



**GSMA mHealth decision support toolkit: *a review in the context of emerging trends in mHealth***

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For iHub Research



Mobile Health (mHealth) is the application of mobile telephony for the provision and use of health services and health systems. In recent years, various companies and organizations, notably [InStedd](#), [Medic Mobile](#), [DataDyne](#) and the [Praekelt Foundation](#), have incorporated and focused on mHealth solutions. Established in early 2009, [the mHealth Alliance](#) brings together many of these organizations - as well as government agencies and other stakeholders - in various [on](#) and [offline](#) forums to dialogue about the "mHealth ecosystem". The demand for mHealth is growing and is influenced by large players in the global health field such as [USAID](#) and the [Gates Foundation](#) that have established a reputation of improving the quality of health services, particularly in resource-poor settings.

Recognizing the importance of mHealth, in June 2011, the [GSMA](#) (Global System for Mobile communications Association) - an association that "represents the interests of mobile operators worldwide" (currently in 219 countries) - began producing a series of documents to support its members to make informed decisions when investing in mHealth. The first publication is a 'decision support toolkit' to inform their stakeholders of the opportunities to develop solutions in the mHealth space in South Africa. Since that time, they have also published three market-entry toolkits: one outlining the "key design considerations for mobile health service development", the other "a practical framework for technology assessment for mobile health", and the third an "examination of current approaches to branding, pricing and promotion" of mHealth services.

The initial decision support toolkit sets the stage for potential decisions by GSMA members in terms of targeted investment in mHealth applications; as such, it is arguably the most important in the GSMA series of documents on this topic. Published in PDF format, the "toolkit" targets actors within the mobile industry in order "to analyze Mobile Health business opportunities and identify what is required to build sustainable health businesses."

The focus of the toolkit is on areas where products and services would be most marketable (and the assumption is that they are likely the most sustainable) to a variety of potential clients. Potential clients are categorized as: 1) payers; 2) producers; 3) providers (public and private healthcare); and 4) consumers (insured and uninsured). There is considerable overlap in these categories, for example, a payer (a stakeholder who would pay for the health services) and a healthcare consumer is likely the same person. Thus, this division can be somewhat confusing. The toolkit focuses on the opportunities for these potential clients and categorizes the opportunities to them as significant, moderate, or minor.



The GSMA state there is great potential in mHealth solutions, particularly in South Africa. The report indicates that South Africa has a mobile penetration rate of 98% - nearing the full saturation point. Owing to this high mobile penetration rate, the report focuses heavily on South African mHealth initiatives and potentials, which we will cover in the following sections.

## **mHealth Insurance?**

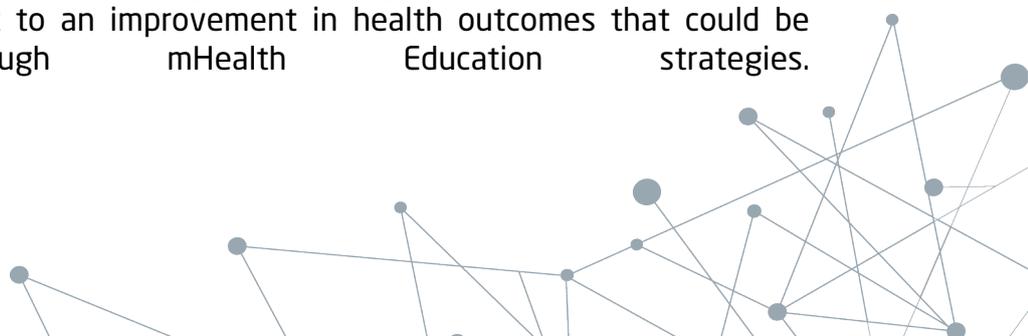
The report outlines significant policy developments - namely the Government's eHealth Strategy Document (currently under development and to be released sometime in 2011) and the newly constituted National Health Insurance (NHI) scheme. The NHI plan is a progressive health insurance scheme to be rolled out over a 15-year period. The GSMA report indicates that 86% of the South African population is uninsured. Given the rising costs of insurance in South Africa, this percentage is not likely to increase under the current system.

