Improving access and use of HIV and reproductive health information in Malawi

By Laura O'Brien

Community health workers used expensive pushbikes to take them to the district hospital. Now they communicate with supervisors through SMS messaging and phone calls. (Photo by Laura O'Brien)

A missing component for many healthcare workers — from community level providers to national level policy makers — is access to up-to-date, locally-relevant, culturally-appropriate, evidence-informed and practical information they can use to improve the health of the populations they serve.

In Malawi, where over three-quarters of the population live in rural and hard-to-reach areas, Community-based Health Workers (CHWs) provide the link between clients and basic health services. Where the closest clinic is often a day's journey away, access to health information for frontline workers can mean the difference between life and death for their clients[1].

> **Findings showed there was a substantial HIV and AIDS and FP/RH information gap among programme managers and health providers across the health system**

New approaches to mobile healthcare (mHealth), however, have great potential to change health service delivery in Global South countries — by expanding the reach of health information to frontline health workers in remote areas. This was the goal of the Knowledge for Health Pilot Project (K4Health)[2] — to provide access to and promote the use of information for Family Planning/Reproductive Health (FP/RH) and HIV and AIDS health workers, managers, and service providers at the national, district, and community levels, to ultimately improve service delivery in Malawi.

Prior to the design of the project, in 2009, K4Health conducted a Health Information Needs Assessment survey to first understand the baseline situation of HIV and AIDS and FP/ RH information management and use in Malawi. Findings showed there was a substantial HIV and AIDS and FP/RH information gap among programme managers and health providers across the health system. To capitalise on the potential of mobile phones noted in the needs assessment, K4Health created a mobile network connecting rural CHWs to their district-level counterparts using Frontline SMS.

Lack of knowledge and information was most among Community Health Workers (CHWs), who are generally trained once upon recruitment, but rarely receive additional training to update their skills. Most CHWs reported having problems accessing new information and resources necessary for their jobs. Access to the Internet for CHWs was non-existent[4]. These challenges are exacerbated by their physical distance from their supervisors and from the specialised services needed to treat their clients.

However, the needs assessment found that widespread access to mobile phones offers a new opportunity for information-sharing, particularly at the district and community levels, where access to FP/RH and HIV and AIDS information is limited.

To close these gaps and leverage the potential for greater interconnectivity, K4Health formed Knowledge Management Taskforces comprised of key stakeholders at the national and district levels to design and implement an integrated programme to improve access to high quality health information in Malawi. Two districts, Salima and Nkhotakota, were selected for participation to build on the existing presence of international and local NGOs working on HIV and AIDS and FP/RH activities.

Frontline SMS offers advantages over traditional voice services including reduced cost and the ability to send messages to large numbers of people in a short amount of time. Stakeholders can be placed in groups — either geographically or by theme — and single messages can be broadcast to the entire group from anywhere with a mobile phone.

In the case of K4Health Malawi, a community health worker wishing to reach the district-level family planning coordinator would send a message starting with the keyword for that coordinator: "SU Does Depo-Provera (DMPA) protect a woman from sexually-transmitted infection like HIV?" The Frontline SMS hub would then detect the keyword (SU) and forward on to the appropriate coordinator for response. Although CHWs were provided with units for air time, district coordinators had to use their own units or go to the Hub, which the project was topping up, to respond. An auto-reply feature also allows messages to be automatically forwarded to the intended recipient using keywords.

The K4Health Malawi Hub sat in the District Learning Centre (DLC) with computers and printed reference materials for use by the district health workers. It was managed by the DLC situation of the hub in the DLC, a permanent employee of the District Health Office. The situation of the hub in the DLC provided an ongoing cycle of communication and learning between the community and district-level health workers, such that CHWs could easily reach their supervisors with questions, advisories, appointments for patients, and other inquiries and notifications. The CHWs now had information at their fingertips.

Increasing knowledge through mLearning

After successfully launching the mobile

> **An auto-reply feature also allows messages to be automatically forwarded to the intended recipient using keywords**

network, K4Health Malawi identified other possible avenues for using the phones to maximise benefits in terms of technical knowledge exchange. This came from a finding early on in the project that only a limited number of CHWs were using knowledge pull factors, i.e., demanding technical information. In view of this, the project used some push factor mechanisms to promote knowledge exchange. One such methodology was to initiate structured learning through mobile phones or "mLearning".

The process involved FP/RH knowledge gap identification within a target group of CHWs through a question-answer approach, content development using approved training manuals and customisation for SMS, weekly questions and information tips to CHWs on various subjects and evaluation questions. The project posed Frequently Asked Questions and later used follow-up questions to narrow down the gaps into specific areas.

> **Travel costs and time of the CHWs were reduced by sending texts instead of walking, renting a bike, or taking transportation to reach the nearest health centre to report and receive support**

One of the most important outcomes of the SMS network was the reduction in time for CHWs to report important events and receive technical support from their supervisors. The average time for participating CHWs to report important events (stock-outs, transportation breakdowns) decreased by close to nine hours, compared to the control district of Nkhatabay during the same time period, as the need for travel to the district hospital was eliminated.

