

PILOTING AN eLEARNING COURSE FOR COMMUNITY HEALTH WORKER TRAINING

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BACKGROUND

Low- and middle-income countries (LMICs) face an acute shortage of health professionals, which jeopardizes achieving the third Sustainable Development Goal of improving reproductive, maternal and child health (Asamani et al. 2019). This is exacerbated by the urban-rural disparity in availability, accessibility, and equity of health care (Rodney and Hill 2014). Despite being more populous, rural areas lack the infrastructure and human resources for health found in urban centers, depriving often impoverished rural residents of access to quality health care (Lopes et al. 2014; Commission on Social Determinants of Health 2008). In the absence of medical professionals, health systems in LMICs have adopted and are increasingly utilizing community health workers (CHWs) to bridge the gap in health care access in areas where formal health services are limited or unavailable (Gilmore and McAuliffe 2013). CHWs are typically health workers without specialized medical training who are tasked with providing primary health care within their communities (e.g., conducting outreach from their homes and beyond primary health care facilities or based at peripheral health posts that are not staffed by doctors or nurses), either voluntarily or paid with a small stipend (Scott et al. 2018).

Rwanda has successfully implemented a CHW model since 1995, which has been a key factor in the country's reduction of maternal and childhood mortality (Farmer et al. 2013). Every village in Rwanda has four CHWs, each serving different duties but working in tandem to bring essential primary care closer to the community

(Ministry of Health 2015). Some of the services provided by CHWs include promoting health seeking behaviors; diagnosing and treating malaria, diarrhea, and pneumonia in children under 5 years of age; monitoring pregnant women; and offering nutritional advice, family planning, referrals for health services, and psychosocial support (Tuyisenge et al. 2020). Considering their importance, it is imperative to equip CHWs with sufficient knowledge and skills to enable them to ably serve their communities. Continuous training is needed to boost not only their competence but also their confidence. Since they lack specialized medical training, the level of care and service delivery offered by CHWs is linked with the quality of on-the-job trainings received (O'Donovan et al. 2018).

Refresher trainings are, however, infrequent, depending on the availability of funds from the government or development partners, and when carried out often involve didactic sessions conducted away from the CHWs' duty stations, which means they often have to travel long distances to training venues, depriving their communities of essential primary health care (Egan et al. 2017). Further, these didactic, classroom-like trainings have been repeatedly shown to be ineffective in long-term knowledge and skill retention, which puts CHWs at risk of insufficient skills to carry out their duties, threatening the health outcomes in communities (Willcox et al. 2019).

Research in LMICs has demonstrated that eLearning is more effective than conventional classroom trainings by increasing accessibility



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to information, better content delivery, self-pacing, and potentially reduced costs (Dalberg 2012). The ability to incorporate context-specific audio and visual content into eLearning platforms leads to faster learning that is useful when training CHWs who usually have lower levels of literacy (Dalberg 2012). Another incentive to use eLearning tools is their cost-effectiveness, with one study finding it 42% cheaper compared to conventional off-site trainings and easily scalable to different contexts (Sissine et al. 2014).

The USAID Ingobyi Activity, a five-year project led by IntraHealth International to improve the quality of reproductive, maternal, newborn, and child health (RMNCH) and malaria services in a sustainable manner in Rwanda, piloted an eLearning scheme

using smartphones in two priority districts with a goal of scaling it nationwide to replace the current didactic refresher trainings. It took approximately 20 months to prepare for and pilot the eLearning courses for CHWs. The eLearning tools are accessible to CHWs from their areas of work and create a more independent level of learning as they use these resources in parallel with mentorship programs and supportive supervision. Establishing eLearning at the community level is a long-term Ingobyi Activity strategy to ensure that the community health program is cost-effective and sustainable.

IMPLEMENTATION OF INGOBYI ACTIVITY'S ELEARNING COURSE

STEP 1: PRELIMINARY MEETINGS AND PLANNING

In 2019, Ingobyi carried out consultation workshops with the Ministry of Health (MOH) and Maternal, Child and Community Health (MCCH) Division of the Rwanda Biomedical Centre (RBC) to identify a suitable eLearning platform. There was consensus to use an existing MOH eLearning platform—an open-source learning management system based on the Moodle platform.

