Impact of Using Text Message in Health Seeking Behavior in Uganda

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Given the challenges rural communities face in accessing quality healthcare, a new model of service delivery is required to bridge the gap from existing monitoring protocols, traditional health-seeking behavior and the local human resources available for treatment. Furthermore, because Nnindye's residents have already highlighted the importance of improving their locally available healthcare, this project focuses on addressing that already elaborated desire. Through effective application of mobile technology, training of village health workers, and improving the mobile literacy of the community residents, Nnindye will gain wider access to higher quality care than had been previously possible.

A. Previous actions to deal with this need

Within Nnindye, health care delivery falls under the mandate of the Ugandan government. Services are centralized at the clinic level and managed by the presiding clinician, essentially a nurse practitioner. These services include a basic maternity for delivery of uncomplicated childbirth labors, a small pharmacy intermittently supplied by the central government, consultation rooms, a solar panel to run the clinic lights, a vaccine fridge, and a village health team, staffed by local volunteers. Presently, there is no coordinated plan, either locally or nationally, to harness mobile technology to improve health monitoring and service delivery or maintain medical records electronically and longitudinally track the activities of village health team members.

Even so, the national Ministry of Health has noted the proliferation of mobile health applications throughout the country, and has begun to slow down the implementation of such activities nationwide. As such, we will work closely with the Ministry to ensure that these activities are in-line with national expectations and coordinated with their latest policy prespcriptions.

B. Background

Nationwide statistics are available from the UN, and they highlight the challenges faced throughout the country. Child mortality is noted at 99, infant mortality at 63, and maternal mortality at 430 per 100,000 live births. Only 41.9% of births are attended by a skilled professional. Approximately 6% of the population is living with HIV, with only 39% of those with advanced HIV with access to anti-retrovirals. Only 68% of children sleep under bed-nets, with the same percentage reporting access to anti-malarial drugs.[1] Though the data

[1] Data from UN MDG indicator website: http://mdgs.un.org/unsd/mdg/Data.aspx

trends indicate improvement over time, the country's residents still face daunting challenges within the health sector.

The challenges faced by Nnindye's residents are similar. Available statistics from the local health clinic note that only 50% of pregnant women receive the 4 minimum required pre-natal consultations. 15% of children exhibit characteristics of stunting.[2] The contraceptive prevalence rate is 26%. The outpatient utilization rate (OPD) is only 1.4 visits per 100 residents, as compared against approximately 30 for countries such as the United States. Though not directly linked to the clinic, but impacting public health nonetheless, Nnindye reports poor access to clean water and improved sanitation facilities. Only 19% of the population has access to safe water; only 20% have access to latrines. This implies that waterborne diseases may be prevalent. Other statistics reported from the clinic, however, indicate the area is doing well – 100% of pregnant women are receiving iron and folic acid supplementation, and the total immunization coverage is 95%. A vaccination rate of 90% is usually considered to sufficient to eliminate the circulation of most communicable diseases from the population. Statistics for both maternal and child mortality have not been calculated for Nnindye.

Consultations at Nnindye Village Health Center, as % of total visits, APRIL and MAY 2012

	Adults		**Children**		**TOTAL**
Disease	**Male**	**Female**	**Male**	**Female**	
Malaria	12.6	13.7	2.5	2.5	31.4
Cholera	0.0	0.0	0.0	0.0	0.0
Dysentery	0.4	0.3	0.0	2.5	3.2
Measles	0.0	0.0	0.0	0.0	0.0
Typhoid	0.0	0.0	0.0	0.0	0.0
Tuberculosis	0.0	0.0	0.0	0.0	0.0
Diarrhea	0.5	1.3	1.0	0.9	3.7
Urinary tract infections	0.6	1.5	0.0	0.1	2.3
Pelvic inflammatory disease	0.0	0.4	0.0	0.0	0.4
Skin diseases	1.3	2.3	1.5	1.4	6.5
Cough or cold, not pneumonia	2.8	2.2	12.1	13.5	30.5
Pneumonia	2.2	1.9	1.1	0.6	5.9
Ear nose and throat	0.8	0.5	1.3	2.0	4.6
Eye conditions	1.0	1.1	1.4	2.0	5.6
Genital ulcers	0.0	0.0	0.1	0.0	0.1
Sexually transmitted infections	0.0	0.0	0.3	3.2	3.4
Intestinal worms	0.4	0.6	0.8	0.6	2.4
Sleeping sickness	0.0	0.0	0.0	0.0	0.0
Tetanus	0.0	0.0	0.0	0.0	0.0

