



USAID
FROM THE AMERICAN PEOPLE



USAID Eliminate TB Project



Private courier arriving at testing facility with sputum specimen.
Photo Credit: MSH

TECHNICAL BRIEF

TB PROGRAM IN ETHIOPIA FINDS INNOVATIVE WAYS TO IMPROVE SPECIMEN REFERRAL SERVICE

December 2023

BACKGROUND

To ensure effective control of the tuberculosis (TB) epidemic, the World Health Organization (WHO) End TB Strategy calls for early diagnosis, universal drug susceptibility testing (DST), and prompt initiation of effective treatment. But this collective approach can only be successful when all patients have access to diagnostic services regardless of where they live.

Unfortunately, people in resource-limited settings such as Ethiopia often do not have diagnostic facilities located near their homes. Specimen referral systems can address the problem, however, by allowing patients to receive care at their nearest health facility and then transferring their specimens to laboratories at diagnostic centers for testing. In this way, specimen referrals can obviate the need for patients to travel and incur associated costs and thereby enhance equitable access to health care.

Ethiopia has been gathering experience with an integrated specimen referral system, which covers multiple disease programs including HIV and TB, since 2005. In 2017, the Ministry of Health, the Ethiopian Public Health Institute (EPHI), and officials in all the country's administrative regions signed an agreement to outsource specimen referral services at every level, including peripheral facilities, to the Ethiopian Postal Service Enterprise (EPSE). Similarly, the EPHI introduced guidelines and standard operating procedures (SOPs) and prepared a laboratory network and monitoring tools for the service integration. According to the agreement, Ethiopia's postal specimen referral service is a schedule- and phone call-based service that uses vehicles and motorbikes to transport specimens to testing facilities. However, despite those efforts, the country's specimen referral service has faced many challenges due to the limited capacity of EPSE to access some health facilities and deploy vehicles or bikes for specimen transport.

To fill the gap, USAID, through its Help Ethiopia Address Low TB Performance (HEAL-TB) project (2011–2015), bought eight vans with built-in cooling systems to support the referral system. Following the closure of that project, the vans continued to be used extensively by the USAID Challenge TB project (2014–2018). The vans were deployed to Addis Ababa and the Amhara and Oromia regions, and their operations were managed by these two USAID-funded projects in collaboration with the local governments for those areas. During their service period, which ended in December 2018, the vans served more than 200 health facilities and transported a total of 77,298 specimens in an integrated manner (2018 Challenge TB Project Report). The intervention brought about significant improvement in both testing turn-around time (TAT) and specimen quality.

PROBLEM STATEMENT

Despite Ethiopia's implementation of the integrated specimen referral system, 34% of health facilities at the periphery level still do not have access to the service due to EPSE's limited reach (EPHI 2023 Report).

EPSE is often active in cities and towns and on the main roads where postal offices are located. However, some areas without postal offices, along with zones impacted by internal conflict or with little engagement of the private sector, did not have access to TB-related specimen transportation services. Thus, a local alternative means of specimen transport needed to be introduced to demonstrate that a rapid and practical solution to the problem was feasible and available for such situations.

STRATEGIC APPROACH

Building on prior Government of Ethiopia and USAID investments, the USAID Eliminate TB Project (2020–2025) has been working with EPHI to strengthen the specimen referral and laboratory network to execute, coordinate, and monitor the functioning of the specimen transportation service to maximize efficiency. The project has been collaborating with the National TB, Leprosy, and other Lung Diseases Program (NTLLDP) and EPHI to strengthen the current specimen referral system and improve access to highly specialized diagnostic services using GeneXpert machines at or near the point-of-care as well as additional advanced testing (culture and DST, line probe assay) at the national and regional levels. The project also worked with partners to contribute to a national diagnostic network assessment (DNA) and to the new LabXpert connectivity solution, which has enabled EPHI to monitor the performance of GeneXpert machines and the contribution of referred samples to the total testing. The findings from the DNA also helped EPHI update the national specimen referral and laboratory network mapping and enhance the quality of specimen transportation across the tiered laboratory network, including by improving coordination between referring and high-load health facilities. At the regional level, the project tested two different alternative specimen transportation models: one in the Amhara region in conflict-affected zones and one in the Sidama region to reach health facilities that previously had no access to the postal service-based transportation system. Together, these interventions have both enhanced access to TB laboratory services at all levels by opening up specimen transportation to couriers other than EPSE and empowered regions to manage specimen referral to meet their needs (figure 1).

