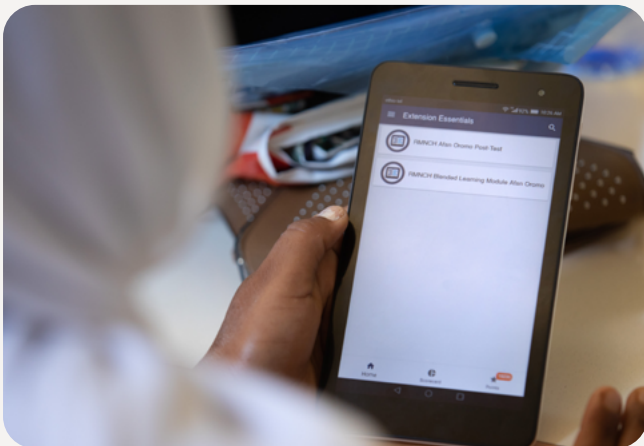


# Optimizing in-service training for community health workers in Ethiopia using an offline mobile application



1. Health worker training at Oromia region. Photo credit: Last Mile Health

## Overview | Digitizing in-service training for community health workers in Ethiopia using an offline mobile application

Ethiopia's Health Extension Program—considered a global exemplar—employs more than 40,000 community health workers. Known nationally as health extension workers, this all-female workforce provides essential health services in rural and remote communities across the country.

Under the program, community health workers are provided in-service refresher courses every two years. This training aims to strengthen their knowledge and skills to improve the quality of health services they deliver to patients. Conventional refresher training is conducted in

person, covers six areas (including reproductive, maternal, neonatal, and child health; social and behavior change communication; hygiene and environmental health; major communicable diseases; common non-communicable diseases; and basic first aid), and is mandatory for all active community health workers in Ethiopia. However, recent analysis by the Ministry of Health found that the traditional training method is resource intensive, was not effectively addressing knowledge and skill gaps, and was impacting community health workers' ability to provide the highest quality of care for their patients.

Starting in 2021, the Ministry of Health launched a partnership with Last Mile Health to transform training based on the organization's 16-year track record of working in partnership with governments to build strong community health systems that equip professionalized community health workers to provide essential primary healthcare in the world's most remote communities. Now, the Ministry of Health and Last Mile Health are working to improve training for community health workers—and care for patients—by developing a blended learning<sup>1</sup> training powered by an offline mobile application. The innovative training has been designed with the potential to scale to all 40,000+ community health workers in Ethiopia.

<sup>1</sup> The innovative blended learning approach is a training solution that incorporates digital and face-to-face components in sessions to deliver holistic learning experience to learners.



# Challenge

In 2019, a Ministry of Health assessment of the [Health Extension Program](#) identified critical challenges in implementing training and supervision for community health workers:

1. In-service training is costly and inconsistently delivered, prohibiting the full cohort of community health workers from completing the refresher course.
2. Gaps in community health workers' knowledge and skills are primarily linked to suboptimal pre- and in-service training.
3. Community health workers do not consistently receive supervision visits and may have outdated information while in the field; physical manuals are often impractical to use as a reference.



In an effort to address these challenges, the Ministry of Health and Last Mile Health have modernized the in-service courses by developing a blended learning training approach, incorporating both in-person and digital self-learning components.



2. Holeta health post visit. Photo credit: Last Mile Health



Together, the Ministry of Health and Last Mile Health launched Extension Essentials, an android application based on the learning platform Moodle, to digitize refresher training, improve the quality of learning resources, and provide interactive content community health workers can access anytime—including offline and in remote settings.

The Extension Essentials application powers the blended learning approach. In this approach, refresher training modules are digitized and include interactive multimedia elements like illustrations, animations, and videos in the learner's language. The curriculum, digitized modules, and accompanying elements of the integrated refresher training rely on approved brand guidelines for refresher training modules developed by the Ministry.

The digital content includes case studies, direct demonstrations, roleplaying activities, and group discussion that engage learners effectively. Pre- and post-training knowledge questions, quizzes, and skills assessments are embedded throughout the modules to provide opportunities for feedback and enhanced learning. Through this blended learning approach:

- + Community health workers receive a mix of in-person and digital **self-learning sessions** to build their knowledge and/or skills, with the Extension Essentials application functioning as the delivery platform for digital sessions.
- + The Extension Essentials application gathers and **displays learner engagement and performance data** to enable real-time assistance to users during training workshops.
- + The application provides the Ministry an **avenue to quickly disseminate information** about new content to all community health workers, like during the COVID-19 pandemic.



