



Partners

- Eastern Cape Department of Health, through its Port Elizabeth Hospital Complex
- FHI 360 (formerly AED)
- Henry E. Niles Foundation
- John M. Lloyd Foundation
- MTN-South Africa
- Nelson Mandela Metropolitan University, Department of Nursing Science

2010 Statistics

- Life expectancy: 49.2 years
- Population: 49,109,107
- GDP per capita: USD 10,700
- Internet penetration: 10.8%
- Mobile penetration: 98.76%

Sources: CIA World Factbook (<https://www.cia.gov/library/publications/the-world-factbook/>); Mobile penetration data provided by Informa UK Limited and based on market intelligence. Internet penetration data provided by www.internetworldstats.com and based on data published by Nielsen Online, the International Telecommunication Union, GfK, and local regulators.

“Since I was introduced to the device in January 2009, I have been using it on a daily basis – the device as well as the mobile library on it. I love that I can access health information at the point of care, as I do not always have the time to go to the library. The device is loaded with so much relevant and interesting content that it is hard not to want to read more. It has kept me up-to-date with other health information that I rarely come to deal with.”

-Rochelle Gelandt, Registered Nurse at Livingstone Hospital ARV Wellness Clinic

Case Study

Mobile Health Information System: Providing Access to Information for Health Care Workers

In South Africa, where access to relevant health literature as well as broadband Internet access is limited, nurses at the Port Elizabeth Hospital Complex (PEHC) are using 3G wireless technology to overcome access-to-information challenges and provide better care to their patients. With the help of the Mobile Health Information System (MHIS), an Internet-capable, commercially available smartphone pre-loaded with a locally relevant, reliable clinical library, nurses can access much-needed information at the point of care.

Challenge

- Every day, people in Sub-Saharan Africa die unnecessarily from infectious diseases - malaria, tuberculosis, HIV/AIDS, pneumonia and diarrhea. Among the challenges for health care providers in these areas is the delivery of adequate health care to large populations living with chronic lifestyle diseases.
- In South Africa, where only 10.8 percent of the population has Internet access and only 0.9 percent has broadband Internet access,¹ many doctors, nurses and public health workers particularly in rural health care settings do not have access to the Internet. This precludes them from sharing information with the global health community on rare and complex cases, keeping abreast of the latest information on epidemics, and looking up information in realtime for patient evaluation.
- Increasingly, the burden of providing health care to the world’s poorest populations falls on nurses rather than doctors. Enhancing their access to relevant clinical information and increasing the timeliness and accuracy of this information is vital to improving health service delivery.

Solution

- The MHIS project was designed to improve the ability of health workers in urban and rural health care settings to care for their patients by providing them with locally relevant, reliable and accurate clinical information at the point of care through the deployment of commercially available, Internet-capable smartphones pre-loaded with a library of pertinent resources.
- The MHIS project provides health care workers with an electronic library of information resources chosen to build nurses’ knowledge and skills through the provision of continuing medical education and professional development materials. Designed to support the delivery of comprehensive patient care, the library includes digitized medical guidelines, protocols, diagnostic tools, drug formularies and other actionable, evidence-based clinical content drawn from publicly available information sources.
- The MHIS project provides a comprehensive, two-day training session to teach participating nurses how to use their smartphone to access information, add to the library and share information with peers. In addition, the system offers standard phone-based productivity applications to support nurses’ daily clinical activities.

Solution

- The efficacy of the approach was demonstrated by FHI 360 in a pilot project funded by the John M. Lloyd Foundation. Personal digital assistants (PDAs) were pre-loaded with essential information for treating HIV-infected and AIDS patients and field-tested by doctors and nurses in KwaZulu-Natal, South Africa. The “AIDS PDA” met with a strong positive response from nurses who previously had little or no access to printed or digital information resources or reference materials.
- In phase two of the project, FHI 360 conceptualized and implemented MHIS to increase the effectiveness of mobile devices as information tools for clinical nurses in urban health care settings and to allow for a larger scale deployment to this target audience.
- A survey was randomly distributed to 250 nurses at PEHC to identify the clinical information resources they would find most valuable. Project staff then aggregated and analyzed the data collected from the survey’s 136 respondents.
- Project partner FHI 360 created GUIDE, a software tool to automatically convert large documents to formats optimized for viewing on smartphones. GUIDE was then used to create a digitized Mobile Library consisting of evidence-based medical and public health information.



An Eastern Cape Department of Health nurse displays the Mobile Health Information System phone interface.

- Once completed, the Mobile Library was loaded onto the main memory of each of the mobile devices to be deployed as well as to each phone's microSD card for backup purposes. Designed to make navigation and access to information simple, the Mobile Library interface is easily launched from an icon on the main screen of the smart phone. Listed resources are hyperlinked to the documents.
- Fifty nurses chosen from a broad spectrum of clinical specialties participated in a two-day introductory training session and received ongoing instruction from project staff throughout the project. In addition, PEHC information technologies staff received separate training to prepare them to provide on-site user support for equipment and applications.

Results

Enhancements in clinical practice

- Based on a rigorous, multi-phased evaluation process, project partners identified enhancements in clinical practice and a positive response to the tool from program participants.
- Nurses were more confident in answering questions at the point of care, thereby empowering their patients with information on their illnesses. Nurses regularly consulted the clinical library on their device and searched the Internet for health information as they cared for patients. In addition, it was reported that the project generated an overall pattern of knowledge-seeking behavior and learning.
- Communication tools on the mobile device, such as email and SMS, increased communication with nursing peers, both within South Africa and internationally.

Strong, positive quantitative responses from program participants

- One hundred percent reported they would continue using the mobile computing device upon program completion.
- Ninety two percent said it was helpful to carry the mobile device.
- Ninety two percent indicated that they would be willing to purchase their own mobile device.
- Eighty nine percent indicated that nursing practice was enhanced by making information accessible at the point of care.
- Eighty one percent ranked retrieving information from the mobile computing device as either "easy" or "extremely easy."

Project Partners

- **FHI 360 (formerly AED)**, conceptualized the project, serves as the lead implementing partner, created the Mobile Library, and offers training for project participants.
- **MTN, South Africa**, as the wireless network provider, offers technical expertise for wireless communication services throughout the project. They are also a co-funder through an in-kind donation, offering equipment and services at below-market costs.
- **Nelson Mandela Metropolitan University, Department of Nursing Science** conducted the initial information needs assessment and final project evaluations among the nurses.
- **The Eastern Cape Department of Health, through its Port Elizabeth Hospital Complex**, obtained necessary legal and research approvals, and provides project coordination and technical support for the nurses.
- **Qualcomm, through its Wireless Reach™ initiative**, is a co-funder that provides project management support.



¹ Internet World Stats <http://www.internetworldstats.com/africa.htm#za>

Qualcomm's Wireless Reach™ Initiative

Qualcomm believes access to 3G and next-generation mobile technologies can improve people's lives. Qualcomm's Wireless Reach initiative is a strategic program that brings wireless technology to underserved communities globally. By working with partners, Wireless Reach invests in projects that foster entrepreneurship, aid in public safety, enhance the delivery of health care, enrich teaching and learning and improve environmental sustainability. For more information please visit www.qualcomm.com/wirelessreach.