Mobilising Africa: the growing role of mobile phone technology in healthcare

Can the mHealth revolution be scaled-up? Taruna Gupta reports on the challenges faced

In sub-Saharan Africa, diseases such as HIV/AIDS, malaria and tuberculosis are the focus of high-profile health campaigns with the aim of fighting their spread, but there is one epidemic pervading the region that is being actively encouraged and harnessed to help tackle health problems: the epidemic of mobile technology. The pace at which mobile phones have spread globally is unmatched in the history of technology. Between 2000 and 2012, the number of mobile phones in use worldwide grew from fewer than one billion to around six billion. Mobile penetration in Africa hit 80% in the first quarter of 2013 and is growing at 4.2 percent annually[1], driven by massive reductions in the costs of owning a mobile phone. And this surging uptake of mobile technology has only been so endemic because it has stemmed from organic needs and abilities of the population. Mobile technology is not being imposed – it is naturally growing from people's needs and habits.

One of the biggest advantages that this prevalent and keenly-adopted network has given rise to is the bridging of physical distances in regions where infrastructure can be extremely poor. Remote areas now have virtual links to professionals and services that would have previously been unavailable to them, or only available following difficult and time-consuming journeys. The potential that this has created for helping to tackle diseases and health problems in sub-Saharan Africa has been quickly seized upon by governments, medical bodies, Non-Governmental Organisations, and other actors in the health sphere – giving birth to 'mHealth'. The rush to pilot applications of the consistently advancing mobile technology has, however, created a hindrance to ensuring the mass replication of effective applications that improve healthcare provision and standards in developing countries.

The applications of mHealth are already being demonstrated in their abundance throughout the world, but are taking strong hold throughout sub-Saharan Africa. World Bank figures published in 2012 showed that there were 29 countries in the region that had already rolled out mobile health applications, compared to three in Europe and Central Asia. The Freedom HIV/AIDS programme is an example of how mobile games are being used to deliver mass-orientated tele-education. Since 2006, the mobile phone games have been rolled out in Botswana, Kenya, Malawi, Mozambique, Tanzania and Uganda – some six million handsets in total – and are helping to educate participants about HIV/AIDS, fight stigma, and discrimination surrounding the disease. In Ghana, the Mobile Midwife project is part of an over-arching Mobile Technology for Community Health (MoTeCH) initiative, and aims to improve antenatal and neonatal care among the rural poor. It provides text and voicemail information for women during their pregnancies, then provides postpartum information on essential vaccinations and the management of critical childhood diseases, while also allowing community health workers to keep electronic records and retrieve patient information using their mobile phones. In the first two years, after the programme was launched in 2010, more than 20 000 had enrolled on it[2].

Kenya's Changamka Medical Smart Card combines the use of mobile technology, in both finance and health to help people save money for medical treatment using transfers through M-Pesa, the mobile-phone based money transfer and microfinancing service. By using their mobile phones, people who have no access to medical plans or insurance cover can save money specifically for primary healthcare, specified laboratory tests, and drugs at pre-contracted prices. The health savings programme has now been extended to cover antenatal, delivery, postnatal, and outpatient care, via a

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Public Private Partnership (PPP) programme with a maternal health clinic. By the end of 2013, Changamka had distributed more than 10 000 smart cards, specifically targeted at pregnant women[3].

The issue now facing more than 850 mHealth applications[4] that have been established around the world is making sure their impact does not go unevaluated. In order for the scale up of applications, and for mHealth to be integrated into future strategic health plans, developers must be able to access evidence-based information on their advantages and disadvantages, as well as their ultimate usefulness. Little research has so far been carried out on them, so there has been sparse strategic feedback on certain factors that are integral to the success of a project. How well can they work around regional language differences and literacy levels? How much are they affected by irregular or basic mobile networks? Are they bound by the timeliness of responses from people and professionals, and what can be done to improve that? What roles do financial incentives have in improving their impact? How vulnerable are they to misuse? Effective research, monitoring, and evaluation of mHealth technology will allow developers and governments to keep creating meaningful and efficient systems that can keep pace with evolving demands and purposes. Analysis of the impact of technology will allow for the streamlining and simplification of applications, to ensure that they remain appealing and easy to use for healthcare professionals and the wider public.

It is then a matter of putting this research to use. The greatest financial costs of establishing mHealth structures lie not in their development, but in their effective integration with existing health systems, and the human and technical infrastructure already in place. Ensuring that there is research, precedent, and documented methods in place should provide donors and funding organisations with increased confidence in the potential impact of projects and their value for money. In order for this information to be obtained, however, it must be easier for healthcare professionals and developers to freely exchange information and feedback. The existing forums for such information sharing must be strengthened, easily efficient, and made easier for the user experience to be documented – which can, of course, be carried out on mobile phones.

And it is here where governments need to start developing their roles in the advancement of mHealth technology. mHealth, as a commodity, needs national institutions to start establishing strategies and plans so that its development does not start losing control and focus, but at the same time, they must not stifle creativity and natural innovation. Governments can play vital coordination roles that can prevent overlap, align developments with longer-term plans and health sector strategies, and make sure that mHealth projects are viewed holistically rather than in the segmented and individual formats in which they now largely exist. If there is a move towards a more decentralised model, where the patients demand services, then controls need to be in place to ensure structure and efficiency, which can be cultivated and advanced by governments through technology strategies and technical working groups. Again, however, these governments must navigate a difficult course between capitalising on potential and not dampening natural development. Government buy-ins for new technology have the potential to contribute to a sense of country ownership over mHealth systems, foster greater efforts to encourage their development and the public uptake of them.

mHealth has already staked out an important position in the future of tackling health problems in sub-Saharan Africa, but the challenge that healthcare managers, providers, and beneficiaries now face is solidifying its role and building more solid foundations, upon which further applications can be strategically developed. The scaling up of mHealth is crucial if the smaller pockets of success it has created so far are to be translated into wide-spread improvements in health and well-being in the developing world, but its bold potential and solid impacts mean that the future for effective mass healthcare in sub-Saharan Africa is looking increasingly mobile.

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