3. Health worker training at Oromia region. Photo credit: Last Mile Health

By integrating technology through the Extension Essentials application, the blended learning approach facilitates a flexible learning environment. The application supports digital self-directed learning alongside in-person sessions, providing real-time data analytics for performance monitoring that improve the overall effectiveness of training.

The blended learning approach was designed and piloted with a reproductive, maternal, neonatal, and child health module. The pilot trained 1,122 community health workers and their supervisors in 20 districts across Oromia, Sidama, SNNP, and Amhara regions. After the pilot training, skills assessment scores among learners using the blended approach improved, with an average composite skills assessment score **increasing from 60% to 90%**. Based on the pilot results and the successful implementation of the blended learning, the Ministry of Health elected to scale the approach across all woredas in Ethiopia and digitize the entire portfolio of in-service training modules.

Since the pilot, the Ministry of Health and Last Mile Health have deployed the Extension Essentials application and the blended learning approach to three cohorts of community health workers and their supervisors. Additional scaling of the approach is ongoing, with the long-term goal of training all 40,000+ community health workers in Ethiopia.

Last Mile Health trains health officials and clinicians as course facilitators who implement the blended refresher training sessions: two days of in-person training, five days of digital self-learning using the Extension Essentials app, and a two-day closing session.

Powering the blended learning approach, the Extension Essentials application supports:

- + **Optimization of resources for health worker training** through at-home self-directed learning, reducing the cost of the refresher course while maintaining the rigor and integrity of the program.
- + **Data for decision-making during and after the blended training.** The app provides real-time data to evaluate the training and supports performance tracking that allows the training to be customized to the cohort and each user.
- + **Dissemination of new curriculum.** The app provides an effective method to quickly and easily disseminate new curriculum to health workers in remote areas.

Throughout the implementation of the application and the blended learning approach, Last Mile Health gathers Ministry as well as learner feedback on the content and interface of the application in macro design sessions and workshops. The Ministry and Last Mile Health jointly review all recommendations and determine which core changes to incorporate

in upcoming iterations of the program. This process ensures that the application aligns with the needs and priorities of the Ministry and the learners, fostering ongoing optimizations in the overall design.

In June 2023, the Ministry of Health formalized the blended learning approach for the Health Extension Program, making the approach and the Extension Essentials application integral to in-service training for the community health workforce. The Ministry of Health and Last Mile Health will digitize and deploy the remaining training modules on the Extension Essentials application, starting with the modules on major communicable diseases and non-communicable diseases. Ultimately, all modules will be scaled across all regions in the country.

Once scaled, the Extension Essentials application and the blended learning approach will enable all community health workers in Ethiopia to receive training efficiently, effectively, and cost-effectively—and will equip them to access critical resources offline, anytime, to support better decision-making at the point of care and improve their ability to deliver quality care to their patients.



4. Adama user testing exercise. Photo credit: Last Mile Health

“A standardized integrated refresher training is the best pathway to enhance health extension professionals’ knowledge, attitude, and skills. Therefore, it helps to create a system whereby training is linked to performance, so that the providers would be able to provide quality services to their clients. Now, a digitalized blended learning approach has been a proven approach in order to provide effective, efficient, and quality training.” —**Israel Ataro**, Lead Executive Officer for Community Engagement and Primary Health Care, Ethiopia Ministry of Health

**3,840**  
community health workers and supervisors  
completed the blended refresher training\*

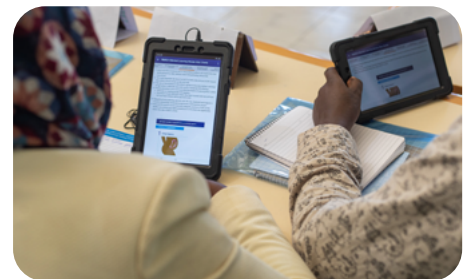


**451**  
course facilitators and health  
information technicians completed  
the blended refresher training

Health workers from **129** woredas in five regions  
(SNNP, Amhara, Oromia, Sidama, and South West)  
received blended training



Community health workers who completed the  
blended training serve a total population of  
**7,678,556.\***



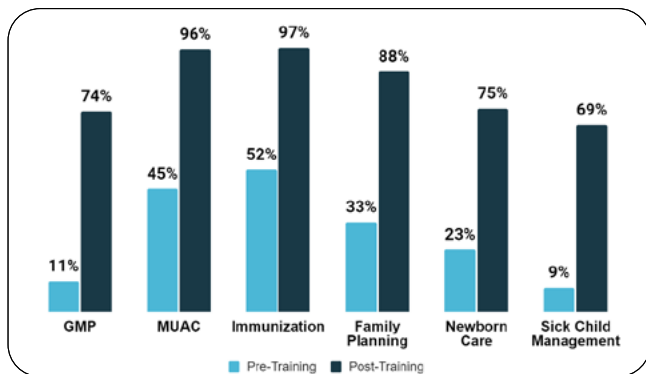
5. Health worker training at Oromia region 6. Holeta health worker using the offline mobile application 7. Health worker training at Oromia region. All photo credits: Last Mile Health

\*Reach totals above reflect all deployments of the Extension Essentials application as of 3 October 2023: pilot, scale-up, and enhanced reproductive, maternal, neonatal, and child health module. Total for population served assumes that one community health worker serves a total population of 2,500.