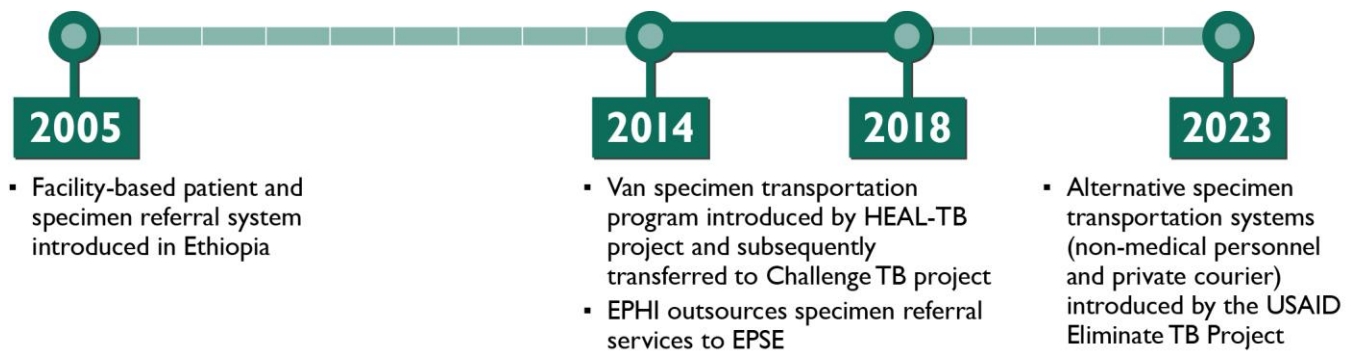


Figure 1: Timeline of specimen transportation interventions in Ethiopia

INTERVENTIONS

Testing alternative specimen transportation models in the Amhara and Sidama regions

Amhara region: Use of non-medical personal as couriers in conflict-affected zones

Beginning in June 2021, access to TB laboratory testing services in some areas became compromised due to conflict in the country. As one of the more highly impacted regions, Amhara needed an alternative mechanism for transporting specimens in order to rapidly restore the service in the aftermath of the conflict (figure 2).

As part of its post-conflict response activities, the USAID Eliminate TB Project implemented an alternative specimen transportation model in 6 zones, 25 woredas, and 119 health facilities in the Amhara region using trained administrative staff and other non-medical personnel such as cleaning staff and guards from non-GeneXpert sites as

couriers. Those individuals would pick up specimens twice per week from high-load health facilities and once per week from low-load health facilities and deliver them to GeneXpert sites, which in turn would send the results to the referring facility via Telegram Messenger within a day of when the test was performed. Additionally, one laboratory adviser was employed specifically for the region to help with coordination, offer mentoring, provide regular supportive supervision, and review biweekly specimen referral activities. Regional specimen referral networking and mapping was used to link specimen referring facilities with GeneXpert sites.

The project presented the results of the alternative courier experience in the Amhara region to the EPHI and advised that similar specimen transportation arrangements be implemented in other places as a short-term strategy. Based on that recommendation, the EPHI endorsed the non-medical personnel specimen courier approach for the rest of the country. In August 2023, through the USAID Eliminate TB Project’s financial and technical support, the EPHI signed a memorandum of understanding with nine regions to implement non-medical personnel alternative specimen transportation arrangements to serve 1,274 previously inaccessible health facilities.

