

Community Engagement for eHealth in Masvingo, Zimbabwe

(Conference ID: CFP/377/2017)

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Abstract

The health system in Zimbabwe is facing challenges in the provision of equity and quality health care, especially in the rural areas. In response, this has resulted in mounting interests in the potential of eHealth (application of Information and Communication Technologies in the health sector) by the Government of Zimbabwe through the Ministry of Health and Child Care. The Ministry of Health is focusing on the gradual improvement of existing and new health systems involving the incorporation of Information and Technology to optimise the current health care system.

The hypothesis of this paper is that eHealth has the potential of advancing health care to better health outcomes and improved cost efficiency of care. This paper presents the potential of eHealth and mHealth (application of mobile technology for health, as part of eHealth) to facilitate equity and quality health care.

In conclusion eHealth and mHealth hold potential to improve and optimise the health system in Zimbabwe, especially in the rural areas. This potential necessitates community engagement, sensitisation to create awareness in communities, empowerment through skills development and education, and implementation of solutions and strategies that fit the local context.

(Keywords— eHealth, Masvingo, Zimbabwe)

I. INTRODUCTION

eHealth, we define, is the combined use of electronic communication and information technologies in the health sector, ensuring the right health information is provided to the right person at the right place and time, in a secure, electronic form for the purpose of optimising the quality and efficiency of health care delivery (cf. [1]). Among others, eHealth has the potential of reducing administrative tasks, enhancing quality and integration of service delivery, lowering of administrative and financial risks, keeping professionals on site by limiting travels for training and meetings, and providing for non-monetary remuneration. Zimbabwe is in the process of introducing a comprehensive e-Health strategy. In Zimbabwe, mHealth (mobile health) is already widely implemented for the strengthening of communications along the Early Infant Diagnosis result chain.

Application of Data Science to information contained in the Health Management Information Systems (HMIS) is the next frontier in disease control. eHealth pilots are highly visible and provide for encouraging examples of application and beacons of hope in a depressed health sector. The Ministry focuses on the gradual rehabilitation of existing and new administrative and operational systems, possibly leapfrogging into the digital information era by involving the incorporation of Information and Communication Technologies.

Based upon its long-term commitment in the health sector in one of the remote areas of Zimbabwe, upon request by the Ministry of Health, in corporation with national partners like Zimbabwe's Scientific and Industrial Research and Development Centre (SIRDC), SolidarMed is reviewing how to play an active role in the exploration of e-Health possibilities by supporting local infrastructure development, testing of applications in (remote areas) in Masvingo province, and strengthening the institutional capacity in eHealth. It does so from a unique, and long-term base in Masvingo Province. Therefore, SolidarMed, with its partners, is regarded a long-term partner able to operationalise and test the current and upcoming innovations in health care, in Zimbabwe, based upon existing relationships and involvement in support of what works so far.

Upon this notion, SolidarMed in cooperation with the Zimbabwean Ministry of Health and Child Care is gearing up for an e-Health readiness in Masvingo Province. Such readiness is engendered through developing infrastructure and preparing for tangible activities in the areas of operation, provisioning of a conducive environment for (health) community engagement in eHealth, and preparations to act as pilot/demonstration site. This paper shows the circumstances and ideas originating

during the initial – sensitisation – phase of eHealth in Masvingo Province, Zimbabwe.

II. EHEALTH: GOVERNMENTS PERSPECTIVES

African governments recognise Information and Communication Technologies (ICTs) are instrumental to leapfrog legacy systems and practices towards improved cost effectiveness and quality of health care. Since 2011, Kenya executes a national eHealth strategy “to

cope with the rising cost and demand for quality health care services, against the backdrop of a shortage of skilled health care professionals. [...] There is [...] a compelling need to devise ways and means of closing the gap between vision and reality. Th[e] e-Health strategy seeks to set in motion the process of closing this gap by harnessing ICT for improved healthcare delivery in addition to other ongoing efforts.” [2:1]. “The [Kenyan] Ministry of Health is keen to ensure an enabling regulatory environment to encourage innovation and use of mobile technology in improving the health of Kenyans. M-Health is one of the pillars of the Kenya e-health strategy. The other four are telemedicine, health information system, e- learning and information for citizens”, and: “One of the most important things M-Health will deliver to Kenyans is the ability to dramatically improve health service delivery” [3: online]. The latter endorsement contains a succinct rationale for eHealth in Kenya.