The Extension Essentials application combines Last Mile Health expertise and Ministry experience in delivering an application that effectively addresses in-service training challenges with impactful results.

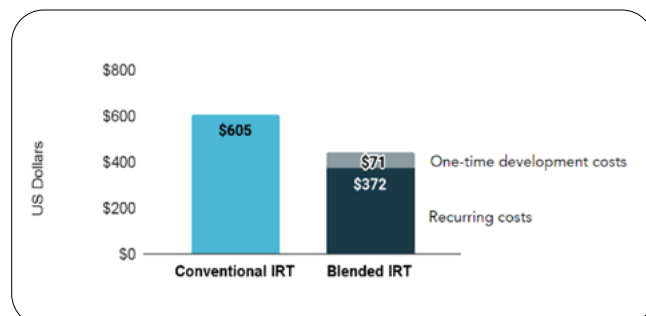
**Figure 1:** Percent of blended training learners with a passing skills assessment score



**+ Skills assessment scores show a marked increase across all training topics supported by the blended learning approach.** With the Extension Essentials application, Last Mile Health has tracked and demonstrated dramatic improvement in skills assessment scores among learners who participated in the blended refresher training. These improvements are present across all key topics defined by the Ministry of Health.

Data as of 3 August 2023. Includes all health extension workers and supervisors from all blended training implementation phases with completed pre- and post-training skills assessments: growth monitoring and promotion (n=1,943), mid-upper arm circumference-MUAC (n=1,340), immunization (n=495), family planning (n=403), essential newborn care (n=397), and sick child management (n=452).

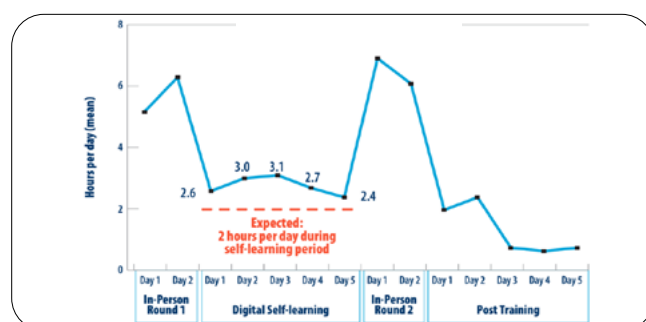
**Figure 2:** Pilot results: cost per learner, conventional vs. blended training



**+ The cost of blended learning training was 39% lower than the conventional training method.** When all factors including effective programming were considered, the recurring costs of implementing blended refresher training with the Extension Essentials application were **39% less costly** than conventional training.

Note: Comparison costs were extrapolated using standard figures provided by the Ministry of Health. Comparison refresher training costs only include recurring costs. Analysis credit: Temesgen Tesfu.

**Figure 3:** Average hours spent in training app (during the pilot)



**+ Learners spend an average of 2.8 hours each day on digital learning with the Extension Essentials application.** During the blended refresher training, community health workers remain engaged on the Extension Essentials application in the digital self-learning period, averaging almost three hours per day.

“The blended training is not even comparable to the other trainings I’ve received. This one was more interactive, more interesting. The app is quite simple to use—it’s friendly...it’s very helpful. You can watch the videos again and again—you can see all the steps and procedures.”

—Serkalem Getachew, a community health worker in Amhara region

# Planning ahead: Sustainability for the future

Following the Ministry of Health's formal adoption of the blended learning approach into community health worker training, Last Mile Health has continued to partner with the Ministry to facilitate the success of the Health Extension Program. Last Mile Health's role includes digitizing the remaining in-service training modules as well as supporting the scale-up of the blended learning approach to more than 2,500 additional community health workers.

