



Reimagining Mobile in South Africa: Lessons from Year One

Acknowledgments

On behalf of the entire MAMA family, we want to thank the many partners who have made the launch of MAMA South Africa successful, with particular recognition to Praekelt Foundation, Wits RHI, Cell-life and Vodacom. Their hard work on the ground along with the vision of our founding partners – USAID, Johnson & Johnson, United Nations Foundation, mHealth Alliance and BabyCenter – have brought vital health information to hundreds of thousands of women and families. The ideas, lessons and successes of MAMA South Africa are also a shining example for others in the field, and as this work expands globally, we will continue to look to the MAMA South Africa team as a leader who can guide us all in creating mobile messaging services for scale, impact and sustainability.

IN-COUNTRY PARTNERS IN SOUTH AFRICA:



MAMA GLOBAL PARTNERS:



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Glossary

ARV	Antiretroviral
EMTCT	Ending mother-to-child transmission [of HIV]
IVR	Interactive Voice Response, a mobile phone technology allowing for voice- or touchtone-based interaction with an audio menu.
GSMA	Global System for Mobile [Communication] Association
IWG	Innovation Working Group
KABP	Knowledge, attitudes, behaviors and practices
LSM	Living Standard Measure
M&E	Monitoring and Evaluation
MAMA	Mobile Alliance for Maternal Action
MDG	Millennium Development Goal
MNCH	Maternal, newborn and child health
MNO	Mobile Network Operator
Mobisite	Mobile Website
Mxit	A South African created mobile social network
NGO	Non-governmental organization
PCM	Please Call Me, a free text message that can be sent by one mobile user to another in instances when the first user has depleted their available airtime and wants to request a call back. The remaining characters in the text message can be used to append a second short note, e.g. an advertisement or public service announcement.
PMTCT	Prevention of mother-to-child transmission [of HIV]
SIM	Subscriber Identity Module
SMS	Short Message Service, a mobile phone technology that allows text messages to be sent to and received by subscribers
USAID	United States Agency for International Development
USSD	Unstructured supplementary service data
WAP	Wireless application protocol
Wits	University of the Witwatersrand
Wits RHI	Wits Reproductive Health and HIV Institute

Executive Summary

This report explores the programmatic processes, successes and lessons learned by Mobile Alliance for Maternal Action South Africa (MAMA SA), an innovative public-private partnership that delivers vital health information to new and expectant mothers and their families through the use of mobile technology.

In South Africa, mobile technology is prolific. At the same time, the country’s maternal and infant mortality is unacceptably high. The confluence of these factors signifies that South Africa could both benefit from and support a mobile health program for maternal, newborn and child health (MNCH). In order to fully harness the potential of mobile technology to reach women in need and achieve scale, sustainability and impact, MAMA SA is tackling several challenges related to the cost of SMS, establishing enduring cross-sector partnerships, developing mechanisms for customer acquisition and marketing strategies. They developed a technology platform to support the unique needs of the program, and a strong, integrated monitoring and evaluation (M&E) framework.

Since launch in May 2013, MAMA SA has successfully engaged more than 350,000 women and their families. MAMA SA leverages four different technology channels and has built a consortium of organizations with technical and content expertise, access to clinical services, and proficiency in research. A partnership with the mobile service provider Vodacom, provides free access to the MAMA mobile website to its more than 25 million customers. MAMA SA has also partnered with *Generations* – the most viewed soap opera on South African television, watched by over 10 million people daily – to promote MAMA services.

MAMA SA is currently in the process of collaborating with the South African Department of Health to launch a national pregnancy registry and maternal messaging project called “Mom Connect” later this year. For the registration process, an Unstructured Supplementary Service Data (USSD) technology-based originally developed and tested for the MAMA SA program was adapted to meet the Government’s requirements. MomConnect will greatly improve the accuracy of national pregnancy and delivery data, as well as data from the child’s first year of life. MomConnect aims to directly support mothers through personalized, stage-based information in the language of their choice, on their mobile phone.

1. South African Context

The country's historical legacy of inequality compounds factors contributing to its dramatic increase in maternal and infant mortality since 1995.

In South Africa, mobile technology is prolific. More South Africans use a mobile phone than watch television or listen to the radio, and there are more SIM cards in South Africa than people. South African residents are among the highest users of mobile technology and mobile social networking on the continent — according to the World Bank there are 135 mobile subscriptions per 100 people.¹ A quarter of the phones in South Africa are basic phones with text and voice only, used by the poorest socio-economic groups, while the majority of phones can access the mobile web (65% feature phones and 10% smartphones).

At the same time, South Africa's maternal and infant mortality is unacceptably high. The country's historical legacy of inequality compounds factors contributing to its dramatic increase in maternal and infant mortality since 1995. The greatest challenges to MNCH in South Africa are posed by HIV and AIDS, and inadequate implementation of MNCH programs.² Despite extremely good coverage of antenatal care, the maternal mortality ratio is estimated at 300 deaths per 100,000 live births and is significantly higher than it was 20 years ago.³

In 2000, South Africa joined countries around the world in committing to achieve eight Millennium Development Goals (MDGs) by 2015. Two goals directly focus on maternal and child health: MDG 4 calls for a two-thirds reduction in the 1990 under-5 mortality rate; MDG 5 calls for a three-quarters reduction in the 1990 maternal mortality ratio and universal