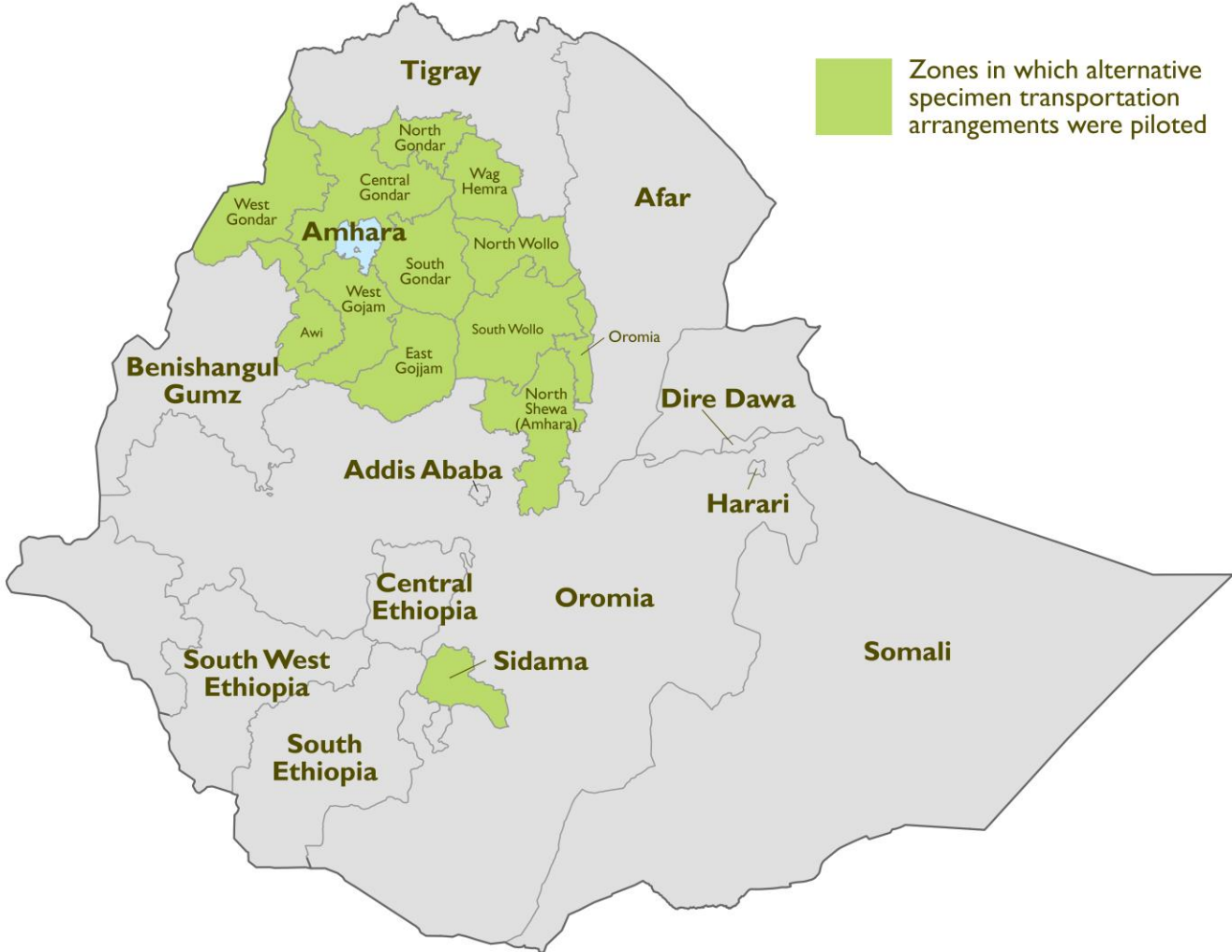


Figure 2: Map of Ethiopia with regional boundaries: Sidama and Amhara are regions in which alternative specimen transportation arrangements were piloted

Sidama region: Use of private couriers to access hard-to-reach health facilities

The USAID Eliminate TB Project also worked with the Sidama region to pilot and implement an alternative private courier specimen referral service as a way of facilitating testing for health facilities with no access to the EPSE service due to a lack of roads and/or public transportation. For this initiative, a triparty agreement was signed among the Sidama Regional Health Bureau, the USAID Eliminate TB Project, and a private courier company to transport specimens from 17 selected non-GeneXpert sites or specimen-referring health facilities. Under the pilot, the specimens were transported via motorbikes that were already located in the areas where the specimen-referring health care facilities were sited. The motorbike drivers, who had been trained by the project on safe transportation practices and the tracking system, would pick up sputum samples twice per week, transport them to the nearest GeneXpert site, collect lab results, and deliver those results back to the referring health facilities. For this initiative, coordination and communication between referring and testing sites were vital for ensuring accessibility, efficiency, safety, and the timeliness of sputum pickup and transport and lab results delivery.