In Zimbabwe, eHealth is a priority, as the following quotes from the current Zimbabwe’s National Health Strategy Zimbabwe (2016-2020) [4], show:

- “The hospital information systems need to be harmonised and fully computerised with all departments, equipment and patient flow properly linked electronically.” (p.50)
- “Significant investments in health system strengthening are necessary for the health facilities and other service delivery and coordination platforms to function optimally. [...] new innovative programmes such as e-health are implemented to enhance and not to disrupt what has been working so far” (p.61)

However, much needs to be done, as the same national health strategy reports: “The item with the lowest availability was the computer with internet/email access” (p.7).

e-Health bears promise to enhance and integrate health service delivery, optimise efficiency in health care provisioning, reduce administrative tasks in health, reduce traveling and out-of-station period of health staff, and provide for non-monetary motivation in a depressed health sector. Zimbabwe ‘s National eHealth Strategy is ‘work in progress’. As the country is coming to grips with the new realities in an information society, developments still depend largely on opportunistic networking of people, co-operating partners, and funding opportunities.

The Ministry of Health currently defined goals focus on the key tools and applications in health as identified by the Zimbabwean ministry [5]:

- Telemedicine
- Medical Education and Research Services
- Electronic record systems

To harvest the low hanging fruits in eHealth, Zimbabwe’s Ministry of Health has embarked on the countrywide roll out of electronic infrastructures to enable an Electronic Health Record keeping for HIV-related reporting (ePMS) [6]. With partners, the Ministry of Health is piloting eHealth initiatives to strengthen maternal and new-born care in Zimbabwe, and the

introduction of telemedicine (e-consultation) in outlying districts. Further, the Ministry is executing a roadmap towards a national Electronic Health Registration system [7].

On the provincial level, the Provincial Medical Directorate Office in Masvingo regards the use of Information and Communication Technologies of prime importance to attain the outcomes of the National Health Strategy, including for health care in the remote areas. Based upon tangible results to make ICTs accessible in rural Africa [8,9], it aims for community engagement [10], work force development [11] and thought leadership [12] for e-Health in the province, for the sensitization, training and role-out of e-Health pilots, operational research and other support in the field of eHealth.

III.

HEALTH: COMMUNITY ENGAGEMENT IN MASVINGO PROVINCE

Masvingo Province consists of a low-veld area, in the south-eastern part of Zimbabwe. The province covers an area of 56,566 km² and a population of over 1.4 million people (2012 census) of which around 90% live in rural areas. Most people in Masvingo's rural areas sustain their life from subsistence farming, cattle ranging and from financial transfers – remittances – from family members in the diaspora.

The Zimbabwean health sector faces human resource challenges, with challenges for health workers at every service delivery level. Of course, human resources are critical to the provision of quality health care. The government recognises that to address the crisis, it is essential that it ensures an adequate and equitable distribution of appropriately motivated, skilled and equitably distributed health workers providing quality services. Human resource shortages are caused by several factors which are both monetary and non-monetary. These include:

- Conditions of service (remuneration and incentives)
- Working conditions (facilities, supplies and equipment)
- Human resource management systems
- Education and training systems.

There is evidence to suggest that improving amenities and working environments can help to retain staff [13]. Information and Communications Technologies (ICT) deployment to support eHealth and the availability of internet connectivity is one avenue that could provide for non-monetary incentive to qualified personnel in the health sector. Preliminary work on the establishment contextual sound ICT deployments in rural areas was done at Macha, in the Southern Province of Zambia [9]. It was shown that access to ICT services could be achieved through an inclusive process of (1) community engagement, (2) workforce development, and (3) thought leadership.