In collaboration with RBC/MCCH, Ingobyi selected two districts, Ngoma in Southern Province and Rutsiro in Western Province, as pilot sites because they represent rural and peri-urban districts, respectively. Within each district, three health centers were randomly selected. A total of 100 CHWs—36 *Agents de Santé Maternelle* (ASMs) and 32 male-female pairs (*binomes*)—were selected by the health centers and enrolled in eLearning courses from the two districts. The selected CHWs were all currently active in service and aged 25 to 60 years old. Before enrollment all 100 CHWs confirmed their willingness to participate in the eLearning pilot. Planning, selection, and testing of the system took approximately one year.

STEP 2: DESIGNING MULTIMEDIA CONTENT FOR THE ELEARNING CURRICULUM WITH SUPPORT FROM MASTER TRAINERS AND CHWS

Together with MOH/RBC, Ingobyi Activity supported the review of existing community health training manuals and updated them with current knowledge and skills needed by CHWs. Input from both CHWs and trainers was incorporated when designing training content since they are on the ground within their communities and know what they need to be more effective.

Ingobyi's eLearning team re-configured and re-designed the training materials into audio-visual content that is interactive, easy to navigate, and more accessible to CHWs with limited education and literacy levels. The process involved writing and recording new and existing scripts into audio and videos followed by photo shoots to add appropriate images into the platform.

After editing and adapting the content, the final version of the eLearning course was uploaded to the Moodle platform for piloting. Ingobyi initially adapted training materials for three courses: integrated community case management (iCCM) of childhood illnesses, community-based maternal and newborn health (CBMNH) management, and home-based management (HBM) of malaria. Additional training packages will be scripted and added following lessons learned from the pilot exercise to create a fully-fledged eLearning resource for CHWs.

The course materials were subsequently reviewed in a series of stakeholder workshops that involved MOH, RBC, Adventist Development Relief Agency, Partners in Health, UNICEF, Health Builders, CHWs, community environmental health officers (CEHOs), and CHWs' supervisors at hospital level.

Ingobyi's eLearning team also created an offline version of the platform to facilitate access to the training content. This was particularly important because of the high cost and unreliability of internet coverage nationwide especially in hard-to-reach rural areas.

STEP 3: PROCUREMENT OF SMARTPHONES

Prior to piloting, and with guidance from the MOH, 100 CHWs were provided with smartphones to host and access the eLearning platform. This was necessary because CHWs typically had feature phones with no capacity to accommodate eLearning content. The locally-produced smartphones Mara Z and Mara Z1 were procured by Ingobyi to ensure that learners and their supervisors had easy access to training content and for the smooth implementation of the pilot.

STEP 4: CONDUCTING DIGITAL LITERACY ORIENTATION

For learners and their supervisors to successfully operate the smartphones and navigate the eLearning platform, it was necessary for the eLearning team to conduct a digital assessment to gauge learners' digital knowledge and conduct orientation to ensure that all CHW supervisors were well versed with their smartphones and the digital training content. In collaboration with the MOH, Ingobyi assessed and oriented CEHOs and community health supervisors at hospital level on digital literacy in the two districts as they were expected to play a key role in technical assistance and refresher training to CHWs during the pilot. A post-training assessment showed that 75% were competent in smartphone manipulation and basic digital literacy.

After the orientation of CHW supervisors, CHWs participated in a one-day workshop to orient them on basic functions of smartphones, the eLearning platform, and the pilot activity. CHWs were also oriented on phone safety and other phone functions to enhance their work, such as sending RapidSMS messages. At the end of the workshop,

a post-test showed a notable improvement in CHWs' knowledge of and comfort with using a smartphone, with their ability to navigate smartphone features and functions increasing from 12% to 91%.

Where necessary, Ingobyi provided further training on navigation of the eLearning platform as well as refresher training of trainers on the three courses (iCCM, CBMNH, and HBM) to ensure that supervisors and CEHOs had the required technical skills and knowledge to provide support to the CHWs during the pilot phase.

STEP 5: PILOTING THE ELEARNING COURSES FOR CHWS

Ingobyi Activity, in collaboration with MOH and RBC, piloted the eLearning courses with CHWs from six health centers (Jarama, Nyange and Rukira in Ngoma District, and Congo Nil, Kayove and Kinihira in Rutsiro District) in April 2021. Ingobyi conducted a one-week orientation session to introduce the eLearning program to various stakeholders including the director generals of the two district hospitals and health center managers from the six health centers.

