

Healthy Pregnancy, Healthy Baby Text Messaging Service in Tanzania



Background

MATERNAL HEALTH LANDSCAPE & UNMET NEEDS THE ‘HEALTHY PREGNANCY, HEALTHY BABY’ – TEXT MESSAGING SERVICE AIMS TO ADDRESS:

Tanzania remains one of the most dangerous places in the world to give birth and to be born, according to the high maternal, infant and childhood death rates. At 947,300 square kilometers, slightly larger than twice the size of California, Tanzania is comprised of great diversity in environment and infrastructure. The vast geographic terrain poses challenges to the population of nearly 45 million people in accessing basic services, such as maternal and child healthcare.

Women in Tanzania have a lifetime maternal death risk of 1 in 38, and every year Tanzania sees the death of 48,100 newborns, ranking it tenth highest in the world¹. However, over the last decade, Tanzania’s government has embraced key initiatives to improve public health, focusing in particular on addressing the Millennium Development Goals. According to the 2010 Tanzania Demographic and Health Survey, the country has shown signs of progress, including improvement of basic maternal and child health and nutrition. For example, almost all pregnant women attend at least one antenatal care visit, and they deliver roughly 950,000 of the nearly 1.9 million annual births in health facilities.

¹ WHO Health Statistics, 2013

Comparing national and regional indicators however, many challenges come to light in providing equitable high-quality of care throughout the country. For example, while nationally, women are delivering at a health facility approximately 50% of the time, this rate varies between remote Pemba North's low rate of 24% and the highest rate in the nation's commercial capital Dar es Salaam of 90%.

"It is not fair for a woman to die because of giving birth or giving life to another human being. It's not acceptable. Sadly, women and children die of causes that can be prevented,"
President of Tanzania, Jakaya Kikwete.²

Providing high-quality antenatal care (ANC) information during pregnancy is crucial to keeping mothers and babies healthy and reducing maternal and newborn mortality rates in Tanzania. A key component of high quality ANC information – that can effectively reduce chances of maternal and newborn mortality – is informing pregnant women of proper nutrition and care and of signs of complications. Encouraging women to seek care and treatment can save lives, in particular if they observe danger signs. Unfortunately, women living in rural areas of Tanzania are significantly less likely to have been informed of signs of pregnancy complications than women living in urban areas (47% and 73%, respectively; reaching as low as 27% and as high as 80% across different regions)³.

There remains a lack of collective community knowledge for safe and healthy pregnancy and 75% of the Tanzanian population lives in rural areas, often far from well-equipped health facilities with trained personnel. This broad portion of the population therefore has limited access to face-to-face coaching on healthy pregnancy.

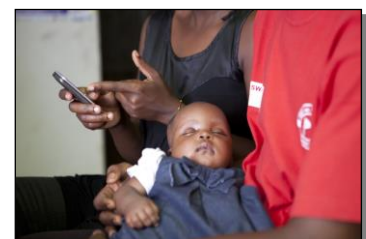
Tanzania faces a challenge in bringing swifter and more significant progress in improving maternal and child health. As Ban Ki-moon, Secretary-General of the United Nations said, "Reducing maternal deaths requires innovative approaches to delivering care in the hardest to reach places". The 'Healthy Pregnancy, Healthy Baby' – Text Messaging Service seeks to be part such a solution in Tanzania.

DESCRIPTION OF SERVICE AND USE OF MAMA MESSAGES

'Healthy Pregnancy, Healthy Baby' – Text Messaging Service offers Tanzanians free text messages in Swahili for pregnant women, mothers with newborns up to 16 weeks old as well, as well as supporters of pregnant women and new mothers (partners, friends and relatives). Subscribers register for the text messaging service by indicating the woman's current week or month of pregnancy (or the age of the newborn baby). The service also offers enrollment as a 'general information seeker', providing Tanzanians with a wide-range of information concerning healthy pregnancy and early childhood care. The objective of the messaging service is to promote healthy pregnancy and early childhood care behaviors. In addition, the service seeks to assist health facilities and health professionals in the dissemination of information typically shared during ANC visits.

The messaging service is unique. It offers official Government of Tanzania Ministry of Health and Social Welfare (MoHSW) developed and sanctioned text messages, incorporating a broad range of complementary topics, including:

- Prevention of Mother to Child Transmission of HIV/AIDS;
- Antenatal Care;
- Family Planning;



² VOA News, October 02, 2012

³ 2010 Tanzania Demographic and Health Survey

- Malaria prevention;
- Nutrition (for mother and baby);
- Danger Signs;
- Individual Birth Plan;
- Postpartum Care;
- Fun Information (such as ‘fetal development’).

On average, subscribers receive three to four messages per week, across the different topic areas. Messages include time sensitive reminders for such events as antenatal clinic visits and taking of malaria prevention medication. The system also sends relevant health tips when the information is most relevant to the subscriber. Messages sent to partners, friends and family of pregnant women offer similar information, but addressed to a neutral ‘third party’. The content of all messages is in accordance with current Tanzania public health guidelines and Tanzanian culture.

MESSAGE DEVELOPMENT, ADAPTATION, TRANSLATION AND LOCALIZATION

The Ministry of Health and Social Welfare (MoHSW) led the development of the ‘Healthy Pregnancy, Healthy Baby’ text message content, in collaboration with the mHealth Tanzania Partnership (led by the CDC Foundation, with financial support from the US Government Centers for Disease Control and Prevention), and several key technical partners. The content team also leveraged messages from the global Mobile Alliance for Maternal Action (MAMA⁴) messaging service.