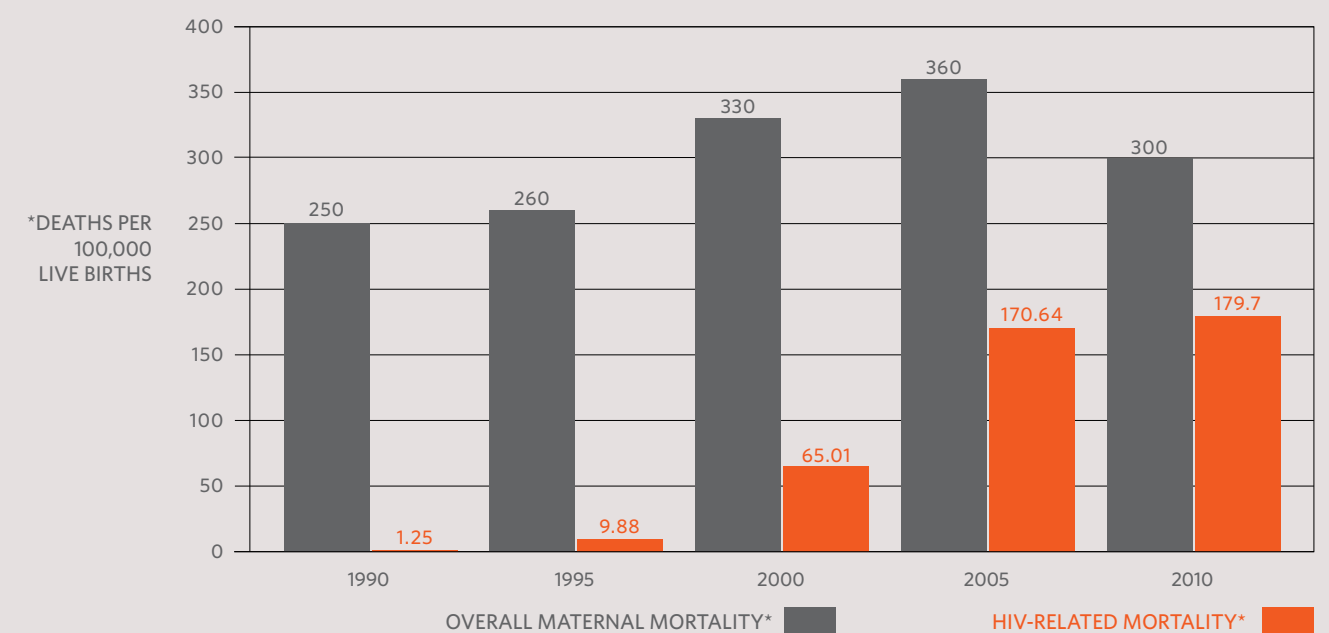
access to reproductive healthcare. South Africa's target for MDG 5 for 2015 is 38 deaths per 100,000 live births, which is highly unlikely to be realized. While the under-5 mortality rate has slowly improved, from 65 deaths per 1,000 live births in 1990 to 50 in 2012, it is still far from the 2015 goal of 29.

UNICEF data suggests that currently almost 60% of all maternal deaths in South Africa are HIV related (Chart 1)⁵. Recent improvements to the SA National Department of Health Guidelines for Prevention of Mother-to-Child Transmission (PMTCT) highlight the importance of early detection of HIV and initiation of antiretroviral (ARV) drug regimens in pregnancy. Unfortunately, fewer than 30% of South African women attend antenatal care appointments prior to 20 weeks gestation, meaning that opportunities for early detection of problems, timely initiation of therapy and optimal management of physical and psychosocial issues are often lost.

South African mothers also experience extremely high rates of violence and mental health problems, including depression.⁶ South Africa's sexual violence statistics are among the highest in the world. According to the World Health Organization, women who have been physically or sexually abused by their partners are 16% more likely to have a low birth weight baby, twice as likely to have an abortion, and in some regions, 1.5 times more likely to acquire HIV as compared to women who have not experienced partner violence⁷. Poverty, violence and gender disparities in access to healthcare also present significant barriers to improved MNCH outcomes in the country.

The confluence of these factors — high maternal and child mortality, and high mobile penetration — make South Africa an ideal fit for a MAMA program.

FIGURE 1.
Maternal Mortality Trends, South Africa 1990-2010⁴



2. Mobile Alliance for Maternal Action

MAMA SA currently consists of a free SMS program offered through six inner-city clinics in Johannesburg, a dynamic community portal at askmama.mobi, a USSD based, interactive quiz service and a portal on Mxit — a popular mobile social network.

Mobile Alliance for Maternal Action (MAMA) delivers vital health information via mobile phones to new and expectant mothers living in poverty in developing countries. Hosted by the United Nations Foundation, MAMA provides age and stage-based messages aligned with global best practices, empowering women to make the best decisions for themselves and their families. With an intentional focus on countries where high maternal and newborn mortality rates intersect with an increasing proliferation of mobile phones, MAMA directly assists programs in Bangladesh, South Africa and India. Additionally, it supports a growing community of approximately 300 organizations in over 70 countries who utilize our tools and information. By bringing together leaders from a cross section of industries MAMA harnesses the strengths and assets from the corporate, non-profit and government sectors. MAMA was launched in 2011 by then Secretary of State Hillary Clinton as a public private partnership between USAID, Johnson & Johnson, United Nations Foundation, mHealthAlliance and BabyCenter.

MAMA SA officially launched in May 2013 and as of May 2014, is reaching more than 350,000 women and their families. MAMA SA uses mobile phones to inform and empower mothers to adopt healthy behaviors and to access maternal and child health services. MAMA SA currently consists of a free SMS program offered through six inner-city clinics in Johannesburg, a dynamic community portal at askmama.mobi, a USSD based, interactive quiz service and a portal on Mxit — a popular mobile social network. Through these services, MAMA SA provides information that promotes earlier antenatal care, supports HIV-positive mothers, helps them understand how to prevent transmission of HIV to their babies, and encourages healthy household practices during pregnancy and in the baby's first year.

