The World Health Organization (WHO) listed Ethiopia as one of the 30 high tuberculosis (TB), TB/HIV, and drug-resistant TB (DR-TB) burden countries. According to a WHO estimate, 2.7% of new and 14% of previously treated TB cases were expected to have DR-TB, which equates to about 2,700 multidrug-resistant (MDR)/rifampicin-resistant (RR) TB cases in 2017. However, only 741 (27%) of the estimated MDR/RR TB cases were notified that year.

There is limited capacity in expanding and decentralization of services, provision of drugs and supplies, laboratory networking and sample referral, delivery of laboratory results, and laboratory facilities for patient monitoring. The National TB Programme (NTP) in Ethiopia committed to decentralizing and scaling up implementation of DR-TB management by using an alternative ambulatory model to increase access to care.

Challenge TB (CTB) is a strategic partner to NTP in ensuring implementation of successful programmatic management of DR-TB (PMDT) in Ethiopia. Ethiopia implemented ambulatory care for DR-TB cases by expanding treatment initiating centers (TICs) and treatment follow-up centers (TFCs) to ensure access. The global average achievement of DR-TB treatment success was 55%—Ethiopia surpassed it and achieved 75%. The NTP currently is using shorter treatment regimens (STRs) and is implementing new drugs at varying scale in the regions of the country.

FIGURE 1. TIC expansion from HEAL TB to CTB
Because the number of TICs was limited, patients had to be admitted to facilities far from home. This affected access to service, was expensive, and caused an accumulating waiting list of patients, some of whom died while waiting.

The number of TICs was expanded (figure 1) rapidly by renovating existing health facilities to enable DR-TB care; these efforts were supported by partners that provided technical support.

### STRATEGIC APPROACH

Previously, the NTP implemented the hospitalized model of DR-TB management, which is highly centralized, not accessible to patients in remote areas, and expensive for patients and the overall health system. Inefficiencies and long waiting times resulted in many patients not receiving the life saving care they needed. NTP’s vision was to rapidly ensure wide coverage, so they mapped the necessary steps to achieve its objective. From consultation to planning and implementation, NTP and partners worked together to map facilities, identify gaps, build technical capacity, mobilize resources, and implement the ambulatory model of care, guided by the ExpandNet framework.³

**FIGURE 2. Core areas of programmatic management of DR-TB in Ethiopia**

- Create enabling environment through renovation, policy and decision-making support, training, and supportive supervision and monitoring
- Procure drugs, laboratory supplies, guidelines, registers, and job aids; pharmacovigilance
- Improve case finding by increasing access to universal DST and introducing and expanding new drugs and treatment sites
- Provide patient care, including follow-up diagnostic and treatment services, counseling, and psychosocial support

**PMDT**
In 2013, the NTP shifted from the hospitalized model of care to the clinic-based ambulatory model to rapidly expand the service to the periphery and customize service delivery to the local context to ensure patient friendly services. This model is designed to provide outpatient treatment based on the decision of the clinical team. Temporary inpatient care is reserved for patients who develop severe adverse events in the course of treatment. However, patients with serious medical or social issues also may be admitted.

CTB identified and targeted the following strategic support areas (figure 2) to address the main challenges of PMDT services in Ethiopia:

### PROJECT IMPLEMENTATION

Within the model of care, the NTP maintained the core functions of designing policy packages at the national level, building the capacity of the PMDT service within the NTP, ensuring delivery of routine care within the diagnostic and clinical services, and supporting patients during the course of treatment enrollment and follow-up. CTB supported these core functions in the following ways:

#### Designing policies, guidelines, and standard operating procedures
- Revised national guidelines to reflect policy and implementation changes
- Decentralized the ambulatory model of MDR-TB service to TICs and TFCs
- Improved access to quality lab services and universal culture and DST (CDST)
- Introduced and expanded STRs and new drugs
- Ensured availability and distribution of supplies
- Conducted pharmacovigilance

