mHealth for CHWs

Sustaining Community Health Worker programmes using Mobile Phones in Sierra Leone.
The Context

Actively engaging communities in addressing their health problems is becoming a key strategy to compensate for the lack of community health professionals in many parts of Africa. Results from systematic reviews of community health workers (CHW) programmes confirm that CHWs provide critical links between rural communities and the formal health system, encouraging and supporting access to health services and positively impacting on health promotion and disease prevention (Bhutta et al., 2010, Lewin et al., 2010). CHWs tend to be well-respected members of the community (often being selected by community-based health committees or community leaders) and with appropriate support and sufficient training, CHWs can play a pivotal role in strengthening health systems in rural areas with poor health services infrastructure (Christopher et al., 2011). More specifically, they are an important resource for implementing interventions targeting reductions in neonatal mortality and tracking women throughout their pregnancy while simultaneously promoting appropriate maternal and newborn care practices.

Sierra Leone is consistently ranked among the countries with the highest maternal mortality ratio (970 per 100,000) and women in Sierra Leone have a 1 in 21 lifetime risk of dying as a result of pregnancy (SSL, 2009). Despite some progress, Sierra Leone still ranks 5th in the world for countries with the highest under-five mortality rates (140 per 1000) (Rajaratnam et al., 2010), and 1 in every 7 children die before reaching their fifth birthday (SSL, 2009). The inequitable distribution of health facilities, a severe lack of health equipment, and a shortage of skilled health staff are some of the identified factors underlying the poor performance of health systems to deliver effective maternal and child health care services (Oyerinde et al., 2011).

The Ministry of Health and Sanitation (MOHS) introduced free health care for pregnant women, breastfeeding mothers, and children under-five in April 2010 (Donnelly, 2011). Early reports show that the uptake of these services has improved significantly but that health centres are struggling to keep up with increasing demand for health care (Moszynski, 2011). In response to this, the government of Sierra Leone is in the process of finalizing a revised policy on the integration of community health workers (CHWs) into the formal health system (MOHS, 2011). This form of task shifting recognises CHWs as a resource within the community and a key alternative cadre in the delivery of maternal and child health services in Sierra Leone (WHO, 2008).
The Problem

CHWs have the potential to engage communities as a major resource in encouraging health promotion and addressing basic health needs. The scalability and sustainability of this resource is, however, hampered by high attrition rates due to inadequate supervision, lack of locally relevant incentive systems, loss of motivation, insufficient recognition and community support, poor connectivity to health facilities, and knowledge retention problems (Willis-Shattuck et al., 2008, Rahman et al., 2010, Kash et al., 2007, Mathauer and Imhoff, 2006). The motivation of CHWs and the risk of high attrition rates therefore have important implications for the effectiveness, success, cost, credibility and continuity of CHW-based programmes.

The Rationale

Mobile health, or mHealth, is a sub-segment of the broader field of electronic health (eHealth) that uses mobile phones to enhance the efficiency of service delivery and improve the quality of healthcare. mHealth tools have shown important promise in providing better access to care in low income countries, especially in rural and underserved populations (Blaya et al., 2010). Low and middle income countries (LMICs) are seeing massive growth in the mobile technology sector with over 3.8 billion subscriptions, comprising 73% of worldwide subscriptions (mobiThinking, 2011). The growing availability of mobile phones in LMICs has the potential to address a number of current healthcare challenges including: addressing the shortage of skilled health workers, strengthening health information systems; improving timely data collection, diagnosis and disease surveillance; increasing treatment adherence and compliance; better administration of drug inventories and drug supply chain management; and improving case-management among health workers (Blaya et al., 2010, WHO, 2011, Chang et al., 2011, Fraser and Blaya, 2010, DeRenzi et al., 2008, Seidenberg et al., 2012, Meankaew et al., 2010, Zurovac et al., 2011, Thirumurthy and Lester, 2012, Pop-Eleches et al., 2011, Mbuagbaw et al., 2011).

Globally, a high interest in mHealth has led to an abundance of pilot project, the vast majority of which have failed to deliver sustained impact at scale. Moreover, mHealth projects can potentially place a high burden on already overextended health resources and health centre staff as they are forced to reconsider and reconfigure their current workflows and protocols (Mukherjee et al., 2010). Lastly, there is a lack of evidence demonstrating how the use of mobile phones can mediate CHW attrition rates through impacting CHW motivation, supervision, and organisational commitment of CHWs.
The Innovation

The Centre for Global Health, Trinity College Dublin is partnering with the Ministry of Health and Sanitation, Sierra Leone (MOHS), World Vision Ireland, and World Vision UK to compare three different strategies for the implementation of a volunteer CHW programme to improve maternal, newborn and child health (MNCH) across five chiefdoms in Bonthe District. Common to all three strategies is the training of CHWs in the delivery of 7-11 timed and targeted counselling (7-11/ttc). Similarly, all three strategies will include a number of job resources including bicycles, CHW kits, badges, and t-shirts. Apart from these commonalities, the three implementation strategies employ different approaches in an attempt to address the aforementioned factors impacting on the retention of CHWs. The three different implementation strategies are as follows:

Strategy 1
7-11/ttc training + job resources

Strategy 2
7-11/ttc training + job resources + closed user group

Strategy 3
7-11/ttc training + job resources + closed user group + mobile application

What is 7-11/ttc training?