Prior to the content team crafting text messages, the Partnership met with various MoHSW and technical stakeholders to determine the key topics areas to be included as part of the service. With the assistance of a PhD public health volunteer, Michelle Helena van Velthoven, the Partnership reviewed all relevant Tanzanian Ministry of Health and Social Welfare (MoHSW) guidelines to identify ‘messages’ (themes and key educational points) covering categories the MoHSW and partners indicated are most critical for pregnant women and her supporters to learn about. Following, partners crafted initial text messages based on the exact language found in the Tanzanian public health guidelines (which are largely in English).

In October 2011, the MoHSW hosted the first official Wazazi Nipendeni Campaign material review, including review of the ‘Healthy Pregnancy, Healthy Baby’ text messages that would launch with and support the campaign. Here numerous members of the MoHSW, as well as supporting partners, reviewed the draft messages and provided technical feedback. They also cross-referenced the messages and the timing of their delivery with international guidelines, such as those published by the World Health Organization (WHO). Subject matter and behavior change communication experts provided technical feedback, indicating that the draft messages were

⁴ Mobile Alliance for Maternal Action (MAMA) is a public-private partnership launched in May 2011 by the United States Agency for International Development (USAID) and Johnson & Johnson with supporting partners, the United Nations Foundation, mHealth Alliance and BabyCenter. BabyCenter created adaptable messages for MAMA, based on the organization’s vast experience in communicating healthy pregnancy information. MAMA offered these messages to the mHealth Tanzania Partnership at no charge, based on the Partnership’s commitment to delivering health information via mobile phones to expectant and new mothers in Tanzania. An Adaptable Message Advisory Board, made up of midwives, nurses, and physicians who work in low resource settings, has approved the message content for BabyCenter and MAMA.

too dense with information. With this feedback, the Partnership worked to simplify the messages to maximize readers' comprehension, while maintaining the technical integrity of the content provided.

The Partnership also reviewed all text message content developed by MAMA and available at the time. The team determined that many message categories and content overlapped with those already developed based on the Tanzanian guidelines. However, the team reviewed all MAMA messages carefully in order to pick up subtle differences in tone and content, to supplement those messages already developed. In addition, the MAMA messages provided additional content primarily in the areas of 'post-partum care', 'fetal development' and 'parent tips'. The Partnership proposed incorporation of these three MAMA message categories into the Tanzanian service.

The Ministry of Health and Social Welfare-led content team adopted many MAMA messages from these categories, which allowed the expansion of 'post-partum care' content, as well as the addition of a new category of messages titled, "Edutainment", which combines the 'fun' yet 'informative' messages from MAMA's 'fetal development' and 'parent tips' messages. The team then spent extensive time localizing the MAMA messages for the Tanzanian context. (The Partnership also determined that the Tanzanian messages included additional content that was not *previously* available as part of MAMA messages, such as messages relating to 'family planning', and 'prevention of mother-to-child transmission of HIV/AIDS' [PMTCT].)

After completing the technical review with the MoHSW and stakeholders, the Partnership completed a pre-test with a group of 22 participants in Dar es Salaam. The objective of the first pre-test was to identify any major service weaknesses and confirm the general direction and tone of the messages. The Partnership noted high demand for this type of text message service and great enthusiasm from the participants (who were men and women from age 15-60, with low levels of education). The Partnership noted no major change in direction or content was required.



The team conducted a second pre-test with 28 participants in July 2012, in Kilombero (a rural district in southwestern Tanzania) with men and women, aged 15-65. Following the analysis of both pre-testing activities, the Partnership worked with technical partners to make final modifications to the existing messages. The primary changes to the messages following pre-testing focused on ensuring the tone in Swahili is pleasant, supportive and easily understood, especially by registrants with low levels of education.

Over several months, the Partnership completed a final review of all text messages with key sections of the MOHSW as well as with technical non-governmental health sector partners. The team developed the messages in Swahili with the cooperation of Tanzanian and international partners, with each organization working in their respective area of expertise.

The Partnership initially drafted the messages in English (based on the Tanzanian guidelines and MAMA messages both being available in English) and translated them to Swahili. The team changed their approach during the final two months of message review. The team transitioned to focus on developing precise Swahili messages with the tone and intention well-understood (as the service is available in Swahili only). This approach was different from the previous one of referring back to English messages or translating additional content directly from English.

LESSONS LEARNED AND CHALLENGES IN MESSAGE DEVELOPMENT

The mHealth Tanzania Partnership learned several key lessons in the development of message content and localization of the MAMA messages through its participation in the development of the ‘Healthy Pregnancy, Healthy Baby’ – Text Messaging Service. Key lessons are summarized below for consideration in future service expansion and new service development.

‘Localizing’ Message Content

Localizing the content of messages requires input from indigenous people who know the culture, language and education levels of the target audience.

Language and Translation

The development of ‘Healthy Pregnancy, Healthy Baby’ text messages demonstrated to the Partnership that translation is literally ‘easier said than done’. Not only are there dramatic differences in the Swahili spoken in Tanzania and Kenya (neighboring countries), but there exist subtleties in Swahili that the English language does not reflect. For example, during the translation of messages encouraging women to drink clean water, the team discovered (as part of a lengthy discussion) that there exist at least four ways to phrase the idea of ‘clean’ water in Swahili, and each has a slightly different meaning (safe, treated, clean, fresh and more). With limited space and characters to communicate important information to end-users, every word needs to have impact. Agreeing across stakeholder groups as to the precise words in the local language takes a significant amount of time; more than stakeholders initially anticipated or planned for.

