

# New technologies in HIV treatment and prevention

By Steve Snyder



Health workers in India practice entering client data during a training session. (Photo courtesy of Dimagi).

**Recent years have seen a stabilisation of the HIV epidemics in many sub-Saharan African countries, and in some cases a decline 1. While HIV continues to be a major problem, the goal envisioned by UNAIDS of ‘getting to zero’ - with zero new infections, zero discrimination and zero AIDS related deaths - may be realisable in the imaginable future**

While young people across the continent are communicating via mobile devices like never before, this technology affords the dual benefit of both access to remote communities, as well as a medium of communication with which a younger population is both comfortable and familiar.

Over the past decade, Dimagi Company has played a central role in developing mobile solutions for public health, from Africa to India and beyond. With offices in Boston and New Delhi, the company recently opened Dimagi South Africa in response to a growing demand for innovative approaches to surmounting health-related obstacles to development. HIV represents one of the most significant impediments to development, both here in South Africa, and in neighbouring countries. Successfully eliminating, or drastically reducing, the incidence of HIV is not a silver bullet; however, but it does represent a key step in ameliorating its impact on development throughout the region.

There are two lenses through which one might analyse the benefits of mobile technology in tackling the HIV pandemic. First, there is the innovative use of interactive tools to revolutionise behaviour change communications (BCC). Secondly, we can vastly improve data collection and patient care at community level, producing cost savings and optimising the use of existing assets, particularly in low-resource settings.

Of course, there are many challenges in introducing technology to these contexts, including interoperability with existing electronic medical record systems (EMR), as well as more basic concerns around the security of the handsets from theft, or even the proximity to a working cell network for data upload. Dimagi has sought to address these issues as projects are brought to scale, focusing initially on the proof of concept, addressing individual constraints on a project-by-project basis, and sharing lessons learned across countries and programmes.

The company’s flagship solution, CommCare, uniquely provides a case management system where health workers are able to register individual patients, or cases, and then update information on those cases at subsequent visits.

Through CommCare’s case-management approach, we are able to provide a long-term view of a patient’s record of treatment. Critically, because the software is open source, we avoid stove-piping interventions between our partners. Instead, any new partner organisation benefits from the features dreamt up by existing users, sharing best practices across programmes, implementing partners, and donors, with the tangible benefits of collaboration flowing directly to the patient.

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It is appropriate, then, that Dimagi’s very first test project in South Africa focuses on HIV clubs, managed by Médecins Sans Frontières (MSF). While MSF runs a vast network of such clubs, they are currently investigating a

mobile application that will allow their club facilitators to better manage their interactions with patients. By bringing services to the patient, CommCare renders them more likely to follow their prescribed treatment, while alleviating pressure on local clinics, allowing nurses and doctors to focus on patients who require more specialised attention. What's more, 'real-time' adherence monitoring could allow for the detection of adherence lapses and implementation of interventions to resume treatment, prior to the development of virologic rebound and drug resistance, which has not previously been possible'.

By syncing the application with local government's existing patient record system, CommCare is able to link a patient's most recent laboratory results to their case on the mobile phone, ensuring that they are informed of their status more quickly and referred to the clinic as soon as possible for follow-up treatment.

preventing the spread of the disease in the first place.

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A number of actors are working in the area of BCC around HIV. For instance, the Praekelt Foundation's Young Africa Live (YAL) incorporates a vast network of users, registered through their mobile phones, who gain access to important information and support. The interface is sleek and, by incorporating celebrity stories and news updates, YAL engages young people in discussions about issues related to safe sex, relationships, testing and cultural dilemmas.

Reaching over one million users across Africa, YAL uses interactive content and surveys to collect critical information about attitudes around sex, disease, dating, and cultural norms, to better understand youth attitudes and

to identify trends, allowing for the refinement of the application to address the most significant obstacles to public knowledge.

It is easy to imagine how a similar programme might be implemented around behaviours and attitudes towards sexually-transmitted infections like HIV. Such a project could similarly work to debunk myths and better inform young people on the risks of unprotected sex, the safest ways to avoid infection, and the importance of regular testing.

While the complexity of the messaging varies, it is generally delivered via SMS to registered users. Measuring responsiveness to such messaging can be difficult. In an integrated system, nurses or doctors at the point of service could confirm that a given patient sought treatment or received a vaccine. For BCC programmes with a larger, more informal membership base, surveys sent to users have proven effective in gathering data and measuring change over time.

As mobile phones costs continue to decline, they will become increasingly ubiquitous throughout the developing world.

Tools such as CommCare leverage a global, collective cadre of research and resources to capitalise on this technology and improve health outcomes.

Additional modules, incorporated into the same mobile phone can similarly address related health issues, like tuberculosis, or preventing mother-to-child transmission of HIV.

The tide is turning in the fight against HIV and through cooperation and creative responses to the epidemic. We can, indeed we must, realise an HIV-free generation. ■



Community health worker in Benin reviews a case with her client. (Photo courtesy of Dimagi).

At times such integration can prove challenging, particularly given the diversity of existing EMR systems, even within a single country. In South Africa, the governments of each province use their own systems, complicating efforts to standardise a national mobile health programme; at the same time, a focus on the local level represents a necessary first step. The long-term benefits of such interventions have yet to be codified. However, it is clear that faster, more accurate data collection, paired with the ability to track and analyse trends in real time, should lead to a more nimble and effective treatment programme for individuals living with HIV.

Treatment is only half of the solution, however. While it is of utmost importance to apply the lessons learned from these programmes to improving treatment effectiveness, it is equally crucial that we leverage the information we gather to develop more effective efforts at

perceptions. Given the taboo nature of HIV in many parts of the world, the anonymity of such a community is central to painting an accurate picture of the practices and beliefs that contribute to the proliferation of HIV in young people.

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Similarly, Dimagi has implemented a number of projects in India that use mobile technology to promote interactive, educational lessons on sensitive subjects such as reproductive health. By sparking a conversation between a health worker and a patient in an intimate setting, such tools permit a more open discussion. The benefit for such a programme is that responses to carefully-crafted questions can be recorded and tracked

**Steve Snyder**  
Project and Operations Manager

**Correspondence:**  
Dimagi South Africa  
56 Barnet Street, Gardens  
Cape Town, 8001  
Tel: +27 (0) 79 419 6836  
E-mail: [ssnyder@dimagi.com](mailto:ssnyder@dimagi.com)

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