Last Mile Health's current focus includes:

- + Adapting new modules into the blended learning format for testing and roll-out on all devices
- + Increasing digital health capacity in Ethiopia and at the Ministry of Health
- + Standardizing and preparing the application and its systems for transition to the Ministry
- + Supporting the transition of the application and its modules to the Ministry
- + Integrating the application with the Ministry's prioritized digital health systems and technologies such as continuous professional development (e-learning) platforms, the electronic community health information system, and [DHIS2](#) (District Health Information Software 2)

Upcoming initiatives for the application will include:

- + Optimizing the application to support specialized use, customized to match the needs of different types of users and learners (such as facility representatives and supervisors)
- + Enhancing the application to accommodate future use cases, such as features that support peer learning and collaboration between learners

Additionally, Last Mile Health supports blended learning facilitators in the field, providing training and troubleshooting support through a network on Telegram; over 178 health technicians are currently engaged.

Together with the Ministry, Last Mile Health will continue to build and support exemplar health system innovations that prioritize primary healthcare access in rural and remote communities: efficient systems, better-trained health workers, and improved access to and quality of care for communities at the last mile.

## LAST MILE HEALTH'S IMPLEMENTATION SUPPORT

Last Mile Health leads the development and testing of the Extension Essentials app, providing:

- Feature development outline in partnership with the Ministry
- Technical requirements gathering and project documentation
- Sprint planning for proposed features
- Application development, testing, deployment, and publishing (with Digital Campus)
- Issues identification and resolution through the development process
- Modules content authoring and review on Moodle (with internal stakeholders)
- Content uploading to the application, updated when necessary
- Device setup, including installing the application and content onto the device during training
- Data visualization for supervisors and facilitators for learner feedback, tracking performance, and learner follow-up
- Troubleshooting guide development and technical support during and after training
- Building facilitators' capacity to address core troubleshooting issues
- Support for continuous improvement workshops to gather and incorporate user and Ministry feedback on the application interface and content



# Key functionalities and features of the Extension Essentials application

The Extension Essentials app's interface is simple to navigate and optimized for users with low technology experience and connectivity.

Developed on an **open-source learning platform** (OppiaMobile and Moodle) and architecture

Suitable for phones and tablets currently deployed by the Ministry; works on any android-based smartphones and tablets with android version above 4.6

## Core functionalities and features

Supports **cross-device content update** when necessary

Passive collection of **learners' performance data**

Continuous **knowledge assessments** track learner progress in a scorecard format

**Gamification** allows learners to see their points earned, rank among their peers, and badge awards for levels completed

**Dashboard** to visualize time spent in the application and completion rate

**Report generation** for tracking completion of activities and providing feedback

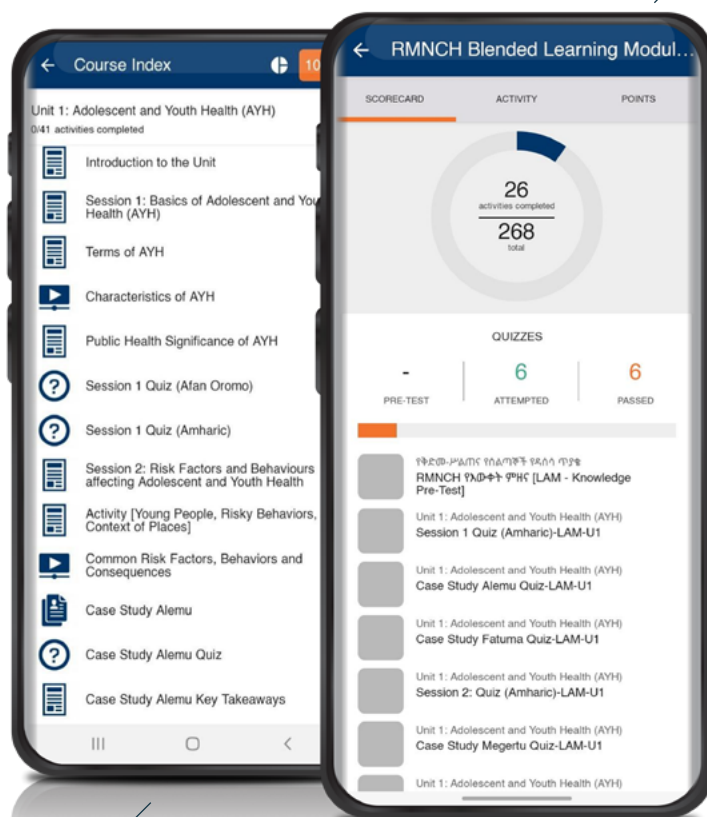
**Offline deployment** with all resources sideloaded using a USB device

**Offline application** means learners can access course content, complete quizzes, and watch videos at any time without needing internet connection

**Sync** enables aggregate of all learners data into a central server (when internet is available)

Summary of learner data for **tailored mentorship and supervision** during refresher training

Flexible to **match user experience** and can be differentiated to match the type of user (facilitator, learner, administrator, facilities representative, etc.)



For **more information** about this case study, contact:

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