Comprehension

‘Walk a mile in their shoes’: stakeholders repeated this expression to themselves and others throughout the development of the ‘Healthy Pregnancy, Healthy Baby’ text messages and localization of MAMA messages. Message content developers needed to consider the point of view of the pregnant woman, the mother with a newborn, or her partner, who likely live in rural Tanzania. Often subject matter experts and different demographic groups can assume another target audience understands specific terms, that in reality are unfamiliar to that group. This required the team to find simple and clear ways to communicate technical information to end-users in understandable terms.

Asking ‘why this message?’

A key lesson the Partnership learned is that starting with messages in English (or any non-native language) and working to translate the messages directly to the local language can prove difficult. There were numerous instances where native Swahili speakers unanimously reached the same conclusion that the actual intention of the message was lost in Swahili when it was translated from English. The team had to change its approach. It started looking at the actual ‘intention’ of each message and how to convey this correctly in Swahili. The Partnership learned that starting with the ‘purpose’ discussion first, and then crafting the messages in the local language can save time and is an effective way to ensure the objective of the message is preserved through the translation and localization process.

Content within the Culture

The Partnership experienced the importance of reflecting local cultural norms in the messages during the adaptation of MAMA messages on ‘fetal development’. A portion of the MAMA fetal development messages relate the developing baby’s size to the size of a fruit, in order for a woman to visualize the size of the baby inside her womb. Initially, stakeholders appreciated these messages, as Tanzania has an abundance of fruit. However, after initiating the ‘localization’ process, the stakeholder group realized that in the respectful culture in Tanzania

there are cultural sensitivities when relating a person to an inanimate object. The team learned that if a message approach is not culturally relevant in the local context, then the message should be omitted. In cases where the purpose of a message is important, the team can seek an alternative approach for communicating it.

Another example is that it is not generally acceptable to grieve publicly for the loss of a newborn baby in many parts of rural Tanzania. There it remains a belief that public grieving can bring 'bewitchment', such as future infertility and even death of future children. Knowledge of these cultural aspects assisted the team in omitting messages that would make the end-user feel uncomfortable.

Pre-Testing

The mHealth Tanzania Partnership found significant value in pre-testing the messages at different stages of the content development process. For example, the team learned that sending prevention-of-mother-to-child-transmission of HIV/AIDS (PMTCT) messages to all subscribers is acceptable, irrespective of his or her HIV/AIDS status. Service stakeholders initially had concerns of stigma surrounding the distribution of these messages; however, the process of pre-testing cleared up this question. Specifically, participants in the pre-test groups indicated that although they may not be HIV/AIDS positive and pregnant, they may know someone who is and the information about prevention of transmission is valuable for them to receive and share.

Pre-testing revealed important subtleties in language, in particular around how text messages 'greet' the end-user. The team also learned to focus on communicating the positive outcomes associated with the suggested action, rather than simply offering instructions.

'Edutainment'

The addition of the MAMA fetal development messages lifted and lightened the overall tone of the messaging service. Prior to incorporating these messages about the development of the baby and interesting facts about the senses the baby was developing, the messages focused on medicine, nutrition, traveling to the clinic, danger signs and other precautions and advice. While all the information contained in the messages is critical to convey to pregnant women and their partners, the team discovered that the end users enjoyed the service more when there was a mix of fetal development and 'fun' information. (This discovery was also made during pre-testing.)

Program Specifics

PROGRAM DESIGN AND IMPLEMENTATION

'Wazazi Nipendeni' (Parents Love Me) is a national Healthy Pregnancy multi-media campaign which directly supports the Government of Tanzania (GoT) and the United Nations (UN) Campaign on Accelerated Reduction of Maternal Mortality in Tanzania (CARMMA TZ). President Kikwete officially launched the CARMMA TZ campaign in 2011. The Wazazi Nipendeni campaign takes steps to operationalize this campaign as well as directly support the achievement of the Millennium Development Goals (MDGs).

The Tanzania Ministry of Health and Social Welfare (MoHSW) Reproductive and Child Health Services (RCHS) section leads the Wazazi Nipendeni campaign under its Safe Motherhood Initiative. Also under the leadership of RCHS, is the 'Healthy Pregnancy, Healthy Baby' – Text Messaging Service. This service launched with the Wazazi Nipendeni campaign and supports and strengthens it by providing a free nation-wide text messaging service, leveraging content and expertise from the campaign and its stakeholders. The MoHSW plans to continue utilizing the messaging service after the close of the Wazazi Nipendeni campaign; however, the two are complementary.

The Wazazi Nipendeni multi-media campaign includes promotion of the free (reverse-billed) text messaging service by listing the short-code (15001) and the registration keyword 'mtoto' ('baby') on all campaign materials and instructs anyone interested in more information on healthy pregnancy to register at no charge. In the first 12 months of the service, the text messaging service registered more than 150,000 active subscribers and sent more than 20 million text messages to subscribers.

Messages and Scheduling

The Partnership scheduled the timing of the text message delivery based on local and international expert advice and in consultation with the MAMA message schedule. Stakeholders designing the service agreed that there is critical information that all subscribers should receive, irrespective of when in their pregnancy they register for the service. For example, all subscribers will receive messages about testing for HIV with their partner and about PMTCT, regardless of when they register.