Likewise, the average time for CHWs to receive feedback on important questions (e.g. specific medical conditions, effects of contraceptive use and dosage amounts) from their supervisors at the district level decreased by over 16 hours, compared to the same control district. Travel costs and time of the CHWs were reduced by sending texts instead of walking, renting a bike, or taking transportation to reach the nearest health centre to report and receive support. CHWs were able to report even when fuel was missing or in short supply as is becoming increasingly common in Malawi.

Previously, HIV-positive people in Salima and Nkhotakota got antiretrovirals (ARVs) at the district hospital with clients spending their money on transport and food to get there. With their phones, CHWs lobbied the district hospital to decentralise the system such that now ART clinics are conducted closer to clients at the health centres rather than at the district hospital.

Increased efficiency of referrals

The number of referrals to district hospitals decreased from 16 to six per CHW per month, as CHWs were better equipped to treat patients in their homes through direct communication, and advice from district coordinators, thus reducing costly and difficult travel for patients. When a referral was necessary, CHWs would use their phones to check that the required service, medicine, or health specialist would be available at the hospital, thus avoiding discouraging the patient from seeking medical services in the future.

Another positive outcome was that the CHWs could quickly report low stock of medical items and avoid turning away patients looking for ARVs or FP methods. When CHWs now run out of supplies like condoms, they can send a message to the Hub and will be supplied, sometimes even on the same day. In the past, it could take up to a week. They can also use the phones to get supplies from each other.

In addition to having a significant impact on avoiding and resolving stock-outs, the Frontline SMS application helped the district Hospital to act on a meningitis outbreak. In October 2010, a message was sent by a CHW announcing a suspected outbreak of meningitis in his catchment area, which had claimed the lives of two men and one woman in just two days. Although it was past working hours when the message was received by the computer Hub, it was automatically processed and immediately forwarded to the phone of the District Environmental Health Officer, who straight away mobilised a taskforce on meningitis, prompting action on the outbreak site first thing the following day.

A CBDA in Nkhotakota discusses HIV prevention with clients. (Photo by Laura O'Brien)

Widening service coverage

Reduced travel time has given CHWs more time to visit the families in the communities they serve. Although the phones are only a contributing factor, one Family Planning Coordinator reported that the phones have contributed to an increase in contraceptive

> **Now, CHWs always get support from district coordinators on the spot**

prevalence rate. Participating CHWs reported that the phones have motivated them to work even harder and reach a bigger community. The CHWs reported a greater feeling of self-confidence and trust between themselves and their communities because errors have been reduced. Now, CHWs always get support from district coordinators on the spot; they no longer wait for the monthly review meetings, which seldom provided time for individual questions about cases.

Increased knowledge

CHWs participating in the mLearning programme were required to read FP/RH manuals in order to give the right answer, thereby reviewing and increasing their knowledge. This also improved relationships between CHWs, as they were encouraged to ask each other for answers. Mobile learning has also encouraged supervisors to conduct visits more often since they know which CHWs have information needs.

Conclusions

While the K4Health Malawi pilot programme was successful in achieving its original goal of promoting and improving access to FP/RH and HIV and AIDS information, and in particular closing the communication and information gap for CHWs, there were challenges.

In addition to the usual project experiences of technology failures and delays in purchasing, K4Health Malawi faced the daunting task of persuading the districts that it was in their best interest to financially support the mobile network once the project ended. Because some of the cost of communication was born by CHWs prior to the project, the districts did not feel the cost savings as acutely as if they had previously paid for all use of motor bikes or public transportation.

Time wasted by CHWs in making long trips to the district hospital was also never factored into district budgets. Initially, both Salima and Nkhotakota committed to buying enough monthly airtime to run the Hub. Yet within six months after the project's phasing out, Frontline SMS was non-functional in the two districts; computers were overrun with viruses, equipment had been lost, and commitment to maintain the system has been lost.

Despite these challenges, CHWs continue to maintain and use the phones for sending text messages to district coordinators, who then use their own resources to respond.

The full success of this pilot programme and any future replication depends on the commitment of the district or regional stakeholders, who will be financially and managerially responsible to sustain the system following the initial launch. To do this when resources are scare, projects and governments should look to mobile service providers that may be interested in combining mHealth with other services at scale for a lower cost.

The benefits in terms of cost and time savings from all parties involved (CHWs, patients, and government) should be emphasised in addition to the overall health information and service improvements. With this commitment and support, mHealth can yield infinite benefits to patients and health workers. ■

Laura O'Brien
Programme Officer

Correspondence:

Management Sciences for Health (MSH)
784 Memorial Drive
Cambridge, MA 02139
United States
Tel: + 1 617-250-9353
E-mail: lobrien@msh.org

References

1 CHWs participating in the programme in the two intervention districts lived on average 11.5km from the nearest health centre.
2. The K4Health Malawi Pilot Project was funded by USAID, implemented by Management Sciences for Health (MSH) from January 2010 to June 2011, and was part of the Global K4Health project led by Johns Hopkins University Center for Communication Programs.
3. Sikwese, S. 2009. Assessment of Information Needs Among Health Managers and Health Service Providers: Knowledge for Health Summary Report.
4 Ibid.