Private courier launching in Sidama region and orientation for specimen transporters. Photo Credit: MSH

RESULTS AND ACHIEVEMENTS

Alternative specimen transportation in the Amhara region

During the pilot implementation period (September 2022 to January 2023) in the Amhara region, specimens from 4,473 persons with presumptive TB at 118 facilities were transported and tested by GeneXpert, from which 135 mycobacterium TB positive (MTB+) and 3 rifampicin-resistant TB (RR-TB) results were reported (figure 3). TAT from picking up the specimen from the referring facility to returning the results using Telegram was reduced from 7–14 days to 24–48 hours. This intervention reduced the cost of specimen transfer by 45% (from 7,900 ETB to 4,400 ETB) compared to the cost of eight rounds per month of specimen transportation and results delivery by the EPSE.

Based on the lessons learned from the pilot in Amhara, the model was scaled up in nine regions of the country, with the goal of ultimately providing GeneXpert testing to 1,274 previously inaccessible health facilities. By January 2023, the Amhara model was being implemented at 777 health facilities (61% of the planned facilities) in the nine regions. From those 777 facilities, a total of 22,623 specimens—19,657 (87%) of which were from project-supported regions—were referred and tested by GeneXpert between January and June 2023.

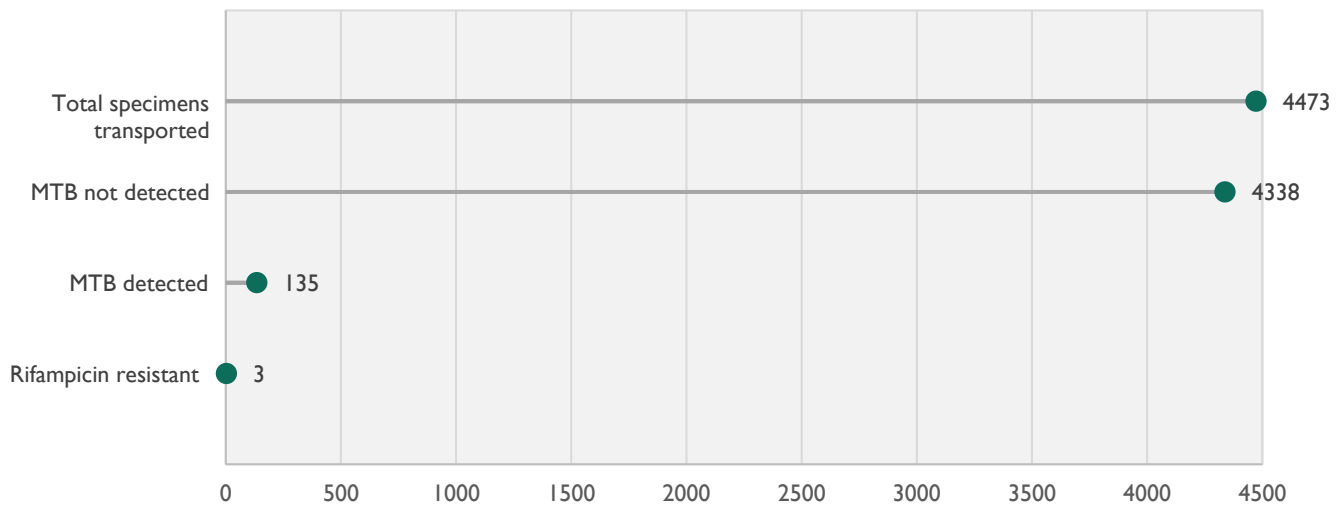


Figure 3: Results from the alternative specimen transportation pilot in the Amhara region, September 2022–January 2023

Sidama’s private courier specimen transportation pilot program

From January to June 2023, a total of 1,422 specimens were transported and 146 MTB+ and 4 RR-TB cases were detected through the private courier alternative transportation pilot program in the Sidama region (figure 4). At the end of the pilot period, the USAID Eliminate TB Project handed over the alternative specimen transportation activities to the Sidama Regional Health Bureau, which agreed to continue providing motorbike transportation service to 10 previously inaccessible health facilities.