The team wanted to avoid situations where subscribers who register late in their pregnancy miss key information that is distributed to those who register at an earlier stage. The team also wanted to avoid the cost (of excessive text messages) and fatigue (of early subscribers) in frequently resending the same messages, in an effort to ensure late subscribers receive the key information. Based on these considerations, the Partnership designed the service to place subscribers into groups based on the woman's current week or month of pregnancy. Each group has a slightly different message schedule. For example, if a woman indicates she is five months pregnant when she registers, she is automatically enrolled in the "month five, pregnant woman group" and receives messages according to a tailored schedule, delivering appointment reminders and information at the most relevant times.

Across registration groups, the service conveys specific appointment reminders and health tips at the correct time in her pregnancy; however, by having separate registration groups, unnecessary repetition is avoided. For example, in the fifth month of pregnancy all registered women receive timely nutrition information for a fifth-month pregnant woman; however, those who just joined the service will also receive a message encouraging them to test for HIV (the latter of which is not sent to those who registered earlier in their pregnancy.)

Self-Enrollment Registration Process

During the registration process, participants indicate the group they belong to: pregnant women, new mothers, supporters of pregnant women or new mothers, or general information seekers. The system asks the pregnant women, new mothers and their supporters to indicate the current month of pregnancy or age of the baby. Those who register as an 'information seekers' are automatically enrolled in the service and receive a standard set of messages over a four month period covering all message categories.

As the messaging service relies solely on (SMS) text messaging technology, the Partnership anticipated errors in the entry of 'keywords'. Keywords are critical as they tell the system which action to take in the enrollment, updating and un-enrollment processes. To minimize challenges for subscribers in using the service, the Partnership developed lists of 'aliases' for each keyword, anticipating the common mistakes, misspellings, typos and abbreviations that users might enter. For several months following the service launch, the team monitored the entries into the system and updated the list of 'aliases' based on commonly made errors.

Error Messages and Reminders

To maximize access to the service, the registration process sends three reminder messages to participants who send the initial keyword 'mtoto' to self-enroll, but fail to successfully register in a specific recipient group. Participants who successfully register in a recipient group, but fail to indicate the current status of the pregnancy

(or age of newborn) are sent three reminder messages before they are automatically placed into the '3 month pregnant' group (or 'week 1 baby' for new mothers). When this placement occurs, the end-user is notified of the registration status and then receives periodic messages (explained below) allowing her to update her current pregnancy status (or age of the baby).

Updating Pregnancy Stage

Subscribers receive periodic messages indicating the week or month the woman 'should be' in her pregnancy (based on the information indicated during the registration). The messages ask subscribers if they want to update the month or week of pregnancy. The service indicates that if the current information is correct, the subscriber can ignore the message and she will continue receiving messages. If a subscriber wishes to update her pregnancy status (or age of baby), she replies as instructed and the system updates her status and message schedule automatically.

Opting In and Out

At any point in time if an enrolled person wishes to stop receiving text messages from the service, he can send the word "simama" (meaning, "stop" in Swahili) to the campaign short-code. Several reminder messages with this information are included in each message schedule in case participants wish to un-enroll and forget the keyword that will achieve this.

Registration at Health Facilities

Healthcare professionals in trained health facilities offer registration assistance to pregnant women as part of the women's routine antenatal clinic visits. To distinguish registrations made through the assistance of healthcare professionals from those of self-enrollment, health care professionals use a different keyword to register women in the service. The Partnership designed a worksheet to help them compose the necessary information sent, which ensures an easy workflow for the healthcare professional.



The registration process at health facilities differs from the self-enrollment process in order to provide the Ministry of Health and Social Welfare (MoHSW) and partners working with health facilities, increased tracking and follow-up capabilities at the facility level.

WHAT PARTNERSHIPS HAVE BEEN FORGED AND FOR WHAT PURPOSES?

Partnerships are a primary component of the Healthy Pregnancy, Healthy Baby – Text Messaging Service and are a key factor for its success to date. The service was developed and continues to operate and expand in a collective manner under the leadership of the Ministry of Health and Social Welfare (MoHSW), Reproductive Child Health Services (RCHS) section. The sharing of expertise and pooling of resources enables the service to provide a comprehensive range of information. Partnerships also allows for continuously increasing subscription rates on a national scale.

No single partner had to bear the full cost for undertaking the service development, advertising, roll out and delivery. The service was developed and launched in relatively short period of time and with relatively moderate resource requirements from each partner (compared with a single partner responsible for all components). This

was achieved thanks to the integrated partner model; where each partner had clearly defined roles and responsibilities, and contributed based on their relative strengths.

Country Leadership

The Ministry of Health and Social Welfare (MoHSW) Reproductive Child Health Services (RCHS) section is the overall leader of the Healthy Pregnancy, Healthy Baby – Text Messaging Service. The RCHS team provided key input to the development of the messaging service and content. It maintains an on-going leadership role by convening the ‘Wazazi Nipendeni Task Force’, which includes a working group that focuses on the ‘continuous improvement’ of the on-going mobile phone service.

Technical Support

Text to Change (TTC) is the key technical partner of the Healthy Pregnancy, Healthy Baby – Text Messaging Service. TTC is a not-for-profit organization with a vision to support change by increasing awareness and enabling citizens to take their health and well-being into their own hands. During the development of the service, TTC provided critical input for the team on how users can most easily interact with the ‘ping pong’ style of registration utilized by the service. In addition, TTC configured the platform to meet the requirements set-forth by having several registration groups and numerous message schedules. The organization continues to provide ‘software-as-a-service’, including platform hosting, maintenance and operation as well as configures changes in support of the messaging service.