Aligned to the existing CHW policy in Sierra Leone (GoSL, 2012), the 7-11/ttc strategy promotes 7 key health interventions for pregnant women and 11 key health interventions for children under the age of 2 (see Table 1). These core interventions are subsequently delivered over the course of 10 timely household visits made by the CHW (WVI, 2010), as depicted in Figure 1. The key element of ttC is household outreach by CHWs to deliver evidence-based curriculum of health & nutrition messages at appropriate times and to the targeted audiences, in a manner that delivers the right messages, to the right people, at the right time.
Table 1: Core Interventions of the 7-11 Strategy

<table>
<thead>
<tr>
<th>TARGETS</th>
<th>PREGNANT WOMEN: 9 MONTHS</th>
<th>CHILDREN: 0-24 MONTHS</th>
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</thead>
<tbody>
<tr>
<td>Core Issues</td>
<td>1. Adequate Diet</td>
<td>1. Appropriate Breastfeeding</td>
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<tr>
<td></td>
<td>2. Iron/Folate Supplements</td>
<td>2. Essential Newborn Care</td>
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<td></td>
<td>3. Tetanus Toxoid Immunization</td>
<td>3. Hand Washing with soap</td>
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<td></td>
<td>4. Malaria Prevention and Intermittent Preventive Treatment</td>
<td>4. Appropriate Complementary Feeding (6-24 months)</td>
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<td></td>
<td>5. Healthy Timing and Spacing of Delivery and Birth Preparedness</td>
<td>5. Adequate Iron</td>
</tr>
<tr>
<td></td>
<td>ANC PNC, Skilled Birth Attendance, PMTCT, HIV/TB/STI Screening</td>
<td>8. Prevention/Care Seeking: Malaria</td>
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<td></td>
<td></td>
<td>9. Full Immunization for Age</td>
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<td></td>
<td>10. Prevention/Care Seeking: ARI</td>
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<td></td>
<td></td>
<td>11. De-worming (+12 months)</td>
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Figure 1: Timed and Targeted Counselling Schedule for CHWs
What is a closed user group?

CHWs and their supervisors at the health centre will be set up on a mobile user group to make unlimited free voice calls and send unlimited free SMS messages to others within the group. In this case, a CHW can make unlimited calls to other CHWs in their area as well as to their supervisor.

What is the mobile application?

World Vision is collaborating with the Bill and Melinda Gates Foundation, Dimagi, Grameen Foundation, Airtel Sierra Leone, and Thoughtworks in the adaptation of two existing, field-tested, open source applications including the Grameen Foundation’s MoTECH (back-end) and Dimagi’s CommCare (front-end) to ensure that the ttC mobile application is at the forefront of existing mobile technology for community health workers. The purpose of the application is to act as a job resource or job-aid for CHWs that will allow CHWs to receive reminders about household visits, receive regular feedback from their supervisors, to make emergency referrals to their affiliated peripheral health unit (PHU), and to collect household data for transmission to the health facility to support clinical and managerial decision-making without having to travel to the health centre.

The Research Objectives

The main objective of the proposed research is to examine changes in CHW motivation, triggered by the introduction of the 7-11/ttC mobile application, and assess how this mediates health worker performance over time.

As a secondary research objective, we will explore how the mobile component of 7-11/ttC changes MNCH health care delivery practices as well as identify the potential challenges and obstacles to scale-up of the 7-11/ttC intervention. A better understanding of how the mobile component of 7-11/ttC contributes to health worker performance, changes existing system workflows, and influences communication pathways between community health structures and peripheral health units has important implications for how the programme will be scaled-up across the 20 countries where it is currently being implemented.
The Expected Outcomes

Expected outcomes include the improved quality and timely use of maternal and child health services through improved health worker performance. In addition, uptake of MNCH services should increase because of more consistent communication between community structures and health centres, awareness and health education creating a greater demand for services, and strengthened operational structures giving the community more confidence in the services being offered. By gaining a greater understanding of the mechanisms through which 7-11/ttC supports community-based health care delivery, we can better address existing challenges, increase programme sustainability, and ensure the effective scale-up of the programme.

The National Telecommunication Company (NATCOM), Sierra Leone’s national telecommunications regulatory body has already given their full support of the programme and our partnership with the MOHS ensures that our results will be utilised to advance the delivery of health services in Sierra Leone. The findings from the proposed research not only have important implications for MNCH outcomes, services and policy in Sierra Leone, but also greatly contribute to the programming of ttC across the entire World Vision Partnership with the potential to scale-up this programme across 20 countries.

Internationally there is growing interest and enthusiasm for the potential of mobile health to improve access to and quality of health services in low-income countries. However, this is not matched by corresponding evidence or understanding of the potential contribution such technology might have. There are potentially many obstacles to the rollout of mobile health interventions across the health services, just as there may be many positive consequences (as yet unknown). The findings from this implementation study can yield important lessons that inform future developments in mobile health.

BLAYA, J. A., FRASER, S. F. & HOLT, B. 2010. eHealth technologies show promise in developing countries. Health Affairs, 29, 244-251.


References
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