

E-HEALTH POTENTIAL IN AFRICA

Claire Biason, Wed March 30, 2011

Africa has a double constraint. First, its disease burden is the highest: Sub-Saharan Africa represents 11% of the world's population, but carries 24% of the global disease burden in human and financial costs¹. Second, it suffers from a lack of infrastructure that is hampering its economic development.



Credit: DataDyne.org

In such a resource limited environment, technological investments can return real benefits to health with moderate spending. In this context, the notion of e-health (defined by the World Health Organization as the use of Information and Communication Technologies (ICTs) for health) springs into focus: it is recognized as one of the most rapidly growing areas in health today. Although Africa is still behind the other continents for mobile penetration rate (41% compared to 76% globally), Internet access (9.6% compared to 30% globally) and broadband subscriptions (less than 1% compared to 8% globally)², the use of ICTs has considerably increased and changed Africans' behaviors, leaving great hopes for the implementation of e-health services.

M-health, or mobile health, defined as the use of mobile devices for health purposes, is the more widespread and promising service. With the decrease of fixed telephone lines and the high cost of Internet due to poor infrastructure, mobile phones are now Africa's communication device of choice. Last September, African mobile phone subscriptions exceeded 500 million, or an 18% mobile growth rate from 2009-2010 (against 1.6% for developed countries for the same period)³.

Various applications use SMS texts, for their low costs and utility in a variety of services, including sending a remote diagnosis. In Mozambique, the Ministry of Health has nationally rolled out text message printers, which transmit the results of infant HIV tests electronically from two central reference laboratories in Maputo and Nampula to more than 275 health centers in 3 days only.

They can help ensure the quality of drugs, in the instance of Sproxil's solution to scratch labels and text medicine codes to their servers in the cloud to verify that the medicines are not counterfeits.

¹ International Finance Corporation, "The Business of Health in Africa", 2007. Available [here](#).

² International Telecommunication Union (ITU), "The World in 2010: ICT Facts and Figures". Available [here](#).

³ "Africa now has over half a billion mobile subscribers," Intomobile, <http://www.intomobile.com/2010/11/12/africa-500-million/>.

Text messages are also a good way to disseminate public health information. Various projects, such as Learning about Living in Nigeria, have been created to increase awareness on diseases and health behaviors. SMS messages can also help provide patient support. In South Africa, Aftercare, a program created by the NGO Cell-Life, uses mobile technology to support HIV/AIDS treatment. Health workers provide home-based care to patients receiving antiretroviral treatments and send clinical information to a central patient database via text messages. There, a care manager respond to health workers' questions or provide additional information for the patient. This system is particularly interesting as it provides immediate information to patients but also fills in a database about the severity and prevalence of HIV in the region.

Thus, mobile devices can be great tools for remote data collection. As an example, the Uganda Health Information Network (UWIN) provides a two-way access to information by PDAs for health information dissemination, data collection and reporting via cell telephone network and wireless access points. This way, health centers can send to the district health offices Health Management Information System (HMIS) reports, disease surveillance data, reports related to HIV/AIDS, tuberculosis, malaria, data for monitoring drug usage and stock. Health workers are also receiving a continuing medical education via their PDAs. Three times a week, information about diagnosis, treatment, and prevention of major health problems are sent to them.

Going even further, mobile phones can also be used for disease outbreak surveillance. For primary disease alerts, field operatives can phone or send SMS messages to a central unit. For long-term disease surveillance, more detailed observations can be transmitted to a central server (where it can be analyzed, mapped and modeled almost immediately) using a digital pen and a mobile telephone or laptop or using smart phones and the Google-Android open source Data Kit. So the mobile technologies are serving to overcome the constraints of poor physical infrastructure by real-time transmission of clinical observations at the point of disease outbreak to experts at district, provincial or national headquarters. Then experts can send immediate feedback with advice on suitable biosecurity measure to adopt. It will be a groundbreaking technical empowerment of the primary health responders, which is already used in Asia but is in embryonic stages in Africa. And the recent access to smart phones offers significant new opportunities for disease surveillance and prevention, and for the development of e-health services in general. Things should change quickly with the introduction of this new technology that is expected to represent 18.6% of the total subscriber base in 2011⁴. It will probably be the main target for mid- and long-term investments in e-health.

⁴ African Mobile Factbook 2008, Blycroft Publishing, [http://www.w3.org/2008/MW4D/wiki/images/9/9c/FrontPage\\$Africa_Mobile_Fact_Book_2008.pdf](http://www.w3.org/2008/MW4D/wiki/images/9/9c/FrontPage$Africa_Mobile_Fact_Book_2008.pdf)

Other e-health applications are appearing in Africa but they require more technology and are costly and difficult to develop. Telemedicine (the delivery of health care and the sharing of medical knowledge over a distance using telecommunications), e-learning (the use of ICTs for the education and ongoing training of health professionals and students) and electronic health records/electronic medical records (the use of ICTs to generate, store and share longitudinal real-time electronic records of a patient's healthcare information) could potentially compensate for the lack of health workers and teaching institutes in the rural areas and to improve the quality of health care. Some projects are being implemented (such as AMREF in Kenya and the Zambia Electronic Perinatal Record System) but it is difficult to see how they can be scaled-up.

Health knowledge management (access to the latest medical journals, best practice guidelines or epidemiological tracking) is also rising, especially with the HINARI Programme that enables non-for-profit health-related institutions in developing countries to gain access to one of the world's largest collections of health literature. These resources have brought huge benefits to tertiary healthcare institutions in sub-Saharan Africa but are hindered by low and unreliable Internet access.

The development of e-health projects in Africa is raising hope for the region. They considerably increase the access, the quality and the economy of care. It can be a way to compensate for the lack of health workers, especially doctors, teaching institutes and services in the rural areas. It also improves access to medicine for local population and avoid patients costs and time associated with transportation and additional consultations.

Now that budgets are constrained due to the economic crisis, investments in ICTs are a good way to do more with less money, and consequently, are good solutions both for health and budgets. But better health investments towards better outcomes are needed in Africa. It is not only a human right; it will help develop critical capacity in those countries to address and treat communicable and non communicable diseases. It will also contribute to form the building blocks for stable societies.