Administration & Management Support

The mHealth Tanzania Partnership, led by the CDC Foundation, provides the Ministry of Health and Social Welfare (MoHSW) with primary technical assistance for the messaging service, including administrative and management support. As an independent not-for-profit organization, the CDC Foundation assists the Partnership in attracting and maintaining partners to support the messaging service. The US Government Centers for Disease Control and Prevention (CDC) funded the development of the service and provides financial support for its current operation.

Subject Matter Experts

Over a several month period, the Partnership completed a review of all text messages with key sections of the Ministry of Health and Social Welfare (MoHSW) as well as with technical non-governmental health sector partners. MoHSW message review participants included members from the following sections and departments: Communications Unit, National Malaria Control Programme, Reproductive Child Health Services, Health Promotion and Education Section, PMTCT Unit, National AIDS Control Programme, Tanzania Commission on AIDS, Muhimbili University of Health and Allied Sciences, Tanzania Food and Nutrition Centre, and more. Health sector message review partners included: Johns Hopkins Bloomberg School of Public Health (Communication and Malaria Initiative in Tanzania –COMMIT and Tanzania Capacity and Communication Project - TCCP), Elizabeth Glaser Pediatric AIDS Foundation (EGPAF), Afya Connect for Change, FHI 360, Mwanzo Bora Nutrition Program, Piga Debe and Jhpiego.

Behavior Change Communication – Media

Johns Hopkins Bloomberg School of Public Health Center for Communication Programs (JHU – CCP) led the development of the extensive multi-media campaign for the Wazazi Nipendeni campaign with the Ministry of Health and Social Welfare (MoHSW). The Healthy Pregnancy, Healthy Baby – Text Messaging Service was launched with the Wazazi Nipendeni multi- media campaign. The Wazazi Nipendeni radio jingles, television spots, billboards and posters all feature the text messaging service short-code for people to self-enroll. This campaign

has proven to be critical in building awareness of the messaging service, with registration rates reaching four times their average when there is a full media presence, versus without.

Text Message Support

Airtel Tanzania, is committed to supporting the Healthy Pregnancy, Healthy Baby – Text Messaging Service during the lifespan of the Wazazi Nipendeni campaign by zero-rating the short-code utilized by Tanzanians to register for the service and receive messages (at no charge to the end-user). This support has greatly assisted the Partnership by reducing the costs incurred during the initial year of the service.

‘On the ground’ Health Facility Orientation

Tanzanians going for their routine ante-natal care (ANC) visit may also receive assistance in registering for the service. This facility based registration assistance is made possible by Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) and Aga Khan Health Services Tanzania – Joining Hands Initiative (AKHST– JHI) and and Afya Connect for Change, partners of the messaging service and Wazazi Nipendeni campaign. These partners leverage their existing networks ‘on the ground’ and existing activities with health facilities and staff, to provide technical assistance to health professionals at facilities. Subsequently, the oriented health professionals assist pregnant women in registering for the text messaging service as part of their ANC visit.

To date, more than 1,000 healthcare professionals have been oriented in the messaging service registration process (across 11 regions in Tanzania). They have successfully registered more than 5,000 pregnant women. The registrations at the health facility level will continue to grow as EPGAF and AKHST-JHI collectively cover more than 1,600 facilities across the country. With more than 7,000 health facilities in Tanzania however, additional ‘on the ground’ partners and financial support is needed to continue providing the Ministry of Health and Social Welfare the support required to make facility-based registration assistance available nation-wide.

BUSINESS MODEL/PLAN

The Healthy Pregnancy, Healthy Baby – Text Messaging Service is already operating nationally with more than 180,000 active subscribers. However, the service is only in its infant state, according to leaders in the Government of Tanzania and service partner organizations. Stakeholders are currently reviewing strategies to ensure a sustainable existence of the service. The services should remain available, but also expand to increase in breadth, depth and accessibility.

For the lifespan of the year-long Wazazi Nipendeni campaign, the messaging service is a fully-donor funded program, covering the development, set-up, operation and maintenance costs, as well as the cost of the text messages (with the exception of Airtel messages, based on Airtel’s in-kind contribution as noted above). This set-up allowed the Partnership to launch the service at no initial charge to subscribers.

The high and sustained levels of registration in the messaging service have demonstrated to stakeholders across the public and private sectors that there is a significant demand for healthy pregnancy information in Tanzania. Moreover, it shows that end-users believe the mobile phone is an appropriate means of accessing and disseminating the information. Stakeholders feel confident in finding additional private sector partners, even after the Wazazi Nipendeni multi-media campaign closing date, based on demonstrated business cases. These partnerships will be based on ‘mutual benefit’ (or ‘win-win’ outcomes). They can unlock sustainability, reveal innovative financing and cost-sharing models and guarantee the availability of services for Tanzanians in the long-run.

The private sector can support the service through corporate social responsibility or through a blended 'shared-value' approach. For example, organizations can benefit from marketing or sales as well as community and public relations opportunities. Companies may also support the expansion of the service (such as introducing a new technology feature or channel).