The GSMA report suggests that there is a significant opportunity for mobile operators to work together with government to provide mHealth solutions within the proposed public insurance plan. An effective mHealth insurance deliver system has the potential to reach out to uninsured individuals and provide a cost-saving alternative that may increase the number of insured up from the dismal 14%. Such a solution would require an enabling environment for mobile money solutions to be rolled out simultaneously and has the potential to provide time and cost-saving benefits to individuals enrolling in the NHI system.

## **Support for health workers**

According the report, South Africa's public health care sector is currently experience an acute shortage of staff - 49% of health posts remain vacant which translates into 80,000 health workers. The report states that "[n]ew means of addressing the capacity shortage must be explored urgently."

To date, many mHealth Education programmes target community health workers and nurses. Early successes have been reported and according to [a report](#) published in by the iHeed Institute and Dalberg Global Development Advisors, "the first wave of projects suggest that mHealthEd[ucation] applications are improving the provision of care and levels of knowledge. Improved training can also increase job satisfaction and reduce attrition rates for health care workers." The iHeed report also discusses the findings of a WHO study that measured a two-thirds reduction in maternal mortality and 40% reduction in still births through the training of community health works. These findings point to an improvement in health outcomes that could be obtained through mHealth Education strategies.



There is increasing evidence that mHealth applications can improve clinical outcomes. In November 2010, the Lancet published [a study](#) of the effects of SMS messages on patient adherence to anti-retroviral (ARV) therapy (HIV treatment). The randomized trial showed significantly increased adherence to ARVs and significantly decreased viral loads (indicating improved treatment outcomes) in patients receiving weekly reminder messages to take their ARVs. The weekly reminder messages were sent by clinic nurses in *Swahili* and asked the question “*Mambo?*” to which patients responded either “*Sawa*” (OK) or “*Shida*” (Bad). If the patient responded that they were doing poorly, they would then receive a follow-up call from a nurse. Another study reported that the use of SMS reminders improved health workers adherence to [malarial treatment guidelines](#). The study, conducted in Kenya, reported 20-30% improvements in adherence to treatment guidelines when delivering care to children infected with malaria. The authors report that the pilot study could be scaled to approximately 15,000 health workers for the cost of \$39,000 - or \$2 to \$6 per health worker for the SMS messages. This may be a cost-effective means of improving patient outcomes and adherence to malaria treatment. In August 2011, the authors reported to be working with the Ministry of Health Services in Kenya to undertake a cost effectiveness analysis of the intervention.

Other evidence points to increased job satisfaction and performance among health workers, as well as community based health workers in various settings. One strategy for addressing the shortage of health care professionals is to train and deploy community health care workers, thus relieving the burden on nurses and clinicians. [A study](#) conducted in Uganda demonstrates that mobile phones are an effective triage tool that can be used to improve the response of community health workers in resource-poor settings. Studies have also demonstrated the cost-saving benefits of such interventions; for example in Uganda, remote data collection using PDAs resulted in a 25% cost savings in the first 6 months of a pilot project by the Ugandan Health Information Network (UN Vodafone report, 2009).

These studies suggest areas of potential partnership between GSMA members and Governments (Ministries of Health and Education). There is clearly a great need for expanding the reach of educational and support opportunities in the health care industry to improve services and extend the effectiveness of existing resources.

## **Burden of disease**

Despite the policy developments and the near-universal reach of mobile phones, the reality is that health in South Africa is still starkly divided along social lines.



This is evident in the disparity between insured and uninsured individuals and between the private and public health care systems described in the report. The GSMA toolkit does indicate that mobile technology *can* and *must* “be leveraged to help address the inaccessibility and inequality of health care in South Africa.” The most illuminating information and perhaps the most relevant to tackling this inequality and for creating impactful mHealth solutions is described in Appendix 8 & 9 at the end of the GSMA mHealth report. These findings discuss the [burden of disease](#) (that is the number of healthy life years lost to different types of diseases) for both insured and uninsured individuals.