Based on the duties they carry out in their communities, 36 CHWs in charge of maternal health (ASMs) undertook the CBMNH course while 64 CHWs (binomes) in charge of iCCM enrolled in the iCCM and HBM courses. This digital training lasted four weeks, with CEHOs and CHW supervisors on hand to assist the learners with technical issues when needed.

For each of the two courses, there was a quiz at the end of each module followed by a post-evaluation assessment after completion of each course. CHWs who scored greater than 80% passed the evaluation and were awarded with electronic certificates. CHWs who did not attain 80% were given the opportunity to repeat the test. Where necessary, learners received extra support from their immediate supervisors.

STEP 6: SUPPORTIVE SUPERVISION OF ELEARNING ACTIVITIES IN PILOT DISTRICTS

As a part of the pilot phase, Ingobyi Activity, in collaboration with MOH/RBC, conducted monthly supportive supervision to make sure that CHWs and CEHOs were facilitating eLearning activities

according to plan. During supportive supervision visits, Ingobyi teams met with CEHOs to discuss their experiences in providing support to CHWs to take their courses and troubleshoot ways of improving the platform based on feedback of both CEHOs and CHWs.

Ingobyi continues to work with CEHOs and hospital-level community health supervisors to monitor learners' progress and assess whether they are applying their newly acquired skills in their daily work. This will provide documentation about what is working and what needs to be changed or improved to ensure timely adaptation and application of corrective measures.

RESULTS

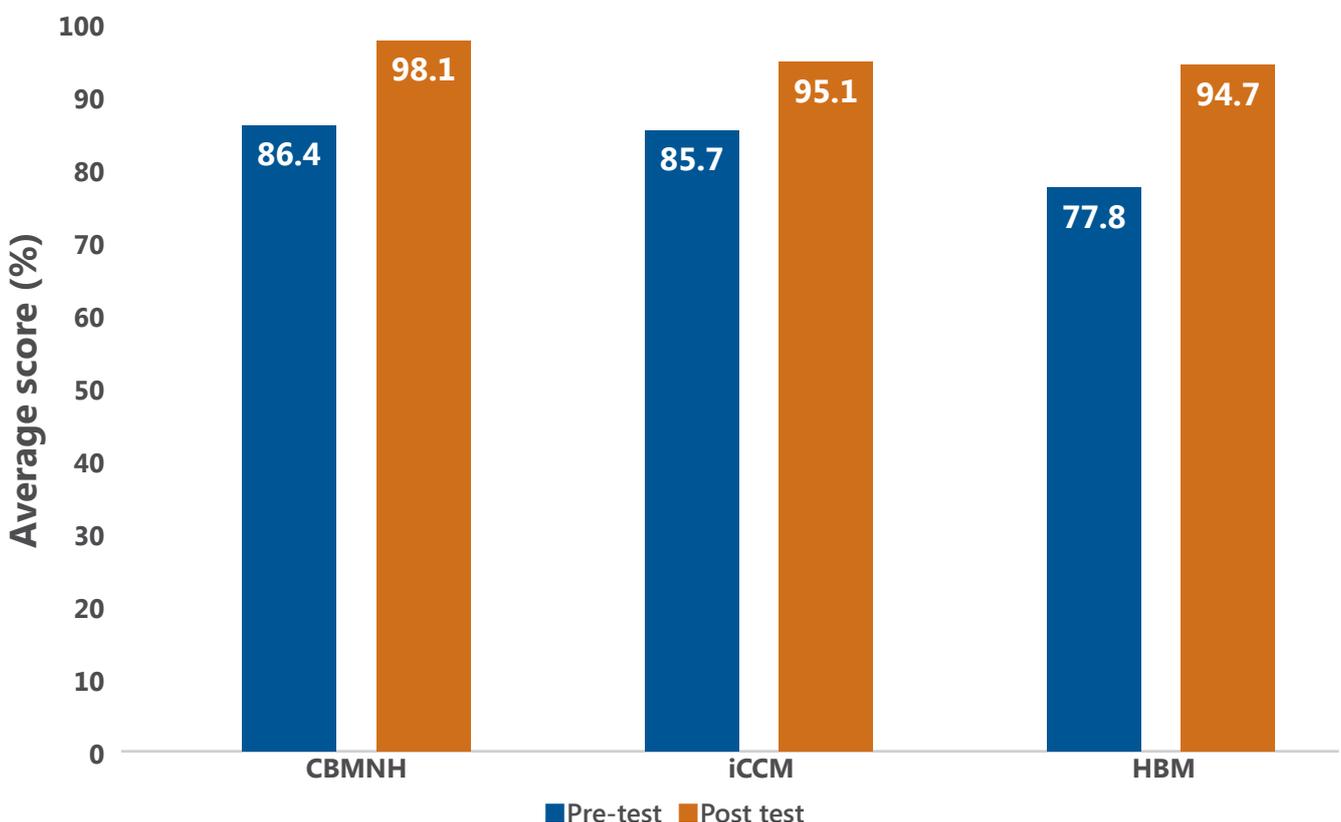
All 100 selected CHWs from the six health center catchment areas enrolled in the eLearning course. All 100 scored above 80% in the post-training assessment. This was particularly impressive because prior to course enrollment, the pre-training digital assessment had revealed that almost all (96%) of the CHWs reported being uncomfortable with using smartphones.

