How Peru and Latin America are using mHealth

By Ernesto Gozzer

Training on Alerta in Iquitos, Peru. (Photo by Ernesto Gozzer).

Mobile phone penetration in Latin America is high, ranging between 52 per cent in Haiti and 151 per cent in Panama. The regional average is 106 per cent, implying that the infrastructure is ready to be leveraged for health purposes. mHealth is a new approach that uses mobile information and communication technologies to help deliver different types of health services and is especially important in the provision of health services to hard-to-reach populations.

Although the first mHealth innovation in Latin America was launched in Peru more than a decade ago, there are very few functional applications compared with African and Asian countries. Latin American governments have not yet recognised the value of mHealth, such as shown by the Uganda Government's Ministry of Health, which has issued a decree "to ensure that all eHealth initiatives are harmonised and coordinated[1]".

Designed in 2001 and launched in February 2002 in Lima, Peru, Alerta MINSA was the first mHealth project in Latin America[2]. At its launch, it faced the challenge of how to transmit timely information on mandatory reportable diseases that pose a threat to public health. Health professionals were trained to use a simple tool that allowed them to input a minimum set of specific data and information about all notifiable diseases in the country. Earlier on in the project, weekly reports on health problems from as many as 75 health facilities were collected. Where epidemics were concerned, immediate reports, including individual data, were generated and delivered. The economic evaluation showed Alerta MINSA – the mHealth tool — was 2.7 times more cost-effective than the official surveillance system, a combination of paper-based forms with stand-alone software.

Initially, Alerta MINSA was implemented by Dirección de Salud Lima Sur (South Lima

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Health Directorate) in partnership with Voxiva and funded by infoDev, a global partnership programme within the World Bank Group.

In September 2002, Alerta DISAMAR was implemented by the Navy's Department of Health (DISAMAR), in partnership with Voxiva and funded by the Naval Medical Research Unit No. 6 (NAMRU-6), in 11 health facilities across Peru. Currently, Alerta DISAMAR is

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being implemented in all health facilities run by organisations that either trained or helped implement the application in Army and Air Force departments of health at national level.

Almost a decade later, Alerta has helped those institutions to build a robust and modern disease surveillance system, which has facilitated research and helped update health programmes guidelines and identify outbreaks early. The programme helped to develop a culture that values the use of timely and accurate information proving that mHealth is a useful tool to strengthen institutional capabilities.

The application was later proposed to other Latin American countries and implemented in Ecuador and Panama[3],[4]. Two mobile phone disease surveillance systems were also implemented in Tanzania using the same approach (Tahadhari!-Kiswahili for take care) and Rwanda electronic Integrated Disease Surveillance and Response

(eIDSR). Alerta applications are multiplatform and data is input via cell phone, interactive voice response (IVR) and the Internet.

It emerges that successful mHealth interventions are not only about technology. The approach used in these interventions includes designing the required measurement tools with reference to national guidelines; identifying information flow bottlenecks and proposing changes to improve health programme processes; involvement of health workers from the very beginning; systems thinking approach, customised training and job aids (short guides, cards, etc.), health programmes management and change management support.

Through local innovation, you begin with participatory design, implementation, learning, improving, and keep going in this cycle using already existing resources before rolling out, providing expert support without replacing actual health workers, in short, building individual and institutional capacity. Afterwards the model can be rolled out even beyond borders[5].

Several other applications have been developed first in Peru and then adapted for other Latin American and African countries like Alerta Panama, Alerta Ecuador, TRACnet in Rwanda and Tahadhari! in Tanzania, among others.

A patient with her child at a health centre in Panama. (Photo by Ernesto Gozzer).

There is increasing interest in the use of ICT in Latin America. Countries like Argentina, Chile, Brazil, Colombia, Mexico, Panama, Peru and Uruguay are formulating policies that deal with what is called telemedicine, electronic health or telehealth, but very few of the projects or initiatives in these countries actually deal with mHealth. The majority are Internet-based applications, concerned with teleconsultation (dermatology, radiology, surgery, etc), appointment schedules, clinical medical record keeping and continuous training of health workers, among others[4].