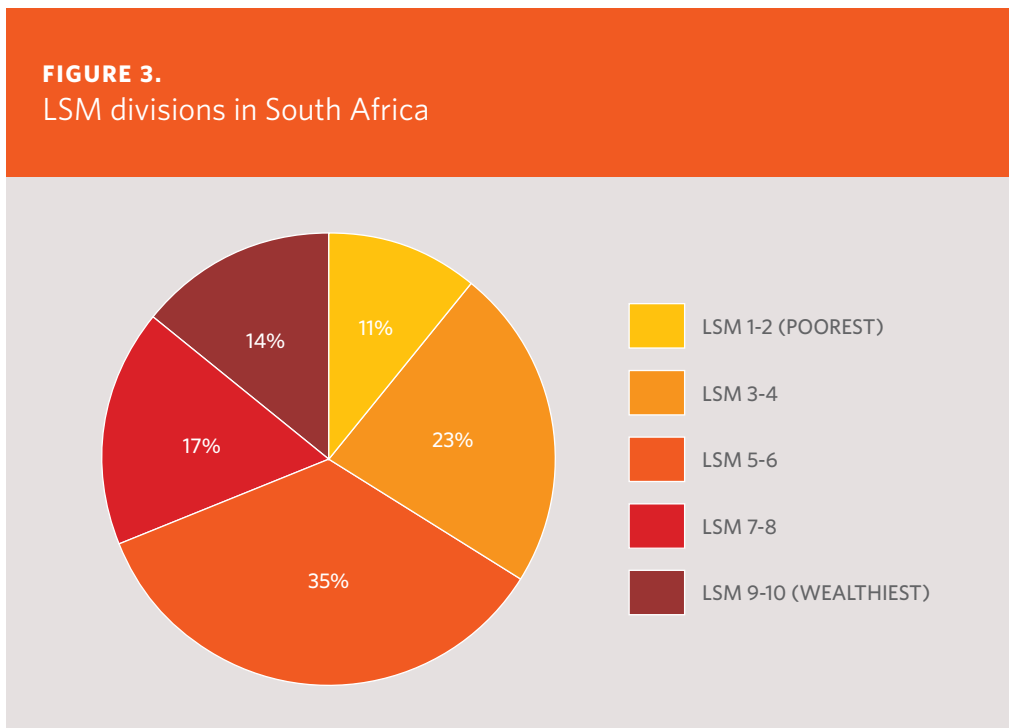
MAMA's Theory of Change posits that following a number of inputs (funding, technical assistance, mobile network infrastructure, etc.) and an initial set-up process to develop the appropriate partnerships, software platform and sustainable business model, a country program can create a virtuous cycle of content sharing, information exchange, and user engagement. With increased access to high quality, relevant local health information, mothers and families would demonstrate improved health-seeking and preventative behaviors, including uptake of antenatal care, early care-seeking in response to childhood illness, hand washing, cord care, etc., that should ultimately contribute to improved maternal and child survival. MAMA Country programs can contribute to and benefit from a culture of continuous learning by engaging with the global health community and the MAMA global partnership to share lessons learned and international best practices. The Theory of Change also highlights how country programs would thrive within an enabling environment of clear regulatory policies and a supportive national government.



3. Defining the Target Audience

Because of the high HIV prevalence (18% nationally) some of the major maternal and child health challenges in South Africa revolve around HIV testing, condom use during pregnancy, prevention of mother-to-child transmission of HIV, and promotion of safe infant feeding practices.

In South Africa, consumers are typically segmented into groups according to the Living Standard Measure (LSM) index, which is determined based on degree of urbanization and ownership of assets like cars and household appliances.⁸ There are 10-14 LSM divisions (depending on data source)⁹, with the population divided as follows:



On a global level, MAMA generally defines its target audience as low-income expectant and new mothers and their household decision-makers with access to mobile phones. However, in South Africa HIV affects individuals at all income levels — it is not exclusively a disease of the poor. Because of the high HIV prevalence (18% nationally)¹⁰ some of the major maternal and child health challenges in South Africa revolve around HIV testing, condom use during pregnancy, prevention of mother-to-child transmission of HIV, promotion of safe infant feeding practices, and addressing issues of disclosure, social stigma and violence against women. These issues are amenable to behavioral change interventions and affect women across all income brackets. For this reason, at-risk mothers that can benefit from MAMA services in South Africa are likely to span a wider demographic range than those in countries such as Bangladesh and India.

Clear statistics on maternal and infant morbidity and mortality within LSM divisions do not exist, and attempts to define priority geographic areas by sub-district have been unreliable.¹¹ However, just 20% of the population accesses private health care.¹² Based on South Africa's LSM structure, it can be inferred that the population accessing public health services falls predominantly within LSM 7 and below. HIV status can also be used as a proxy for maternal and infant vulnerability, and while HIV positive individuals are found in even the highest LSM groups, the greatest burden of disease is generally believed to fall on LSM 6 and below.