eLearning proved effective in increasing CHWs knowledge in iCCM, CBMNH, and HBM as demonstrated by test results among CHWs from both districts (Figure 1). Community health policy recommends that CHWs should receive refresher training every six months.

Ingobyi also carried out a satisfaction survey after the pilot phase to gather feedback from the CHWs. Key survey findings included:

- 97.2% of CHWs thought the course was well prepared and relevant to their duties.
- All CHWs confirmed that the course content was useful and that they would apply what they learned in providing community health services.
- 86.1% felt that the course was not difficult.
- All CHWs said that the assessments were relevant to what they learned in course modules.
- All CHWs said that the training enabled them to learn and use the new technology for learning.

Figure 1. Pre- and post-test assessment scores of CHWs in eLearning courses



LESSONS LEARNED

eLearning for CHWs is a low-cost intervention.

Traditional training can be expensive and often difficult to maintain. During the pilot phase, no hard copy materials were used—eLearning removes the need for printed training materials for participants, supervisors, and facilitators, contributing to more sustainable and environmentally-friendly workplaces. In addition, updates of modules can be done easily via the Learning Management System on Moodle without having to print and distribute updated training materials. Learners can also save time by accessing content where and when they need to, rather than relying on scheduled training. Facilitators can easily access the course without traveling to training sites as long as they have the offline version of the eLearning courses on their smartphones.

eLearning improves productivity. Based on the pilot results, eLearning provides a convenient training approach that allows learners to complete courses at their convenience thus resulting in improved productivity. Even though the pilot of the eLearning courses was open for up to three weeks, most of the CHWs completed their courses within five days. Most CHWs accessed courses late afternoons and evenings after completing their daily work.

Involvement of various stakeholders in development of multi-media content is key:

Working with CHWs, trainers, and health workers in the design of eLearning materials at an early stage was very important in informing content design. As a result, the team produced user-friendly and appropriate eLearning content for CHWs.

IMPLEMENTATION CHALLENGES

1. *Lack of electricity to charge smartphones.* More than 40% of the CHWs did not have electricity at their homes and were forced to travel long distances to charge their phones.
2. *Smartphone technology challenges.* During the pilot phase, some CHWs had issues with their phones freezing during and after training, and some phone batteries discharged quickly. Ingobyi repaired and/or replaced faulty smartphones as needed. In addition, Ingobyi established an eLearning support team at district level to support CEHOs and CHWs to

address basic technology issues without relying on central-level support. The support team is comprised of two hospital IT officers and six health center data managers.

3. *Unreliable and expensive internet.* Internet connections were generally unreliable and expensive in the pilot locations, which meant that CHWs in some cases had to travel to health centers in their catchment areas to access the internet to participate in assessments and group discussion forums. In anticipation of this challenge, facility internet was used by CHWs whenever they would come for monthly coordination meetings and Ingobyi worked with the MOH to develop a user-friendly mobile app that allows CHWs to access courses offline.

CONCLUSIONS

Even though there are challenges related to electricity, results from this eLearning pilot are promising. The model offers a sustainable, affordable, easy-to-use approach that promotes retention of knowledge and skills among CHWs. The ability to easily adapt and update course content based on local contexts makes this model easily scalable nationwide. As a way forward, there is need to expand the content to include other service packages delivered by CHWs. A follow-up qualitative assessment is planned in 2022 to gain a deeper understanding of strengths and limitations of the eLearning approach before scaling-up to other districts. Ingobyi Activity plans to disseminate findings and lessons learned from the pilot and the follow-up assessment to the MOH and other stakeholders in 2022, and use the opportunity to discuss plans for scale-up of eLearning for CHWs countrywide.

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