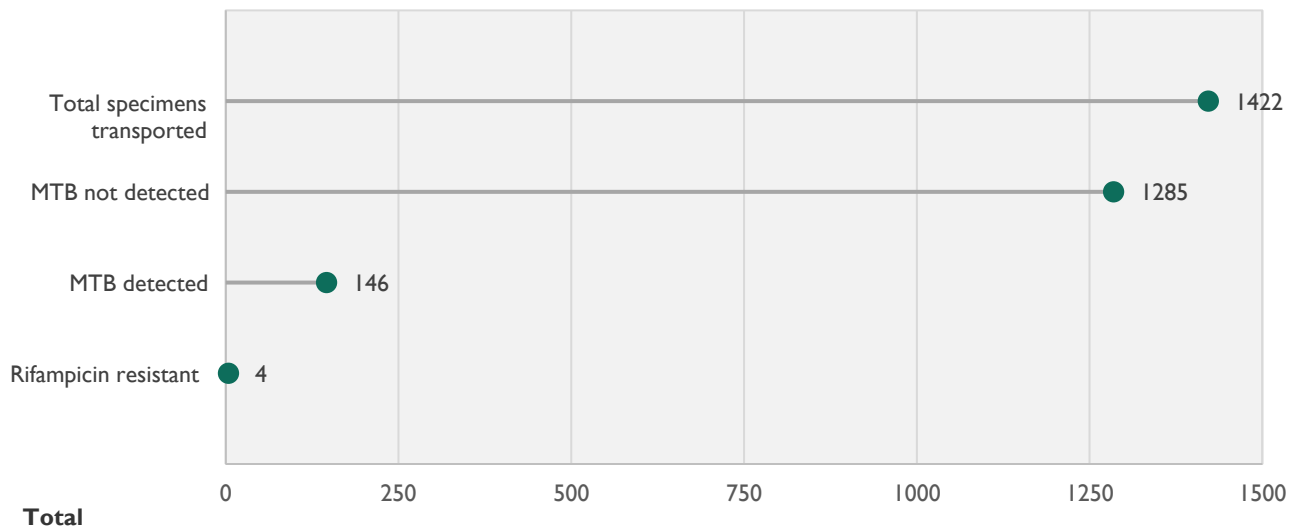


Figure 4: Results from the private courier specimen transportation pilot in the Sidama region, January–June 2023

LESSONS LEARNED

- The involvement of the regional health bureaus, regional public health institutes, woredas, and health facilities in the pilots in both regions enhanced ownership and the sustainability of the alternative models.
- Evidence generation and the availability of technical working groups to advise decision-making authorities such as EPHI are essential for creating an environment in which policy changes can take place.
- Currently, the non-medical personnel specimen transport service model from Amhara has been scaled up and is being implemented by EPHI in nine regions to fill gaps in the EPSE specimen courier system and ensure service to all previously inaccessible health facilities.
- The alternative specimen referral system using the private couriers is also worth considering for sustainability.
- Employing multiple context-appropriate specimen transportation mechanisms is important for enhancing access to GeneXpert testing, monitoring performance, and reducing cost.

THE WAY FORWARD

- While EPHI has already scaled up the use of non-medical personnel as an alternative specimen transportation system, the private courier model should also be considered as an alternative for filling remaining gaps created when neither the postal system nor the non-medical personnel courier option is feasible.
- EPHI may need technical support to conduct a diagnostic network optimization exercise to further analyze the current network and recommend improvements that will help Ethiopia achieve its national health goals—especially its goal of providing greatest access to laboratory service.

ACKNOWLEDGMENTS

The USAID Eliminate TB Project thanks the Sidama Regional Health Bureau and Sidama Public Health Research Institute, the Amhara Regional Health Bureau and Amhara Region Public Health Institute, and EPSE for their strong collaboration and coordination in executing the pilots and subsequent scale up. We are very grateful to the project regional managers and the regional lab advisers.

This brief was written by Gudeta Tibesso, with contributions by Zewdu Gashu and Daniel Gemechu. The following individuals contributed to the development of this brief: Sidhartha Deka and Alaine Umbyeyi Nyaruhirira.



This document is made possible by the generous support of the American people through the US Agency for International Development (USAID) cooperative agreement no. 72066320CA00009. The contents are the responsibility of Management Sciences for Health (MSH) and do not necessarily reflect the views of USAID or the United States Government.