Given the promises of eHealth, ICT and Information Services and Systems can support the government's agenda "Equity and Quality in Health: Leaving No One Behind", which is the sub-title of the Zimbabwe National Health Strategy (2016-2020) [4]. The first step to reach this goal is encapsulated in the process of community engagement. Community engenders

engagement and ‘buy in’, and therefore sustainability, by involving aspects of a holistic approach, local empowerment, reciprocity, and enthusiasm [10,14]. Further, it necessitates action embedded in compassion, desire to engage with local issues, a learning exchange, stewardship, and the utilisation and harnessing of local resource, in a sequence of thinking, practice and progress [14].

IV. E-HEALTH: ENGENDERING INFRASTRUCTURES

In Masvingo, with the use of local skills and resources, SolidarMed created a so-called eHealth Lab to provide facilities for the use and development of ICT and services. This is a facility designed to support the development of contextualised apps for the rural environment. The lab provides working space where health professionals and engineers can meet. Hardware and connectivity are supported, and the facilities are conducive for improvisation. The laboratory is run by an ICT Officer who is also available for training.

In the same building, SolidarMed develops a so-called Future Centre. Here low-cost presentation facilities are being experimented with involving Communities to Practice.

Through targeted hospital assistance projects, involving local talent in planning and implementation, SolidarMed creates sustainable infrastructures (e.g. Local Area Networks at Hospitals and Nurses Training Schools) while streamlining operations and equipment, (e.g. thin client computing, tablets and network servers).



Thin Computing usage at Nurses Training School, Silveira Hospital, Masvingo Province, Zimbabwe (picture Joseph Bishi)

v.

E-HEALTH AND CONTINUOUS PROFESSIONAL EDUCATION Among others, the Zimbabwe Medical Association (ZIMA)

hosts Continuous Professional Development (CPD) / Continuous Medical Education (CME) sessions for health professionals in Zimbabwe, irrespective of their area of speciality. It is a membership-based association, with about 800 members, whose objective is to protect and advance the interests of the medical profession in Zimbabwe. One of their targets is to optimise the environment for a sound doctor-patient relationship through providing a forum for discussion on matters of policy and knowledge sharing, and ensuring that members

optimise from practising medicine in Zimbabwe and protecting the health rights of the public at large. In trying to encourage evidence based medical practises, ZIMA offers continuous medical education to its members. The meetings are a strategic place where health professionals regularly meet for professional updates and information sharing.

SolidarMed and ZIMA experiment and pilot the dissemination of CME sessions for remotely attending a ZIMA meeting of the HIV-clinicians in Harare. In 2016, the first CME-point from ZIMA was awarded in Masvingo for remote attendance, with interactions taking place through a live stream Skype connection between ZIMA Harare and SolidarMed's Future Centre in Masvingo. This activity has the potential to grow in the number of meetings for streaming, boosting attendance and dissemination of medical professionals, country wide.

In the current set up, on purpose, low-cost equipment and services are being used. For the link that shows the presenter, Skype is used. Presentation slides are photographed on site and sent through by using WhatsApp. These services are used because of their general and free availability, readily available on the personal computers of health professionals. Further, these services require no special plug-ins to be downloaded, limiting the strain on the limited bandwidth and throughput of, often limited, (satellite) internet connections. And, last but not least, these services are free, instead of incurring extra costs and the need for downloads, like Cisco's WebEx service.

Every month, UNICEF hosts a "Brown Bag" sessions in Harare. The purpose of the lunch meetings is to share information relevant to health care professionals. The Brown Bag sessions are led by experts in the different fields who present findings of contextual research. The meetings are frequently participated in remotely from Masvingo. These meetings are streamed through Youtube Live, with the added capability to access the presentation after the event, in the case of hiccups like power outages during the event.



Attending Brown Bag session at SolidarMed's Future Centre in Masvingo, Zimbabwe (picture Janneke van Dijk)

The take up of these CME services is slow. The importance of experimenting and promoting the facility is necessary to gain the commitment of all involved in the use of simple, free and

daily used applications. By its use – and the fact that the activity is ‘being talked about’ – health care professionals are sensitised to, and experience, how eHealth supports efficient operations. Efforts have been made in optimising the current setup aiming for the improvement of infrastructure, ultimately improving clinical decision making using right solutions in understaffed and low-resourced environment.