In Appendix 8 & 9 the report outlines the socio-economic divide in terms of the burden of disease. The data demonstrate that South Africa faces significant challenges from what is known as “the double burden of disease.” The double burden of disease refers to the fact that South Africa’s health care infrastructure must deal with the “double burden” of infectious diseases as well as the burden of non-communicable diseases that are more prevalent in higher-income countries.

86% of the population (uninsured individuals) suffer primarily from communicable diseases such as HIV/AIDS, tuberculosis and diarrhoeal diseases (see pg 45 appendix 9). The remaining 14% of the population, which corresponds to those individuals with higher on the socio-economic scale, and also more likely to be insured - more often face chronic, non-communicable diseases such as hypertension and diabetes (see pg 44, appendix 9). This poses a challenge to the national health infrastructure as management and treatment of these diseases require different resources and investment, including staff, equipment and facilities.

## **Maternal and Child Health**

Of the seven diseases that most affect 86% of the population (uninsured individuals), six primarily affect women and children. In the report the GSMA states that it believes mobile can be placed at the heart of healthcare, and providers should consider “cradle to grave” offerings which focus on preventive, promotive, diagnostic, therapeutic and assisted, or remote living. They also state that “chronic disease and disability monitoring are probably the greatest opportunity areas within this “cradle to grave” framework.” This finding is inconsistent with the finding that maternal and child health indicators contribute to six of the seven greatest health concerns within the general population of South Africa as outlined in Appendix 9 (namely HIV/AIDS, interpersonal violence injuries, TB, lower respiratory tract infections, diarrhoeal diseases and low birth weight).



Successful projects have been implemented to improve treatment services and support women and children. One such example is the use of SMS messages to improve adherence to pediatric malaria treatment guidelines. The pilot project proved successful and has been recommended for cross-country implementation in Kenya.

Focusing on multidisciplinary, integrated approaches have the potential to reach under-served populations and positively impact the health of South Africans not currently reached through the existing health care infrastructure. If mobile health solutions are not targeted at the 86% of uninsured population, they run the risk of increasing the health disparity within the country. Tools for improving the reach and impact of health services must be integrated within the existing health infrastructure to support health care providers to reach under-served populations.

## Conclusion

The “toolkit” presents a solid overview of the potential consumers of mobile health solutions and entry points into mHealth, as well as the current policy environment. As a decision support paper however, the toolkit comes up short and would benefit from a deeper exploration of the factors that influence health and well-being. Doing so would provide a different framework for assessing where the greatest return on investment would be based on the greatest population health impact.

Notably absent from the decision toolkit are examples of successful projects, many of which are being rolled out in South Africa by small-scale innovative organizations, such as Praekelt Foundation. References to the growing evidence base for mHealth solutions are also needed. The GSMA members would be wise to draw in multiple actors, many of which have and are building on-the-ground experiences in the intersection of mobiles and health. There are several interesting concepts and opportunities presented in the toolkit, but they should not be taken out-of-context of the wider body of evidence and experience within the growing mHealth field.

There are experiences from South Africa and elsewhere in sub-Saharan Africa that can be drawn on when deploying projects to build upon this decision support kit; another recent [“toolkit”](#) introduced by K4Health (Knowledge 4 Health) is an online guide with an in-depth introduction to mobile health, references to extensive (albeit not exhaustive) list of mHealth evaluations, publications and reference materials. As a dynamic online platform, the K4Health can more correctly be categorized as a toolkit than the GSMA report.



The biggest take home message of the GSMA toolkit (better categorized as a report rather than a dynamic decision support guide) is the drastic inequity between insured and uninsured individuals and the challenge of the double burden of disease on the South Africa health system. The report should not be considered as a standalone decision support guide, but rather a brief introduction to the growing field of mHealth research and applications.

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*Jamie is passionate about how innovative social technology can be integrated into community information sharing systems to discuss and tackle health and social issues.*

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