Specific statistics on mobile phone ownership and usage in South Africa are readily available. In South Africa, 25% of mobile phones are low-end handsets, or basic phones, 65% are WAP (Wireless Application Protocol), or enabled feature phones that can access the mobile web, and 10% are high-end smartphones such as iPhones and Blackberries. Thus, 75% of phones in South Africa are capable of accessing data services.¹³

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By triangulating these pieces of information, the MAMA SA team assumed that a large percentage of their target population of at-risk expectant and new mothers would fall within LSM 3-7, and would therefore be able to access data-based services such as mobisites and Mxit. MAMA SA estimates that 20-25% of users would fall within LSM 1-2 and would have low-end phones that cannot access data and for these users, SMS, voice and USSD technology channels would be the only viable options, despite higher costs.

4.

Channels of Communication

With the recent introduction of functionality that enables the community to monitor itself via comment liking and autonomous comment flagging and removal, MAMA SA is starting to see the emergence of ‘super-users’.

MAMA SA currently uses four different mobile channels to reach women in a broad range of income groups through a variety of mobile phone technologies that they are already comfortable with and using. In addition, each channel has a specific role to play in reaching the MAMA objectives of achieving scale, sustainability and impact within the target audience.

The MAMA SA team is constantly working to improve and adapt their channels to meet their goals. For example, user testing on the USSD service was conducted to determine the efficacy of sending out SMS reminders to mothers to dial back into the USSD line at regular intervals to receive the weekly quiz questions. The team sent out one to four reminders to bring people back to the line. Preliminary findings of the SMS reminder protocols revealed that people who receive three SMS reminders were the most likely to dial back in, as opposed to those getting only one to two reminders. There was no significant improvement between three and four reminders.

MAMA SA also recently worked to improve the stand-alone mobisite. User registration is required to initiate the delivery of age- and stage-based content based on the user’s due date or the child’s birthdate. The team noticed that there was a big drop-off between users who visit the site and users who actually register for the messages. As such, MAMA SA embarked on a complete rework of the registration process to make the benefits clear and the process as easy and visible as possible. In addition MAMA SA constantly collects and responds to user feedback and has implemented changes to the site to improve the user experience, making it easier to navigate.

The mobisite is at an important stage of its evolution. With the recent introduction of functionality that enables the community to monitor itself via comment liking and autonomous comment flagging and removal, MAMA SA is starting to see the emergence of ‘super-users’. These individual community members have the power to shape the culture of the platform online, and become ambassadors of MAMA messaging beyond mobile and into their real-world communities.

The voice channel is proving to be an impractical solution for MAMA SA, especially when weighing the costs versus the benefits of this service. For example, to launch a voice pilot for 100 women would cost around R400,000 (\$40,000 USD). In addition, with the relatively high literacy and access to technology in South Africa, USSD and mobi are easier and cheaper channels to take the program to scale in a sustainable fashion. Thus far, the MAMA SA team has not found a suitable, scalable, effective solution for voice but they continue to search.

FIGURE 4.
MAMA SA’s Mobile Channels

Channel	Summary	Audience	Key Features	Cost to user and for MAMA SA
SMS Text Messaging	The SMS service consists of twice weekly messages pushed to a subscriber's phone until the infant turns one year old.	LSM 1- 5, literate	Launched in six South African languages including English, Afrikaans, isiXhosa, isiZulu, Sesotho, and Setswana. User registration through USSD allows for detailed profiling. Message streams are based on gestational stage, HIV status, language.	Women often don't have funds in airtime to sign-up via the USSD-based registration process (billed by the network at 20 SA cents/20 seconds; maximum user cost of R1.80 or 18 US cents). As a result, MAMA SA has put in place a variety of assisted sign-up methods to help mitigate this issue. MAMA SA cannot currently afford to offer the SMS program to all pregnant women on a national scale.
USSD	The USSD service consists of a set of interactive quizzes.	LSM 2-5, literate	Two stage-based quiz questions per week, accessed by dialing USSD line. The percentage of USSD subscribers who request additional HIV content is very high (almost 70%), this may be because the information is not stored on the handset once the USSD session has timed out.	Cost to the program is low because this is a user-initiated ‘pull’ service Service is free for all moms on Telkom Mobile but billed at 20 SA cents/20 seconds by other carriers.
Mxit	This channel is an interactive, stage-based platform on the mobile social network Mxit.	LSM 4 – 8, geared toward the urban, literate.	Daily text message up to 1,000 characters, within Mxit. Mxit’s large, active user base brings stage-based information to users on a platform they are already familiar with and are using regularly.	Higher set-up costs due to initial development work required. Cost per user decreases as total number of users increases. Lowest cost per user of any platform.
Mobisite	The mobisite is an interactive mobile web community platform. Two versions exist: a stand-alone site and a site hosted on Vodacom’s Vodafone Live! operator deck.	LSM 4 – 8	Has the potential to reach scale. Widely accessible due to the high penetration of mid-level phones that can access the internet. Features support high levels of engagement.	Highest set-up cost. Cost per user decreases as number of users increases. Hosting this platform on a zero-rated platform (Vodafone Live!) means that cost for Vodacom subscribers is zero. Users of the stand-alone mobisite pay standard network data charges, but the site is designed to use very little data.
Voice Messaging [not currently active]	Voice would consist of a weekly voice message of 30 seconds of audio that is pushed to users’ phones.	LSM 1- 3, illiterate (<5% of the population) and disabled.	Detailed profiling of users would mean that messaging streams would be based on stage, HIV status, language.	Most expensive channel: fifteen times the cost per message of SMS.