#### Building capacity
- Strengthened PMDT technical working groups and partnerships
- Built lab capacity and networking: Xpert, line probe assay for second-line drugs (SL-LPA), conventional CDST, and sample referral
- Conducted regular training for health care workers
- Procured and ensured availability and distribution of commodities

#### Delivering routine clinical care
- Renovated TICs and culture laboratory facilities
- Procured and distributed reagents and test kits to diagnostic sites
- Strengthened clinical review panel for patient assessment and decision making
- Linked TIC to TFC for patient treatment and follow-up
- Networked to diagnostic sites for Xpert, SL-LPA, and CDST and used sample referral system
- Conducted active adverse drug events monitoring: clinically and by laboratory tests
- Conducted catchment area meeting with TFC and TIC teams
- Extended expert clinical consultation for challenging cases from the central level
- Conducted mentoring and supportive supervision to TICs and TFCs

#### Supporting patients during treatment and follow-up
- Provided patient adherence counseling and nutritional and psychological support
- Observed monthly MDR day in the catchment area
- Conducted household contact screening of DR-TB patients
- Provided expert patient consultation to DR-TB patients on treatment
- Improved treatment success of DR-TB patients
PHASED IMPLEMENTATION

Initial phase

Based on the challenges to patients, cost to the health system, and impact on outcome, the NTP and its partners coordinated a series of meetings to assess the options to overcome the obstacles. The pros and cons of the clinic and ambulatory models of care were identified and possible mechanisms and resources to scale up the ambulatory model were discussed and agreed upon with stakeholders; implementation will require revision of guidelines, capacity building, renovation of facilities, and provision of commodities.

The ambulatory care model was initiated in 2013 in 8 TICs and 120 TFCs prepared to deliver service in-country at baseline. Most TFCs did not have patients, as enrollment started in the TICs that link patients to the TFCs. However, the TFCs were made ready in terms of technical capacity and facility preparedness to accommodate DR-TB cases. Implementation has provided improved access to care and increased DR-TB enrollment; it was also found to be patient-centered as patients could access the service within a reasonable distance from their homes. Based on assessment of the capacity of health facilities and driven by the needs of the health system, step-by-step support was provided to ensure wider coverage.

Scale-up phase

Rapid decentralization and scale-up of DR-TB management was led by program capacity building for policy makers, training health workers about the programmatic management of DR-TB, and building infrastructure. This phase also established TICs for stabilizing patient and treatment initiation and TFCs for DR-TB outpatient follow-up. Clinical review panels, which include professionals from different departments (psychiatry, drugs, and supplies), clinicians, and other laboratory professionals, were established to provide support in assessing patients for admission or linking to care. Patients started on treatment will be assessed for clinical stability, and if their general condition is good, they will be linked to a TFC for ambulatory care. There is regular follow-up and clinical evaluation for patients in the TFCs and TICs, which are supported through monthly catchment area meetings.
Expanding Ambulatory Care to Treat Drug-Resistant TB in Ethiopia

RESULTS AND ACHIEVEMENTS

Programmatic support, training, mentoring, and supportive supervision were regularly conducted at TICs and TFCs. Since implementation of the ambulatory model in 2013, the service has rapidly expanded to 43 TICs and 426 TFCs (figure 3). The number of TICs and TFCs varies by region, based on their population, size, and health service coverage, with the most in the Amhara and Oromia regions (table 1).

![Figure 3. Expansion of TICs and TFCs from 2013–2018 in CTB-supported regions](image)

**Table 1. Expansion of TICs and TFCs in CTB-supported regions of Ethiopia**

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**Table 2. DR-TB case enrollment and treatment success for 24-month regimen in CTB-supported regions**

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**Average**

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**Figure 4. DR-TB TSR of CTB-supported regions (percentages are averages)**

- **Oromia**: 86%, 78%, 74%, 75%, 81%
- **Amhara**: 82%, 73%, 39%, 81%, 81%
- **Tigray**: 73%, 63%, 63%, 80%, 79%
- **Global**: 71%
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Authors
This publication was written by Daniel Gemechu, with contributions from Degu Jerene and Nebiyu Hiruy.

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