[2] Defined as more than 2 negative standard deviations from the median weight for height of the reference population

Based on the above table, over the two month period of April and June, the disease having the greatest impact on the village's women is malaria, whereas for children the disease is the catch-all, non-pneumonia cough and cold. For women, other relatively prevalent maladies include coughs and colds, pneumonia, skin diseases, diarrhea or dysentery, and urinary tract infections. For children, the other more common diseases, in declining significance, are dysentery or diarrhea, malaria, STIs (especially for girls), eye infections, and ear, nose & throat complications. Typically, public health efforts focus on those diseases with the potential to lead to significant health challenges and potentially death. As such, the diseases that could be considered of primary importance include malaria, pneumonia, diarrhea or dysentery, and other sexually transmitted infections. To provide context for the percentages noted above, 108 women were seen for malaria during the time period noted, and 40 children sought treatment for diarrhea or dysentery. 201 children were treated for coughs and colds, while 15 women received treatment for pneumonia and 25 girls for sexually transmitted infections.

C. Approach and benefit

The use of technology as an agent and tool for sustainable community development is growing rapidly worldwide. In our partner community of Nnindye, however, some basic technologies are still under-utilized. Mobile phones are primarily used for receiving and placing calls only, and few people use texting functions, rendering texting applications for development irrelevant without improved mobile literacy in the community.

For this reason, the initial phase of engagement with the community will be basic mobile literacy and training. As the engagement progresses, and starting with the medium term key users will be trained to take advantage of more advanced mobile applications.

Because the handsets and applications are only a tool, their effectiveness will be limited by: the capacity of the users, the expertise of the local health center staff, and the ICT infrastructure of the health and community centers. The health center will be developed as a hub to keep records of the data collected by the village health team. The center will therefore need improved hardware and training to effectively manage this information. Likewise, its connection to the local network will also need to be ensured. Uganda Martyrs University, collaborating with Notre Dame staff will provide these services. The infrastructure so required, includes computing hardware, software and mobile devices, and as outlined in the budget are the minimum pre-requisites required to support the training needs of the community and the monitoring and communication needs of the village health team and center, based on the technical evaluation of the projects technical specialist noted below.

Given the health indicators noted for Nnindye above, and conversations completed to date with the health center staff, the mobile phone systems and applications will focus on:

a. Developing an SMS registration and communication system for all community members
b. Using SMS to convey clinic operational information
c. Posting data on availability of vaccines, bed nets, and pharmaceuticals

Methodology

We will send text message to a group of women to remind them about events in the health clinic. A random sample of women (15-45 y.o) with cellphone or access to one, and children

under 6 years old (External validity) will be selected to be part of the study (currently only 15% of the population in Nnindye has a cellphone). They will be divided randomly into two groups: one will receive text messages and the other will not. We will exclude for the trial pregnant women and women with no access to cellphone. 200 will be recruited for the trial.

We will collect information on attendance to health clinic, attendance to special events in the health clinic, and vaccination; deworming records, and vitamin intake for children, before the program and three months after the program to the same group of women.

After the trial period, the program will be expanded to all women, and the same indicators will be monitor to confirm results of the randomize control trial.

Anticipated Results

We expect that participation on health events will be 40 to 50% higher than women who did not received text messages. In addition, the odds that children received vaccination, deworming and vitamins will be 60 to 70 percent higher in women who receive text message than women who did not.