

Delivering Patient HIV/AIDS Care (*South Africa*)

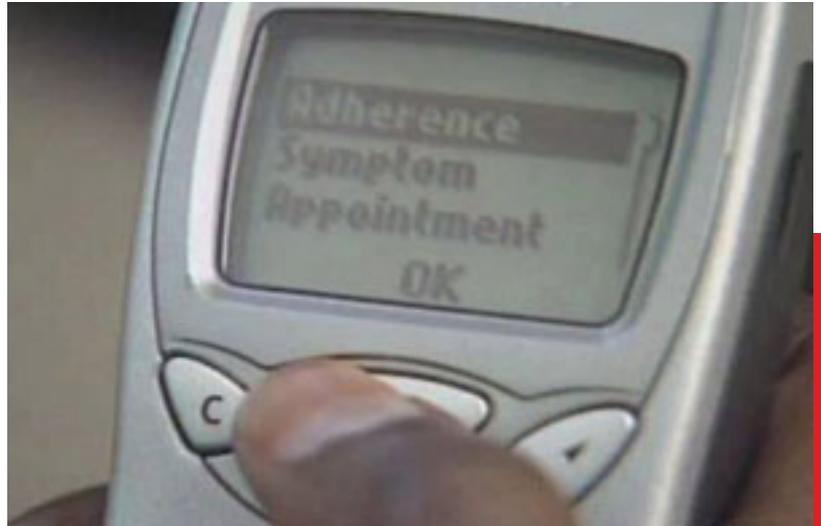
Issue: Confronting South Africa's HIV/AIDS Epidemic

Medical workers and doctors in South Africa are confronted daily with nearly impossible odds: over one-tenth of the South African population has HIV/AIDS, with younger age groups showing infection rates as high as 30 percent. With more than 5.6 million afflicted with HIV or AIDS, South Africa has the worst AIDS epidemic in the world.⁷ The South African government began supplying anti-retroviral drugs in 2004. By 2006, 33 percent of people living with HIV/AIDS were receiving anti-retroviral treatment.⁸

A weak state health infrastructure and disparate system of rural clinics make consistent anti-retroviral treatment (ART) and patient monitoring extremely difficult. Eighty percent of the HIV/AIDS patients that do receive medical care rely on the government health care system. HIV/AIDS patients living in rural areas must travel long distances to reach a hospital. Frequently, they encounter a day-long wait as understaffed and under-resourced clinics attempt to cope with the high demand. Sometimes hospitals run out of the necessary drugs, and patients return home without medications. Secondary infections such as tuberculosis or pneumonia are common.

For those patients fortunate enough to be receiving ART, effective patient care monitoring is essential to reducing the risk of high toxicity levels from treatment, and to ensure a regular treatment regime. If

adherence to medication is not kept above 90 percent, HIV can develop mutations that lead to drug resistance, making first-line ART ineffective and worsening the epidemic.



Credit: Cell-Life

Response: Improving Treatment through Mobile Applications

Cell-Life, a non-governmental organization based in Cape Town, South Africa, created its “Aftercare” program to work with the public health system and its health workers to provide home-based care for HIV/AIDS patients receiving ART treatments. The mobile technology-based Aftercare program supports the effective treatment of HIV/AIDS patients, and covers other aspects such as voluntary counseling.

Each Aftercare worker is assigned to monitor 15 to 20 patients. The worker visits the patient in his or her home, and in a one-on-one session discusses the patient's current treatment. Using their mobile phones for data capture, Aftercare workers record information about patient medical status, drug adherence, and other factors that may affect a patient's ART therapy.

⁷See www.avert.org/aidssouthafrica.htm.

⁸WHO. *Towards Universal Access: Scaling Up Priority HIV/AIDS Interventions in the Health Sector* (Geneva, Switzerland: World Health Organization, 2007, www.who.int/mediacentre/news/releases/2007/pr16/en/index.html).

CASE STUDY 1 CONTINUED

Aftercare workers then relay this information via text message to a central Cell-Life database.

The data sent via text message reaches the Cell-Life server, where a care manager uses a web-based system to access and monitor the incoming patient information. The manager can also respond to Aftercare workers' questions and provide supplemental information to improve patient care.

The information collected not only facilitates individual patient care, but is also used to build a database of information on the severity and prevalence of the South African AIDS epidemic in these regions. The goals of the program include reduction of treatment errors, increased volume of patient data, and increased comfort for the patients as they receive HIV/AIDS care.

Outcome: Delivering Health Care for HIV/AIDS Patients

The Cell-Life Aftercare project was conceived as a joint project with the University of Cape Town and the Cape Peninsula University of Technology. The partners built a monitoring and evaluation system into the Aftercare program, and initial results indicated that the quality of care for patients has improved. A Women's Net and United Nations Children's Fund (UNICEF) report billed Aftercare as "one of the most experienced initiatives combining mobile phone technologies and AIDS management."⁹

In part, the efficacy of Cell-Life's work in South Africa can be attributed to the high prevalence of mobile phones. South Africa's mobile penetration rate is 41 percent, and mobile phone networks cover more than 90 percent of the country's territory.¹⁰ The Aftercare program and technology were

⁹Shackleton, Sally Jean. *Rapid Assessment of Cell Phones for Development* (Women's Net and UNICEF, 2007, http://www.unicef.org/southafrica/SAF_resources_cellphones4 dev.pdf).

designed with end users in mind. It functions in a participatory fashion, is simple and works consistently, and provides feedback to the counselors via text message when reports from the home health aides are received. The program has been able to keep costs relatively low by using data collection software that functions even on low-cost phones.

Challenges: Sustainability and Scalability

Two major challenges for Aftercare's future identified in several evaluations are long-term financial sustainability and the difficulty of implementation on a larger scale. Scaling the project to more areas is expensive and difficult because the system can only be used on one network using prepaid accounts. And because the software is written only in English, it would have to be translated into South Africa's eleven national languages in order to be successfully scaled.

Ulrike Rivett, founder and director of Cell-Life, says: "The single greatest risk [to effective patient monitoring] is the lack of resources to roll out ART effectively. The areas with the highest prevalence of HIV have a shortage of skilled medical personnel, lack of good nursing and management staff and have limited financial resources," making mobile health solutions all the more valuable.

¹⁰The Economist Intelligence Unit, data accessed February 2008.



Credit: Cell-Life

Next Steps: Expanding the Cell-Life Model

Beyond securing the necessary funding, Cell-Life has identified a number of criteria that would influence the future of Aftercare. These include:

- further development of its data management software;
- expansion of its partnerships with other actors in the public health sector and commercial operators in South Africa;
- better interoperability between its systems;
- greater standardization for medical record collection forms; and
- the adaptation of the system to other chronic and acute diseases.

Cell-Life is also considering a migration to Java and GPRS (General Packet Radio Service) platforms to lower data transmission costs. They are also looking to enhance security measures and translate the program to other languages spoken in South Africa.

In a country challenged by a high rate of HIV/AIDS, a weak state health infrastructure, and a disparate system of rural health clinics, the Cell-Life Aftercare program is demonstrating how an innovative mobile application can improve patient treatment. If the program can overcome the significant barriers to expanding nationwide, it may provide a necessary tool for South Africa's ability to confront its HIV/AIDS epidemic through the delivery of effective treatment. ■