5. Content Development

Localization

The MAMA SA team began the process of content development by reviewing local literature on maternal and child mortality and morbidity, particularly around barriers to accessing care. They interviewed medical experts in obstetrics, midwifery, pediatrics, neonatology, breastfeeding, infant feeding, and health and human rights, and conducted a stakeholder workshop with the South African Government and civil society organizations in September 2011. The team also interviewed several mothers and pregnant women, including a group of mentor mothers working with mothers2mothers, a non-profit providing peer counseling on PMTCT. Finally, the team conducted two focus group discussions with mothers in Johannesburg. Based on information derived from these processes, MAMA SA identified local issues to be included in the message content, including HIV-positive motherhood (i.e. social stigma, coping with a new diagnosis and PMTCT), single parenthood and denied paternity, gender-based violence, mental health challenges (especially depression), teenage pregnancy, late antenatal booking, poor quality of care, and the importance of exclusive breastfeeding over mixed feeding.

MAMA SA content differs according to the technical platform. BabyCenter and Cell-life took the lead in adapting the content for the SMS and USSD quiz programs, while Praekelt Foundation and BabyCenter undertook content development and adaptation for the mobi and Mxit channels. The SMS content was adapted from the mobile messages offered by MAMA. MAMA's mobile messages created by BabyCenter incorporate evidence from WHO, UNICEF, and the Lancet Neonatal and Maternal Survival series, and were reviewed by MAMA's Health Content Advisory Council. The original MAMA message content was revised and reviewed by representatives from a number of local non-profit and health organizations, including mothers2mothers, Wits Reproductive Health and HIV Institute (Wits RHI), Clinton Health Access Initiative and the Perinatal Education Program. The USSD content was closely modeled after the SMS content.

The mobile web content was licensed from BabyCenter and reformatted for this platform. The MAMA SA team also wrote new content relevant to the South African context for the mobisite, such as HIV and domestic violence life guides. Additionally, much of the content on the mobisite is user-generated, including first-person stories and comments.

User testing research

MAMA SA conducted user testing to capture three kinds of information:

1. Technical bugs and content errors;
2. Insight into the user experience, e.g. whether users were able to easily find the channels, successfully navigate the sign-up process, access and read the intended information, store and share information, understand any associated costs, opt out, etc.;
3. User feedback on the content, tone, costs, frequency and format of the information.

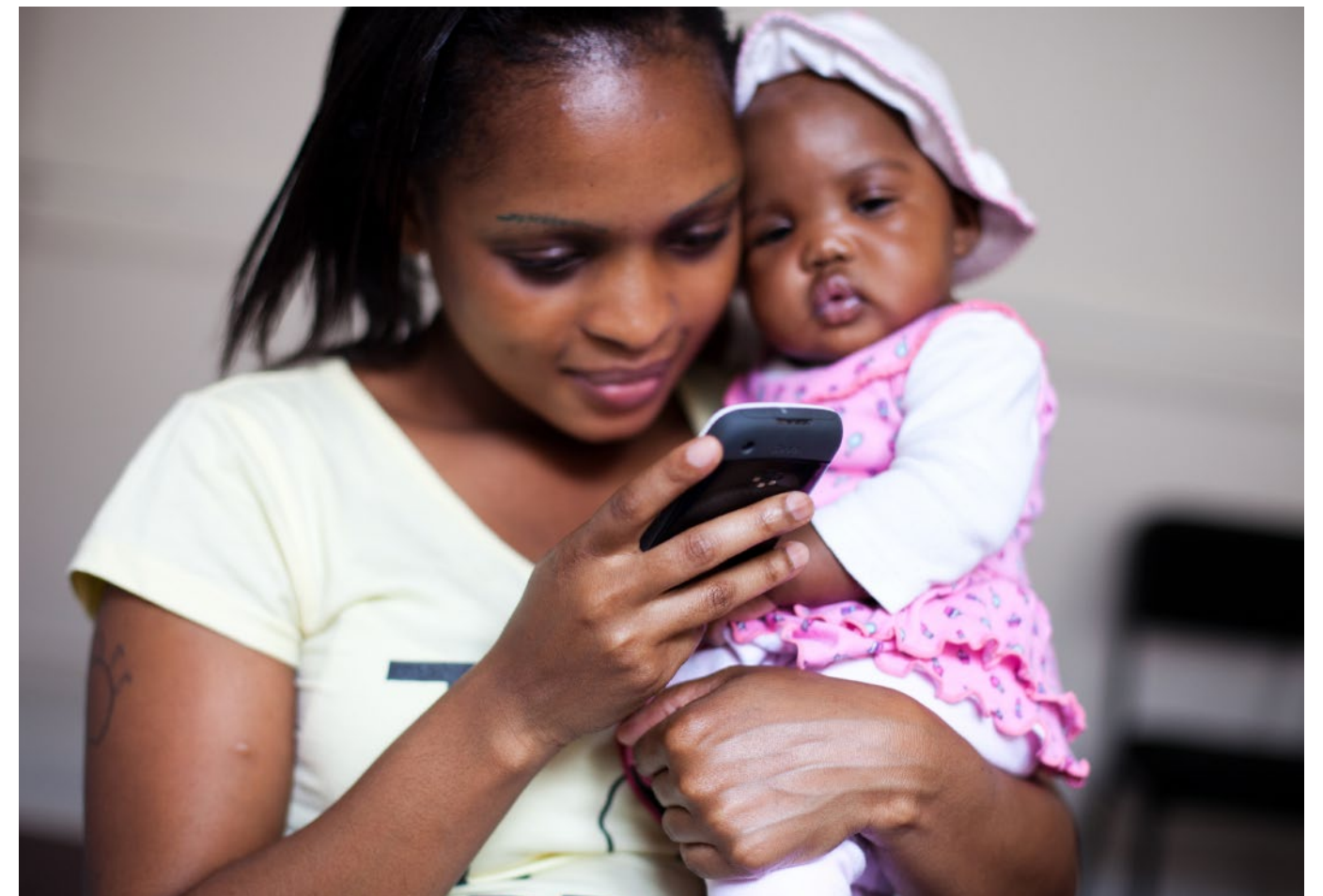
The user testing was not intended to measure the impact on health or behavior of any of the channels, but rather to make improvements to the service and to share initial feedback from mothers with funders and potential investors.

