

TAKING mHEALTH SOLUTIONS TO SCALE: ENABLING ENVIRONMENTS AND SUCCESSFUL IMPLEMENTATION

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Introduction

The increasing availability and capacity of mobile devices is transforming accessibility and coverage in the health field. Globally, there are nearly 6 billion mobile cellular subscriptions with penetration reaching 80% in the developing world.¹ Particularly in low and middle-income countries, the use of mobile telecommunication and multimedia technologies, known as mobile health or mHealth, can improve the quality of care and enhance efficiency of service delivery within healthcare systems. In particular, mHealth innovations offer tremendous opportunities to improve access to health-related information in hard to reach areas.² Such opportunities include increased operational efficiencies, low cost delivery, as well as enhanced diagnosis, treatment and tracking of diseases.³ Like many resources and devices in the larger field of health informatics, mHealth solutions can also improve consumer access to and control over information they receive about health and can help to advance knowledge and skills while reducing complexity.⁴ mHealth tools can provide improved access to healthcare while creating cost efficiency and increasing capacity and quality of healthcare.⁵

Frontline health workers can benefit significantly from mHealth technologies, particularly in maternal and newborn health (MNH) as they can increase autonomy and improve motivation by facilitating and streamlining workloads and automating tedious duties.

Despite its demonstrated potential, mHealth tools and applications often struggle in practice. The mHealth landscape is comprised by a large number of pilot projects that are successful in one location, but do not make it to scale.⁵ This has led to widespread scepticism of pilot projects and

small-scale mHealth interventions in many parts of the world, particularly in low-income countries. In fact, the term ‘pilotitis’ has been coined in response to frequently expressed dissatisfaction from donors and governments about isolated mHealth interventions that are successful in one context, but not ‘rolled out’ due to a variety of technical, practical, economic and often institutional and political barriers.^{6–8}

Initially, there was a distinct need for small-scale projects to gain a deeper understanding of technologies and applications. Likewise, not all mHealth projects are appropriate for scale; some serve a specific function or geographical area and are designed for the short-term. To integrate and build cross-sector partnerships around mHealth solutions, however, there is a growing need to coordinate activities and build an evidence base that allows for learning, communication, and understanding across sectors and contexts.

There is growing evidence to support the emergence of a new era in the mHealth evolutionary process with more and more successful mHealth initiatives making it to scale and being rolled into national health schemes. Research around mHealth initiatives and their impact is evolving rapidly and the tracking of progress and success is increasing.⁹ The mHealth Alliance’s *mHealth and MNCH: State of the Evidence* report has found the increase remarkable and has called for even greater investment of resources in studying the effect mHealth interventions have on health outcomes, and emphasises the need to view gaps in the mHealth evidence as opportunities for future research.⁹

In particular, to make it out of the pilot phase, these initiatives require a number of key elements from

the very beginning to ensure the possibility of scale. The mHealth Alliance has identified five key components that have increased the likelihood of a pilot project being mainstreamed into health systems, including: improved evidence, technology integration and interoperability, sustainable financing for mHealth, global and national policies that support the use of mHealth, and a health community that can design and deploy mobile technologies for health.⁹

Lemaire (2011) cites a number of complementary criteria required for overcoming ‘pilotitis’ and successfully scaling up of mHealth initiatives at national level. These criteria include:

1. Building sustainability plans into mHealth initiatives from the point of planning;
2. Ensuring that technological and logistical solutions to problems are locally feasible and appropriate;
3. Securing buy-in from, and creating strategic partnerships with, key stakeholders, including national Ministries of Health, private sector mobile technology partners, technical agencies, local non-governmental organisations, and potential sources of financing whether private sector or donor-based;
4. Aligning mHealth initiatives with local and national health priorities, and integrating initiatives into existing national- and sub-national health systems, structures, and policies;
5. Putting in place data and interoperability standards so information fluidly feeds back into and informs national and sub-national health management information systems;
6. Ensuring monitoring and evaluation is built into implementation plans, and provided with a sufficient budget.

The following case study offers a look at some of these basic ingredients and approaches that can help to achieve both scale and sustainability in the African context. We focus in particular on how closing persistent gaps increases the likelihood of mainstreaming mHealth initiatives into health systems.

Health Management Information Systems: mTrac

In 2012, following reports of an uncoordinated, ‘chaotic mushrooming’ of mHealth projects across

the country, the Government of Uganda placed a moratorium on all mobile technology pilots until such time a coordinated set of technical standards and government strategies could be put in place.¹⁰ On the surface, the government’s declaration of a moratorium might suggest public sector mistrust in mHealth innovations. However, there have been a number of notable mHealth success stories in Uganda. One such success has been the government’s adoption and scale up of the mTrac platform for health information management. The Ugandan MoH was recognized by the African Development Bank for mTrac and it was rated one of the top ten eHealth projects of 2013.¹¹

mTrac is a government initiative that originated as a pilot project within a Millennium Villages Project and Foundation for Innovative New Diagnostics (FIND). It was then handed over to the Government of Uganda for launch and scale up in December 2011. The Ministry of Health (MoH) fully owns and operates mTrac and it began to roll it out in four phases, each covering approximately twenty-eight districts.

