

health

SMS: Changing the way we manage health programmes



SMS using mobile phones can help managers more effectively monitor interventions and make improvements.

SMS

In recent years, the use of mobile technology, including text messaging, has been growing rapidly across the globe. In 2010, 6.1 trillion Short Message Service (SMS) text messages were sent. SMS is a text messaging service component of mobile communications systems that allows the exchange of short written text messages between mobile phone devices over a phone network. SMS is used to send and receive data and information between multiple users and multiple locations. SMS has now been extended so that messages may contain image, video and sound content (known as MMS messages).

The ability to customize SMS has meant that it is used in a wide variety of activities in the area of health and social progress, among them:

- advocacy campaigns
- supply chain tracking
- monitoring of long-lasting insecticide-treated net (LLIN) distribution campaigns
- logistics management and reporting of stock-outs of essential medicines (e.g., LLINs, oral polio vaccinations)
- tracking and management of food aid distribution
- registering and reporting of vital statistics
- incident mapping
- communicating messages to health workers and the public
- discussion forums between field workers and central staff

SMS and malaria programming

Malaria is a disease that kills the young, the poor and the vulnerable, and affects the future of many developing countries. It is one of the most devastating global public health concerns. There were an estimated 216 million cases of malaria and 3.3 billion people at risk of malaria in 2010¹, a year in which at least 655,000 persons died of malaria. The majority of the victims were children under five years of age, and over 90 per cent of the deaths occurred in sub-Saharan Africa.

Core interventions for the prevention and control of malaria include vector control using LLINs, and case management and improved diagnosis. The huge investment in LLINs, their mass distribution and promotion to ensure they are utilized are

¹ World Health Organization, World Malaria Report 2011

all very important interventions. During 2010, over 145 million LLINs were delivered to malaria-endemic countries in sub-Saharan Africa² and widely distributed.

Good management and good communication are challenging activities, as is the coordination of logistics. All interventions must be monitored for progress and findings used to make decisions about action to be taken. In many cases, data are widely collected, but their use in making decisions has been limited. Timely sharing of data between field sites and the central office can be difficult. Data may remain unexamined and unanalysed for some time, and actions based on evidence are delayed. By integrating SMS into the monitoring system, this situation could improve.

Features of SMS

- Any mobile phone that can send and receive text messages has SMS capability.
- Large amounts of data can be collected since a high volume of short messages can be sent by large numbers of users.
- Vast geographical areas can be covered.
- Access to data and information from the field is in real-time (as opposed to waiting for monitors and forms to return from the field).
- Data can be automatically entered into a database.
- Authorized persons with an internet connection can view the data immediately.
- Two way communication can take place.
- Data and information can be monitored and acted upon with speed.

How does SMS work?

SMS can be used to support two types of health and development information functions: 1) data collection and 2) information dissemination. An example of information dissemination is sending a SMS message to an individual to remind her about her follow-up prenatal appointments. SMS software platforms can perform one or both of those functions. Popular SMS software platforms include the open source platforms Frontline SMS, Kannel, and RapidSMS, and the SMS function of EpiSurveyor. The software platform (which can be locally or remotely hosted) can be accessed locally via SMS on any basic mobile phone, enabling the mobile phone subscriber to get information, submit data or receive news. Almost all commercial cellular phone networks support SMS.

For data collection, incoming SMS messages and data can be placed in a local database or in an internet database. To reach an internet database, the SMS data must pass from the local cellular network through a gateway to an international network.

Advantages of SMS

Other (non-SMS) types of data collection and information dissemination (e.g., e-mail, Java applications) require more advanced and expensive mobile phones and advanced networks (2G or greater), whereas SMS can be used on any mobile phone and on all networks. Therefore, an SMS data project can be started without purchase of new phones or upgrading of networks.

² World Health Organization, World Malaria Report 2011

How much does SMS cost?

Cost component	USD
Local cost for report by SMS	0.02 per local SMS
Sending management action SMSs from data analysts and distribution leaders to supervisors and distribution leaders, and supervisors to volunteers	0.02 per local SMS

The cost of SMS messages may differ according to the mobile service provider and depends on their charging systems/pricing schemes. The above figure, however, is based on the average cost in several countries in Africa.

Using SMS in a LLIN bed net distribution campaign: Cross River State, Nigeria

Overview

In late 2011, the Nigerian Red Cross Society (NRCS), the International Federation of Red Cross and Red Crescent Societies and the Nigerian Cross River State government collaborated to carry out a small-scale pilot study entitled “Strengthening the management and effectiveness of the door-to-door mass distribution of LLINs by reporting data through mobile phone-enabled SMS messages”.

An existing management database system was already in place, with five major forms being used to collect data about the functioning of the mass LLIN distribution, each completed by a different monitor³. The amount of paper-based data was so voluminous that the workload for collecting, summarizing and entering the data into an electronic format was too high to be completed rapidly. Most of the data were not therefore available within a short time period for management, analysis and reporting.

The ability to collect data using mobile phones and instantly convert those data to an electronic format and enter them



Theresa Agba, a Nigerian Red Cross volunteer is conducting an interview in the village of Etikpe as part of the ongoing monitoring survey taking place in Cross River State.

into an electronic database could dramatically improve the timeliness of management actions to improve the LLIN distribution. With mobile technology available for SMS and internet databases, the decision was taken to carry out the pilot project in parallel with the existing management system. The mobile phone SMS data-reporting function of EpiSurveyor software was selected for the project.

SMS implementation

A project team was established and the paper management database system was reviewed. Work was carried out to design and test the four electronic databases required. State coordinators and first-level supervisors were trained on how volunteers and first-level supervisors would report data through SMS. Data collectors were provided with a dial-in phone number and a pre-designated code for the database that they would enter into their mobile phones, followed by the required

³ The major paper forms were: 1) household-by-household list, completed by community volunteers 2) daily record of data sent by volunteers to first-level supervisor 3) daily SMS reporting form from first-line supervisors 4) lowest-level (sub-Local Government Authority) LLIN storage units, outgoing, and 5) end-of-work SMS reporting of data by volunteer and village.

data elements. From the field, the text data that were sent appeared instantly in the SMS EpiSurveyor electronic database. The data analyst and other members of the state project team were able to review data about the functioning of the mass distribution on a daily basis.

Results

The pilot demonstrated that SMS data has the potential to improve the management of LLIN mass campaigns. During the pilot, SMS data were transmitted from many villages and most supervisors to an internet-enabled database. In addition, the data manager could communicate with supervisors by providing feedback using SMS.

Lessons were learnt, as the project encountered some obstacles that need to be addressed in the next pilot project. First, the local-international gateway for one of the main local cellular network providers became non-functional during much of the LLIN distribution. As a result, IFRC is investigating software platforms that work exclusively with the local network (without the need of a local-international gateway). In addition, some remote areas did not have access to a cellular network at all, emphasizing the importance of a back-up paper-based data collection system. Overall, however, the experience has raised the enthusiasm of the partners for continuing to explore the use of SMS for improving the management of malaria programmes.



Nigerian Red Cross volunteers sending SMS messages during net distribution to ensure accountability. Boki Local Government Area, Cross River State, Nigeria.

What lies ahead?

During 2012, IFRC will continue to work with partners interested in exploring ways to use the SMS and mobile communications and information technology for data collection, and for strengthening the monitoring and evaluation of health and development interventions.

SMS implementation for malaria and other health interventions is fairly new and IFRC recognizes that there is a need to experiment and explore. Pilot studies and more development work are needed, supported by partnerships in a culture of learning.



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