User testing research was undertaken in 2012 by a contractor called Submarine. Submarine enrolled 10 pregnant women and 12 new mothers as 'trusted testers' over a 10-week period during which they completed in-depth acceptance testing on three platforms: SMS, mobi and USSD. This phase also involved one-on-one interviews and focus group discussions. The results revealed that most of these mothers reported that the service gave them new knowledge on how to care for their child, such as when to introduce solid foods, how to monitor developmental milestones, that they should never leave the child unattended on a bed or couch, and when to vaccinate. Pregnant women reported learning about the signs of labor, the importance of a facility-based delivery to reduce the risk of HIV transmission, warning signs of illness, improved nutrition, and the relief of common complaints such as swollen feet.

All of the testers reported sharing the information with others in the community, and some used the messages to correct those who were giving poor advice: "My family was giving me contrary information so I showed them the SMS to correct them," said one user. Others found the information helped them negotiate with a partner around sensitive issues such as the use of condoms while pregnant: "You don't have to argue with your husband, you can just read it to him," said another.

An additional step in the content localization process was translating the SMS into the five most widely spoken South African languages other than English: Afrikaans, isiXhosa, isiZulu, Sesotho, and Setswana. This occurred at the end of the process because the MAMA SA team determined that it would be most efficient to postpone translation until content adaptation had been completed to ensure that all languages retained fidelity to the English core content.

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Prevention of mother-to-child transmission of HIV

Supporting HIV-positive pregnant women and mothers is central to the goals of MAMA SA. As such, the mobisite has a variety of topical guides around HIV during pregnancy, and for feeding and caring for the baby. All subscribers can also choose to receive additional messages on HIV when they sign up for the SMS program.

MAMA SA identified a variety of factors that pose challenges to PMTCT including the shock of a new HIV diagnosis during pregnancy, the guilt and shame of being pregnant with HIV, social isolation or rejection, and the contradiction between medical instructions (e.g. exclusive breastfeeding) and community norms (e.g. mixed feeding). The content provided by MAMA SA works to support HIV-positive women to have healthier pregnancies and children by encouraging earlier antenatal check-ups and HIV testing, reinforcing adherence to treatment regimens, addressing myths, concerns and stigma, and providing motivational messages and encouragement.



Acquisition of Customers and Marketing

6.

The Praekelt Group of companies (Praekelt International, Praekelt Consulting, Praekelt Foundation) has nearly ten years of experience using mobile technologies to market services and products to people in developing markets. The Praekelt Group's related experience includes: a large 'Please Call Me' (PCM) social impact campaign called Project Masiluleke and large-scale commercial campaigns on Mxit for brands such as Cadbury, Revlon, Smirnoff and Ponds, among others. MAMA SA benefits from Praekelt's diverse and extensive experience in marketing on digital platforms.

MAMA SA employs various recruitment and marketing mechanisms to enroll pregnant women and new mothers for the various channels. Three of the four current channels – the mobisite, USSD and Mxit – are currently marketed and promoted nationally. The fourth channel, SMS, is promoted in select health facilities in Johannesburg by Wits RHI's fieldworkers. MAMA SA uses two different paper flyers for marketing purposes – one is for SMS and is distributed solely at clinics where women are recruited for this service. The second is for the mass media channels (Mxit, mobi and USSD) and is distributed widely. The difference in distribution of the two flyers is due to the fact that the MAMA SA cannot afford to support a large number of SMS subscribers but can easily accommodate unlimited user numbers on the mass media channels.

The MAMA SA team also uses traditional mobile marketing methods to attract and recruit users to the mass media channels. These include media buys and banner placements, tagging PCMs with a call-to-action to register, and use specific Mxit advertising avenues known as splash screens and Tradepost ads.

MAMA SA partnered with *Generations*, a popular soap opera on South African television viewed by more than 10 million people daily, to promote MAMA services. The MAMA concept was written into the script with characters talking about the program and the service it offers to women. MAMA SA was mentioned in seven episodes in October 2013. The MAMA SA team receives frequent emails from viewers who found the MAMA website after hearing about the project on *Generations*. While the public exposure and awareness aspect of the effort was a success, in the future, the team plans to grow the relationship with *Generations* to have a clearer call-to-action on how mothers can sign-up for services.

MAMA SA partnered with *Generations*, a popular soap opera on South African television viewed by more than 10 million people daily, to promote MAMA services.

7. Partnerships

Partnership with a mobile network operator is essential for most mHealth programs to increase their visibility to users and to generate sustainable revenue from mobile services. In MAMA SA's case, partnership with Vodacom has proven fruitful and vital to achieving scale and sustainability.

Consortium partners

Three organizations — Cell-life, the Praekelt Foundation, and Wits RHI — originally worked together to implement MAMA SA. Together, they have technical and content expertise, access to clinical services, and experience in monitoring, evaluation and research. They bring deep experience in health and technology, including the use of mobile technology to engage South Africans on critical health issues like HIV and AIDS.