PROGRAM MONITORING MECHANISMS

The mHealth Tanzania Partnership, in collaboration with Wazazi Nipendeni campaign partners, will leverage existing mechanisms to complete routine monitoring related to the messaging service, during the lifespan of the multi-media campaign, including:

- Baseline data developed from Tanzania's Health Management Information System (HMIS) (based on aggregate facility-level reporting)
- Quarterly data collection at health facilities (MoHSW, Jhpiego, EGPAF, AKHS)
- Omnibus surveys (media monitoring)
- Tanzania Communication Chance Program mid-line household survey
- Health facility exit interviews conducted by Jhpiego (planned)

Indicators routinely monitored include:

- # of self-enrolled subscribers in Text Messaging Service (by type of registrant, e.g. pregnant woman, new mother, etc.)
- # of women registering for Text Messaging Service through facility-assisted enrollment
- % of pregnant women who attended ANC within 16 weeks of pregnancy
- % of recently pregnant women who attended ANC at least 4 times during pregnancy
- % of ANC clients that know they need 2 doses of malaria prevention medication (SP)
- % of recently/currently pregnant women who received 2 doses of SP during their pregnancy
- % of recently/currently pregnant women who test for HIV together with their partner
- % of population exposed to 'Healthy Pregnancy, Healthy Baby' text messages
- % of health facilities recording no malaria prevention medication (SP) stock-outs
- % of pregnant women who have a birth plan

Data sources: Jhpiego exit interviews, COMMIT (JHU) and TCCP (JHU) household surveys, Omnibus surveys, JSI drug monitoring report, SMS Technology Platform usage statistics and information submitted by registrants and health facility records from EGPAF and Aga Khan Health Services supported facilities.

The program stakeholders have a strong interest in conducting an extensive field study on a) the health impacts of the text messaging service and attributable behavior changes and b) the technical intervention, perceptions and ways to improve the service (technology, content and accessibility). This would require additional funding support, following necessary stakeholder evaluation approvals.

Challenges

SERVICE ACCESSIBILITY

There are inherent risks and challenges in utilizing a mobile health service, such as the Healthy Pregnancy, Healthy Baby – Text Messaging Service, in Tanzania. In order for end-users to access the service, they must own or have access to a mobile device and a mobile subscription (usually accessed through a pre-paid 'SIM' card). Further, end-users must live in an area, or have the ability to travel to an area, with network coverage. In the case of text

message-based services, they must also be literate. Each of these requirements poses a unique challenge in accessing mobile health solutions in Tanzania.

Studies estimate that there are more than 25 million mobile phone subscribers in Tanzania⁵, with 61% of households owning a mobile phone⁶. However, there is a gap in the ownership rates between men and women. It varies by an estimated 40% (fewer women than men). The Partnership designed the text messaging service, with this gap in mind. A registration option exists for partners, friends and relatives of the pregnant woman, in order to encourage male involvement and family support (especially in cases when the woman does not have access to the service otherwise).

To date, 'supporters' constitute more than one-fifth of the subscribers (compared with more than half of the subscribers registering as pregnant women or new mothers). Although the supporter group is included to reach women without phones, the pregnant women remain the primary target audience of the current service. Thus, a challenge remains of inadequate mobile phone ownership among women.

Phone owners and those who have access to a device must contend with partial and often intermittent national network coverage. The mobile-cellular network covers 85% of the Tanzanian population, according to recent studies⁷. Coverage is disproportionately missing or weak in rural areas; thus, accessing the service remains a challenge for remote populations.

Literacy remains the final hurdle for those interested in the messaging service. Nationally, the literacy rate in Tanzania is 77%. However, gaps exist between urban and rural populations as well as between men and women. According to the latest Tanzania Demographic and Health Survey (2010), literacy rates for women and men in urban areas are 88% and 94%, respectively; compared with 66% and 78% in rural areas. The low literacy rates of women, particularly in rural areas, create 'access' challenges for subscribers. Additional technical options, such as voice-based technology, can help to address this challenge. In addition, as the Partnership observed during the pre-testing and launch phases, 'supporters' can assist illiterate and semi-literate women in their registration and participation in the service by reading the messages allowed to them.



MEETING 'SUCCESS' HEAD ON

System Load

More than 100,000 Tanzanians registered for the Healthy Pregnancy, Healthy Baby – Text Messaging Service, within the first 15 weeks of launch (as part of the Wazazi Nipendeni campaign launch). Such a high demand in such a short period posed technical challenges, despite the robust technology platform and extensive testing of all systems and components involved in operating the service. The Partnership configured the initial system set-up to send messages to subscribers at approximately the same time each day. As subscription rates quickly climbed past the 'stress test' point for concurrent messages in and out, large message queues developed, slowing the sending of messages. The queues posed the risk of message delivery at off-peak hours (such as the middle of

⁵ 2011, World Factbook, cia.gov

⁶ 2011-12 Tanzania HIV/AIDS and Malaria Indicator Survey

⁷ Economic and social context: IMF, UIS, UN, WHO and World Bank; Sector structure: ictDATA.org; Sector performance: ictDATA.org, ITU; Wireless Intelligence, and World Bank

the night) or risk of message delivery failure. Partners assisted in addressing this challenge by updating the outbound message schedule to stagger based on the registration group type and other variables.

Meeting the Demand at Facilities

Challenges in managing the 'success' of the message service was also felt at health facilities. Health professionals provided anecdotal feedback of message service subscribers attending ante-natal clinic (ANC) requesting for services promoted in the messages, such as receiving malaria prevention medication or testing for HIV/AIDS. During the first several months following the service launch, the Tanzania Medical Stores Department experienced limited stock of certain medications and test kits. These shortages, combined with the increased demand at health facilities created challenges in meeting subscribers' service expectations.

In addition to increasing demand on physical supplies, anecdotal evidence indicates that the messaging service inspires patients to request additional information from health professionals during their visit. For example, pregnant women attending ANC requested more information related to specific messages on danger signs and nutrition advice. Therefore, health facility professionals can more adequately address the questions if they are familiar with the Wazazi Nipendeni campaign in general, and the content of the messaging service in particular.