Regional efforts to promote the use of ICT and develop concepts to guide the development of solutions exist, like the one promoted by the Pan American Health Organization (PAHO)[6]. However, actual projects on mHealth remain fragmented efforts supported by several national and international organisations, and are yet to crystalise into client-centred national programmes to improve health.

Out of 20 services that mHealth can provide — according to the Inter American Development Bank — only five were from Latin America[7]. After releasing the report, the bank invited proposals for mobile solutions in the social sector. Out of 120 proposals, five were selected for funding. Three of these were on mHealth, namely, MiDoctor: to improve engagement and care of patients with type 2 diabetes in

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Chile; WawaRed: to provide continuum care for pregnant women and newborn in Peru and ChagasMovil: a surveillance tool for dengue and Chagas in Argentina.

In 2011, the Universidad Peruana Cayetano Heredia organised the first mHealth symposium, which was attended by 150 participants from 12 countries. Eighteen experiences on mHealth were presented, including Cell PREVEN, which focused on monitoring medical treatment among female sex workers in Peru using mobile phones[8]. Other applications related to mother and child care, disease surveillance, diabetes and pre-hypertension care.

Two applications focused on data collection for health research, including Cell POS on HIV adherence and another on collecting data about sexually transmitted diseases using PDA[9]. Two others aimed at improving remote diagnosis of tuberculosis[10].

Other mHealth projects include TulaSalud, an application used in Guatemala to track patient data over long periods of time, replacing the need for stacks of charts and forms, as well as applications for antenatal care and health promotion, and GlicOnline to help patients manage diabetes in Brazil. The application is controlled by physicians. Patients are able to log in sugar levels, count carbohydrates and calculate insulin doses[11].

Lessons and challenges

Although mHealth efforts in Latin America are widespread with the field continuing to attract more players with innovative ways of using ICT to improve health services, it is not clear why there are more mHealth initiatives in Africa than Latin America. Perhaps the higher prevalence of communicable diseases in Africa and the lack of resources to tackle

The following statements come from direct and indirect experience, so they should be considered as hypothesis rather than conclusions from carefully-designed research studies.

1. Mobile technology has brought unprecedented ways to solve health problems, but technology alone will fail if health workers in the frontline do not get continuous support.
2. With appropriate monitoring and technical support (especially about content and health programme management) mHealth tools can lead to improved individual and institutional capacity building. Alerta DISAMAR helped to create a new national electronic disease surveillance system that is up and running eight years later.
3. There is no such thing like the "perfect" design before going live. mHealth tools are always improving as end users get familiar and become more sophisticated clients and request for new features according their actual needs.
4. Data traffic provides a wealthy database. With appropriate support, health workers can improve their operations research skills and benefit themselves and their institutions by improving their own way to deliver health services.
5. The simpler the better. Avoid complex designs that include too much data and many processes, especially at the beginning. But technological platforms must be flexible enough to include new features over time.
6. Multi channel and multilingual applications are necessary to provide end users with alternatives.
7. mHealth tools must be able to work with any mobile network operator to reach a higher percentage of end users. This is what now is being called applications "technologically agnosticism".
8. mHealth initiatives should be designed to leverage the already existing technology and devices.
9. More research on cost-effectiveness needs to be done.

Limitations and pitfalls

1. Avoid designing many vertical mHealth tools to solve specific problems. This will end up in too many unconnected "applications" that will lead to chaos.
2. "Pilotitis" is an outbreak in the mHealth field; use the local innovation approach instead: identify and work with institutional champions, analyse the health problem in the context of the health system and use patient-centred approach.
3. Broadcasting mass SMS has to be carefully planned. It seems to work only if it is part of comprehensive campaigns or accepted by subscribers of specific services.
4. More research is needed to identify the more suitable business model for mHealth.

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them demanded innovative and easy-to-use tools. In Latin America however, there is need for improved networking to ensure learning from past successes and challenges to maximise positive interventions and avoid repeating errors. There is also scope for competition and collaboration so that mHealth becomes a powerful tool for building individual and institutional capacity. ■

Training on Alerta in Panama. (Photo by Ernesto Gozzer).

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