mTrac is meant to be used as both an auditing and data collection tool. In particular, mTrac focuses on the collection, verification, accountability and analysis of data generated at community and health facility levels. With financial support primarily from the UK Department for International Development (DFiD), this is done in three key ways.^{12,13} Firstly, via SMS, in order to transmit weekly surveillance reports (i.e. information on disease outbreaks and stocks of anti-malarials) from health facilities to the MoH and District Health Offices (DHOs). Secondly, mTrac operates as an anonymous hotline providing a service delivery complaints toll-free number through which community members can report health service-related issues, including operating hours of health centres and stock outs of essential drugs in hospitals. Thirdly, through a mechanism known as ‘u-report’- where 235,000 registered stakeholders representing every community in Uganda collect regular feedback on developmental issues and engage elected representatives to discuss these issues.

mTrac is also available at the Village Health Team (VHT) level, feeding into the system information collected by community health workers. Data collected at this level includes information on malaria, severe malnutrition, and referrals to health facility, as well as on ACT and Amoxicillin stock.

mTrac was designed from the start to work within and through both the MoH's existing software and paper systems of collection at the community and facility-level. By prioritising interoperability from the beginning, mTrac has aligned and integrated fully with the MoH and required limited additional investment in IT infrastructure or project implementation.

The MoH receives technical support from UNICEF and WHO, as well as financing from DfID, but mTrac is formally governed via a government-led Steering Committee chaired by the National Medical Stores, as well as via a dedicated eHealth Technical Working Group (TWG).¹³

The impact of mTrac is not yet known as it is still in its early stages. There is some evidence of low reporting rates by end users, and also weak health system responsiveness (e.g. supply chain inefficiencies mean that reports of drug stock outs cannot be acted upon).¹⁴ Such problems serve to highlight the fact that mHealth initiatives are not magic bullets, and their success is largely dependent on the strength of the health system into which they are introduced. Nevertheless, mTrac serves as a model for mHealth scale up as it focused, from the beginning, on a) designing interoperable systems that can be implemented to scale; b) aligning these systems into existing national structures, policies, and institutions; c) coordinating multiple public and private sector stakeholders, and leveraging their strengths; and d) focusing on minimising additional investment by government to ensure sustainability.

Conclusions

Achieving comprehensive health delivery systems supported by mHealth tools requires meaningful, productive communication across numerous sectors and stakeholders. Such stakeholders may include public health and healthcare delivery personnel, information technology and communication specialists, economists and finance professionals as well as evaluation and monitoring experts. Leadership is also needed from ministries, acting in concert, to provide the necessary guidance for innovators, companies, and organisations in order to develop meaningful mHealth tools targeted at national priorities. Patients or end users should also be included. There is a distinct need for engaging peers in the technology sector, thus requiring discussion to be extended to include stakeholders from across the full healthcare spectrum and along the full continuum of care.

Bringing mHealth solutions and interventions to scale requires cross-sector partnership brokering expertise, increased awareness, coordinated and directed financing, national and global policies to establish interoperability standards and data protection, and investment in the workforce to support long-term applications and initiatives.³ It also requires numerous and multi-sector stakeholders to be involved in national discussions to set strategies and operational plans to move forward in a unified fashion. The way forward needs to draw upon governments' formal health sector development strategies and formal commerce, communications and related national strategies.

There remains limited evidence on the improved health outcomes generated from these projects. Better evidence would ensure improved coordination of activities to allow for learning, communication and thus understanding across sectors. For example, a project that demonstrates an increased quality of care or improved capacity of health care workers to manage patient load will provide the necessary evidence to funding organisations and national health systems that these projects are not only possible, but effective in changing delivery methods and improving efficiency, as well as generating tangible health benefits for the often most difficult to reach populations and doing so in a sustainable and affordable manner.

The mHealth field is currently dominated by people from the technology sector rather than health delivery practitioners. As mHealth is still in its nascent state, limited cross sector expertise is to be expected but has also been a contributor to 'pilotitis'. Technologists can dazzle healthcare providers in the field or even policy makers with a new screen on a smartphone or a clever way to eliminate paperwork using SMS, however, this leads to a solution-based approach that does not consider long-term adaptability and sustainability implications. Once the technologist leaves, the pilot often falls apart because those in the field cannot support the application, or the technology/solution does not take into account the fact that the 'solution' needed to interoperate with some other equally important systems or processes.

As demonstrated with mTrac, there is a growing consensus among governments, funding bodies, and international organisations for the need of greater efforts in cross-sector partnerships to bring various stakeholders together. The Commission on

Information and Accountability for Women's and Children's Health has called for 74 countries to have integrated the use of Information and Communication Technologies (ICT) in their national health information systems and infrastructure by 2015.¹⁵ The implementation plan of the Commission's recommendation on use of ICT has three elements: develop a national mHealth plan, identify scalable projects, and build a knowledgebase of lessons learned and best practices.

Bringing mHealth solutions and interventions to scale requires numerous and multi-sector stakeholders to be involved in national discussions to set strategies and operational plans to move forward in a unified fashion. The way forward needs to draw upon government's formal health sector development strategies and formal commerce, communications and related national strategies.

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