At the global level, MAMA's partners are Johnson & Johnson, USAID, United Nations Foundation, the mHealth Alliance and BabyCenter. Johnson & Johnson and USAID provide direct financial support, BabyCenter provides content support, while the mHealth Alliance and the UN Foundation provide technical and programmatic support.

Praekelt Foundation builds open source, scalable mobile technologies and solutions to improve the health and well-being of people living in poverty. Their programs have reached more than 50 million people across 15 countries in sub-Saharan Africa. They believe that mobile tools are the only way to reach people at the base of the pyramid with engaging, personalized, and relevant content and services. The organization began work in mHealth in 2007. Health remains the biggest portfolio of Praekelt Foundation's work, but they also work in the areas of education, employment, agriculture, governance and transparency.

Cell-Life is a non-profit organization that provides technology-based solutions for the management of health in developing countries. Cell-life works to address health-related challenges, such as distribution of antiretroviral treatments, continuous patient monitoring and evaluation, and collection and communication of information. This is achieved through the use and development of innovative software supported by existing technologies such as mobile phones and the Internet, in a manner that is appropriate for a developing country context. Cell-Life was awarded a 2011 Innovation Working Group (IWG) grant funded by Norad to deliver SMS-based MNCH information to 38,000 South African mothers. This SMS project consisted of an abridged package of non-stage based messages with an emphasis on PMTCT.

Wits RHI is one of the largest research institutes at the University of Witwatersrand in Johannesburg. With a focus on addressing Africa's health challenges through science and technology, their portfolio includes research, programmatic support, training, policy development, health systems strengthening and technical assistance at national and international levels. Wits RHI works in three provinces in provincial and clinical health programs in South Africa. Their headquarters are in the Hillbrow Health Precinct, a development which seeks to create a visionary, world-class health precinct addressing HIV and related diseases, poverty and urban renewal in Johannesburg's inner city. MAMA SA recruits subscribers from six health facilities supported by Wits RHI, namely: Esselen, Jeppestown, Malvern, and Yeoville Primary Health Care Clinics; Shandukani Maternal and Child Health Centre; and the Hillbrow Community Health Center.

Partnership with Vodacom

Partnership with a mobile network operator (MNO) is essential for most mHealth programs to increase their visibility to users and to generate sustainable revenue from mobile services.

In MAMA SA's case, partnership with Vodacom has proven fruitful and vital to achieving scale and sustainability.

Vodafone is a pan-African mobile telecommunications company with the largest number of cellular network subscribers in South Africa where it operates locally as Vodacom. MAMA SA's partner organizations began working with Vodacom around the use of mobile phones for HIV and AIDS in 2009, specifically around a mobisite called 'YoungAfricaLive' that focuses on love, sex and relationships in the time of HIV. Vodacom agreed to host the mobisite on their homepage and waive all data charges associated with navigating the site for all Vodacom subscribers. In turn, Vodacom benefits from users staying on their homepage longer as a result of hosting this engaging mobile portal. Praekelt's partnership with Vodacom continues to grow, and when MAMA SA was launched, Vodacom was the first choice for an MNO partner.

One of the main challenges MAMA SA overcame in navigating this partnership was working with both the corporate and non-profit parts of the organization simultaneously. MAMA SA learned that it is essential to obtain full organizational buy-in, and to coordinate conversations among different parts of the MNO to streamline the decision-making process. In January 2013, the MAMA Global team visited South Africa and met with Vodacom. This visit helped to demonstrate MAMA's global footprint and presence, as well as to profile the project as being highly innovative and collaborative on a global scale.

Vodacom supports two aspects of MAMA SA. Vodacom hosts the MAMA mobisite on their operator platform, Vodafone Live!, and provides zero-rated access to the MAMA content to its more than 25 million customers. Secondly, Vodacom supports 6,000 women by sponsoring their SMS messages from MAMA. The MAMA mobisite on Vodafone Live! has had more than 89,000 unique users since its launch in August 2013.

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8. Monitoring, Evaluation and Research

MAMA SA's approach to M&E, led by Wits RHI, seeks answers to key questions related to both the processes and outcomes of program implementation including measuring change in health behaviors of users. Monitoring data is mainly gathered through the back-end of the technology platforms. A variety of outcome-level research studies for measuring the effectiveness of MAMA SA are planned, most notably a randomized control trial to determine if exposure to MAMA has improved health seeking and preventive behaviors of HIV-positive pregnant women and new mothers.



MAMA SA is guided by an M&E plan that includes a core set of indicators provided by MAMA Global to assist with cross-country comparison as well as numerous indicators specific to South Africa along with the South African Government's core set of PMTCT/ EMTCT indicators. The project indicators are used to measure the performance of the four channels as well as provide evidence for programmatic decision-making relating to partnerships, advertising, enrollment, sustainability, and ultimately, the impact of the project on key health seeking and preventive behaviors central to MNCH.

Monitoring data

Project managers of MAMA SA use an automated online dashboard that provides them with user data and basic analyses of MAMA's four different channels. Recent analysis of demographic data from the SMS program enrollment revealed that MAMA SA is indeed reaching its target audience — of the more than ten thousand SMS users, nearly half (44%) live in a household with a combined income of \$125 USD or less per month, which equates to LSM 2 or below. Additionally, a large portion of SMS users (22%) opted to receive HIV-related messages, which is higher than the national prevalence rate of adults 15-49 living with HIV (18%).

Enrollment data for the stage-based messages on the mobisite reveal that the majority (73%) have already given birth and are looking for information to care for their baby, while the rest (27%) are pregnant. Recent polls on the MAMA mobisite indicate that it is also reaching its target audience — the majority of respondents are unemployed (77%), more than half live in a rural province (54%) and receive a government assistance grant (52%), and nearly half live in a household with a combined monthly income of \$180 USD or less, which is LSM 3 and below (47%).