During 2016, from the start with the live streaming of Brown Bag sessions from UNICEF, the activities have grown into streaming of webinars, conference sessions (e.g. AIDS 2016), attending meetings in Europe (e.g. on FAIR data), and even disseminations from Masvingo (e.g. university lectures at University of Cape Town and in Europe).

VI. EHEALTH AND REMITTANCES/MOBILE MONEY

In the developments of mPesa (mobile money) and eHealth, Kenya is an example on the African continent. In Kenya “... approximately 53 percent of the country’s GDP was transacted through mobile money platforms. ...” [15:online]. A dignitary of Kenya’s government commented “through the efforts of inclusive business models which aim to include the poor in their value chains, we have seen an emergence of a wide spectrum of services for those at the bottom of the economic pyramid with services ranging from accessible health insurance to primary healthcare services, facilitated by technology and especially mobile platforms” [3:online]. Our exploratory research suggests that the condition in Zimbabwe is not much different, and what happened in Kenya might very well happen in Zimbabwe.



Picture is showing “taxi” in South Africa with a message to remit from South Africa to Zimbabwe (2016, Gertjan van Stam).

The benefits ‘at the Bottom of the Pyramid’ can be “increased access to quality healthcare, such as through mobile money-based e-vouchers that are only redeemable at accredited healthcare facilities; safe and convenient platforms for mobilizing funds to pay for healthcare products and services; increased opportunities to save for future healthcare needs; and increased access to affordable health insurance. Mobile money has also provided

development partners with a means to directly channel funds to targeted beneficiaries” [16:np]. These benefits are all potential innovations for Masvingo.

eHealth involvement of the business sector embedded in the formal economy seems to focus on the urban areas [17]. In the meantime, the hospitals in remote locations are prone to benefit most, but receive last, in the case of an external/urban focus on remittances. Building capacity in peripheral institutes is most urgent and can provide for ‘a way out’ of the current financial conundrum of diminishing incomes at the rural hospitals.

In Zimbabwe, mobile money is used by the Health Center Management Funds. These small-scale community funds are coordinated by village heads and councillors. Experts report that in Masvingo these funds receive most of their contributions through EcoCash. The Health Centre Management Funds had various roles, among them, being supporting the most disadvantaged with out-of-pocket-user fees, renovating staff houses, waiting mother’s shelters, and patient waiting areas, paying for the night security guard and general hand.

The government of Zimbabwe recognises the importance of remittances, and focuses on its leverage through the newly set up National Diaspora Directorate for purposes of encouraging the people in the diaspora to participate ‘in the country’s economic turnaround strategy’.

VII. EHEALTH AND APPLICATIONS

From its experience in community engagement, SolidarMed has noted that investments in infrastructure development remain the priority at the health institutes. Without infrastructure, service provisioning is not possible. Upon the existence of infrastructure, with partners, SolidarMed has started the sensitisation in applications development, focusing on applications in the following fields:

- Mental Health: SolidarMed participates in the development of a ‘Friendship Bench App’ for Mental Health.
- Interaction by Health Professional: experimenting with VULA App for physician peer-to-peer communications and referrals.
- Clinical Mentoring Tool App: Aiming to enhance operations and management of Clinical Mentoring in a decentralising health care service provisioning, and
- Electronic Health Registration: Preparing for the Governments Electronic Health Register Implementation.

VIII. CONCLUSION

eHealth holds significant promises for the health sector in Zimbabwe. Due to the virtual non-existence of services aimed at rural areas, there are opportunities to unconstrained 'leapfrog' into eHealth. Zimbabwe's government guides eHealth deployment in careful wording, for it 'to support what is going well'. eHealth opens contextual opportunities that could alleviate pressing problems, for instance in facilitating out-of-pocket expenses through mobile money and remittances.

The process of Community Engagement for eHealth involves sensitizing the process of assisting institutes in building up eHealth infrastructures, in the engagement in application development in line with opportunities applicable for the province, and by strengthening the eHealth knowledge base and capabilities.

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