Addressing Incoming Questions

There is high demand for healthy pregnancy and safe motherhood information in Tanzania. The Healthy Pregnancy, Healthy Baby – Text Messaging Service demonstrates this demand with its rapid national scale and extraordinary registration rates. The Ministry of Health and Social Welfare and service partners remain with the on-going challenge of adequately addressing the full extent of subscribers' information requirements. The Partnership is consequently seeking out innovative opportunities to address the thousands of incoming messages with questions from subscribers. The Partnership initially launched the service as a one-way communication tool. However, based on the significant demand for additional healthy pregnancy information from subscribers, the Partnership is looking to expand the service with 'look-up' and question and answer mechanisms.

Sustainability

To date, the Healthy Pregnancy, Healthy Baby – Text Messaging Service has delivered more than 10 million text messages on healthy pregnancy and early childhood care to its subscribers. It counts over 180,000 current subscribers and the Partnership estimates to reach 300,000 subscribers within the first of service. This number will continue to grow as more Tanzanians register for the service based on mass-media advertisements, and as the health facility-based registration grows.

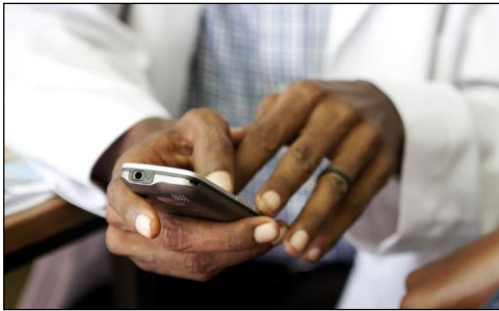
The service is currently available at no charge to the end-users, through donor support. The Partnership is seeking assistance in establishing a sustainable financial model, to continue with a basic level of service available to all Tanzanians. Senior members of the Government of Tanzania support the service and its continuation beyond the Wazazi Nipendeni campaign period. However, domestic budgets in Tanzania remain insufficient for immediately meeting the full cost of the service.

RESOURCES, SUPPORT AND ACCESS THAT WILL ENABLE GREATER SUCCESS

The mHealth Tanzania Partnership is actively seeking new partners and financial contributors, on behalf of the Ministry of Health and Social Welfare as well as the Healthy Pregnancy, Healthy Baby – Text Messaging Service stakeholders. Additional financial support is required in order to solidify the early success of the messaging service. Moreover, it will help facilitate expansions necessary to offer increased accessibility and utility.

Financial support will assist the Partnership in maintaining the current program in the short-term, as well as in developing financially and operationally sustainable technical expansions. Technical enhancements can include voice-based messaging, user 'look-up' functions as well as question and answer services. Other funds will also facilitate the growth of service content. For example, it can assist with the development of specific 'male messaging', increase the duration of post-partum care messages (which currently end 16 weeks after delivery) and enhance the content for 'general information seekers' in order to more fully engage with adolescents and young adults.

Both technical assistance as well as financial support can help the program to carry-out a more comprehensive evaluation of the service impacts. It could also offer opportunities for improvement and replication in other



countries. The Wazazi Nipendeni multi-media campaign plays a crucial role in the registration process. However, by its very nature as a 'campaign', it will come to an eventual close. As such, service stakeholders view the facility and community registration routes as crucial in maintaining and expanding Tanzanians' long-term participation. This requires further funding support to facilitate expansion of health facility and community-based service registration programs.

ADVICE FOR PROGRAMS INTERESTED IN PROVIDING A SIMILAR SERVICE

Learn from others and create an appropriate local service

The mobile health space is lighting up with examples of behavior change communication programs that leverage the mobile phone. The Healthy Pregnancy, Healthy Baby – Text Messaging Service is one of them. Successes and challenges of other programs can be useful for those interested in developing similar services in a new environment. For example, programs can fast-track message development and local buy-in of the service, by following advice offered by the Mobile Alliance for Maternal Action (MAMA). It can help them in formulating content that focuses on the positive outcomes end-users can look forward to by following the advice offered. MAMA offers helpful learning tools that will provide new programs with a strong foundation:

<http://mobilemamaalliance.org/tools-and-resources>. However, ensuring a service is locally appropriate, relevant and accessible remains a key task in order for the program to maximize its impact.

Early and Constant Stakeholder Engagement

A key success factor for launching a mobile service at scale, such as the Healthy Pregnancy, Healthy Baby – Text Messaging Service, is to involve all relevant government program leaders and service stakeholders. They should be part of the process as early as possible. Their 'Ownership' or 'project sponsorship' can promote sustainability and assist in attracting a diverse partnership base.

Programs can formalize project management communications and organizational structures to foster regular and interactive communication. It helps keeping the key stakeholders involved throughout the development, operation and review processes. 'Slight' changes in service direction or text message content can appear 'minor' or insignificant to one group, but can be of great importance to another. Keeping all stakeholders engaged and informed can promote collaboration, transparency and efficiency.

Media

The Healthy Pregnancy, Healthy Baby – Text Messaging Service registers an average of 6,500 subscribers per week, during the Wazazi Nipendeni campaign’s national mass media promotion (which publicizes the registration short-code.) The service launched as part of this campaign, through collaboration with the Johns Hopkins Bloomberg School of Public Health –Communication Change Program and the Ministry of Health and Social Welfare. The campaign includes thousands of radio and television spots as well as billboards and posters across the country, each listing the free text messaging service short-code. During a two month interruption of the campaign’s multi-media promotions, the service registration rate dropped to one-fourth of the preceding rate. Upon recommencement of the mass media ads, the registration rates returned to the previous rates. Anecdotal evidence suggests that promoting a mobile phone based service, as part of a mass media campaign, can be an effective way to raise awareness for it.