Evaluation and research

A unique aspect of the MAMA SA consortium is the access to Shandukani Clinic and several government clinics in Johannesburg's inner city that Wits RHI brings. Shandukani Clinic is a flagship public/private partnership between the Wits RHI, Vodacom, Altron (a leading South African technology group) and Altech (a telecommunications division of Altron). By having access to these clinics and the clinic records, the MAMA SA team is able to conduct interviews with patients and review clinic records. This allows MAMA SA to go beyond the self-reported evidence that many mobile for MNCH programs rely on and actually verify health service uptake by reviewing the clinic records themselves.

The MAMA SA team is about to commence a review of clinic records in the health facilities where MAMA registers users to understand effects of the dosage or exposure of stage-based messaging on improving maternal and child health outcomes. Results of this study are expected to be shared by the end of 2014.

Wits RHI has also been conducting exit interviews with SMS subscribers who have completed the SMS program. Interviews are administered face-to-face in clinics, with fieldworkers using mobile data collection (specifically, Open Data Kit), thus, eliminating the need for a separate data entry process.

In early 2014, the MAMA SA team began working on a more rigorous sampling frame for the exit interviews to ensure that they are getting an accurate representation of SMS subscribers. The team looked specifically at women who enrolled early and late in both antenatal care (ANC) and postnatal care (PNC). As such, they decided to extract 50 women

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per category (late in ANC, early in ANC, late in PNC and early in PNC) for a total of 200 across the program.

The questions in the exit interviews cover the following topics:

1. General socio-demographic information such as language and LSM; information on previous pregnancies and/or miscarriages, cell phone type and ownership;
2. Baby care e.g. feeding choices (breastfeeding/formula/mixed);
3. Perceived value/satisfaction of MAMA messages e.g. sharing of messages with others, saving content for review at a later stage, usefulness of message content, most memorable messages;
4. Sign-up experience – comfort with self-sign up vs. fieldworker assistance;
5. Retention of message content and care seeking – recall of number of ANC and PNC visits attended, family planning/contraception, HIV testing, confidence in broaching health topics with health care workers; and
6. General feedback with open-ended questions.

Barriers to completing a large number of exit surveys consist of women not wanting or being able to answer the questions by phone, and the fact that clinics have no schedule systems for future PNC visits, so they have to rely on patients arriving on their own. As such, it is difficult for MAMA SA to find a convenient, reliable place and time to conduct the interviews.

The MAMA SA team also assisted GSMA and Ask Afrika, the largest independent South African market research company, with interviews of 113 MAMA subscribers. The interviews gathered information on: household composition and various socio-economic factors which will be used for segmentation purposes; access to energy and ownership of appliances; where they get general healthcare information; understanding of pregnancy-related behavior/practices, where they gather information, and perceptions of services provided in clinics/hospitals; mobile phone ownership and usage and perceptions of services provided by mobile network operators; value added services via mobile; perceptions of community health workers; and perceptions of existing MNCH messaging services. Findings from this study are expected to be disseminated in mid-2014.

In terms of M&E work, MAMA SA will focus its attention on the scale-up of evaluation efforts and the honing in on key research questions relating to effects and dosage of MAMA's messages.

Overall, preliminary MAMA SA data indicate high acceptability and satisfaction with the channels. Service uptake has been satisfactory, but strategies for greater publicity are necessary. Further research is needed, and planned, to ascertain behavior and health outcomes.

Sustainability and Future Plans

9.

MAMA SA developed its messaging channels to ensure sustainability. The mobisite, in particular, has several features that make long term sustainability likely, such as design and development costs decline as the site shifts into maintenance mode over time. New users can be added to the platform with very little incremental cost, and as the user base grows the active mobile community becomes more compelling to commercial entities targeting this particular market segment (e.g. baby brands, health insurers, low cost retailers). MAMA SA expects to be able to introduce ethical and appropriate advertising to attract corporate sponsorship, generating new streams of revenue that will increase as the number of users increase. These approaches are being tested in South Africa on Praekelt's existing sites.

New advertising and funding opportunities have developed with Johnsons Baby and the Innovation Working Group (IWG). Currently, MAMA SA is working with the products division of Johnsons Baby to scale-up the MAMA SMS program. Johnsons Baby has agreed to sponsor 2,000 moms on SMS and has been signing up mothers at their roadshows. In addition, Praekelt won a United Nations IWG catalytic grant to scale up. This funding was distributed in two rounds: 80% up front and 20% in February 2015. A large amount of this funding has gone to fieldworkers, SMS, USSD, content maintenance, and inventory for marketing purposes.

The goal for MAMA SA is to reach 500,000 women by May 2015, two years after the public launch of the project in May 2013. Given its exponential growth since launch, MAMA SA is on target to meet this goal. In addition, this goal is comprised of individual targets for each of the MAMA channels and various marketing and recruitment strategies are underway. For example, MAMA SA aims to scale-up the Mxit user-base to at least 150,000 users in the next two years.

Finally, MAMA SA is supporting the National Department of Health's effort to create a national pregnancy registry, messaging and help desk service for pregnant women and new mothers in South Africa. The MAMA SA team has adapted and applied their platforms and technologies, in particular the USSD-based registration platform, to support the work of the South African Government. This program will be announced by the National Department of Health in 2014, and the roll-out of MomConnect is a long-term goal that the MAMA SA team will support throughout its life-cycle.

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