Facility and Community Engagement

Pregnant women - interested in receiving healthy pregnancy and safe motherhood information from the messaging service - can self-enroll or receive assistance at health facilities where professionals have been oriented on the mass media campaign and message content. It is clear to the Partnership that orientation is vital for health professionals to take ownership of the service, which familiarizes them with the importance of the service. Furthermore, they see it as a job aid that helps in the communication of critical information to their patients. The Ministry of Health and Social Welfare advocates the scaling of orientation activities to facilities nation-wide, based on very positive feedback from previously oriented health professionals.

Partnership

It can be overwhelming for a single organization to take on an mHealth program at national scale. The Healthy Pregnancy, Healthy Baby – Text Messaging Service development and operation involves numerous partners. Each partner is valuable with its unique skills and resources to develop, operate, promote and maintain the service. Thanks to the integrated partnership approach, each stakeholder that supports the messaging service and the broader Wazazi Nipendeni campaign makes a specific contribution. Collectively, the individual efforts support the broad programmatic achievements.

Broad partnerships can leverage the relative strengths of each stakeholder. They can maximize their success through shared risk and shared reward opportunities. Programs can create partnerships at the national level though the design and coordination of an intervention. Partnerships can also work in the implementation, delivery and monitoring of services 'on the ground', where groups focus on complementary activities in the same geography. Establishing joint key performance indicators (KPIs) and program plans assist to unify the work of many partners.

Future Plans

IS SCALE AND SUSTAINABILITY AN OBJECTIVE OR ON THE HORIZON?

The Healthy Pregnancy, Healthy Baby – Text Messaging Service achieved national scale as well as a subscriber base of more than 180,000 Tanzanians in the first eight months of its existence. The immediate priority of the Ministry of Health and Social Welfare and service stakeholders is ensuring the sustainability of the program. The mHealth Tanzania Partnership is actively leading the review of potential new partners, focused on articulating the shared-value to private sector and other partners in order to create mutually beneficial, or ‘win-win’, sustainable relationships.

After securing the sustainability of the existing program, the stakeholders are interested in expanding the technical services as well as the content available. Additional technology strategies will focus on increasing access to the service and information provided. Platforms providing ‘voice delivery’ and Unstructured Supplementary Services Data (USSD) look-up can make the service more accessible to populations with lower levels of education. These technologies can also support ‘interactive’ services with added question, answer or ‘search’ features. The content enhancements can deepen the engagement with key audiences such as men, new mothers and adolescents.

Increasing the level of engagement at the community and health facility levels will also be a future focus. Collaborations with community health workers and local civil service organizations can improve awareness of the service and drive increased registration rates. These key stakeholder groups can act as an advocacy platform for the development of future mobile services, based on actual needs observed at the village level.

WHAT ARE NEXT STEPS?

The Partnership will continue to review and create value opportunities for potential funding and collaboration partners, within the mobile service and its broader program framework. The immediate focus will be on ensuring sustainability of the current services, then on increasing access and content. The Partnership will also seek opportunities to enhance the program evaluation to include a comprehensive analysis of the public health impact.

WHAT OUTCOMES AND RESULTS CAN BE EXPECTED AND WHEN?

The primary objective of the Healthy Pregnancy, Healthy Baby – Text Messaging Service is to support Tanzania’s achievement of Millennium Development Goals 4, 5 and 6. The Ministry of Health and Social Welfare and the messaging service stakeholders hope it will assist in supporting the following public health objectives:

- Increase rates of ANC visits throughout pregnancy;
- Increase rates of HIV/AIDS testing of pregnant women and partners;
- Increase utilization rates of PMTCT services throughout pregnancy;
- Increase utilization rates of PMTCT medication throughout pregnancy;
- Increase delivery rates of babies at health facilities [especially HIV/AIDS positive women];
- Increased rate of use of ARV for newborn babies born of HIV/AIDS positive women);
- Decrease rates of transmission of HIV/AIDS from positive moms to babies;
- Decrease rates of maternal mortality;
- Decrease rates of newborn and early childhood mortality.



The Partnership has compelling anecdotal evidence that suggests that the service assists in achieving these important public health goals. For example, hair stylist Khadija Said never exclusively breastfed her first two children, but is doing so with her third and lastborn baby. She told her health professional that she made this decision as a Text Messaging Service subscriber, receiving messages explaining the importance of exclusive breastfeeding for the first six months of the child’s life. Other health professionals indicate that more women and their partners are coming to their clinics requesting for HIV/AIDS testing and malaria prevention medication. They come encouraged by the messages and timed reminders, included in the text messaging service.

Pending additional funding, the Partnership wishes to explore anecdotal and empirical data in order to capture the health impacts of the service.

HOW DOES THE ORGANIZATION WANT TO ENGAGE FURTHER?

The mHealth Tanzania Partnership, on behalf of the Ministry of Health and Social Welfare and service stakeholders, wishes to continue engaging in healthy pregnancy and safe motherhood mobile health activities. Through administrative and management support of the CDC Foundation, the Partnership will continue to connect with stakeholders and new partners in order to sustain and expand the existing service.

For more information on joining the Partnership, please contact info@mhealthtzppp.net



KEY PARTNERS

