

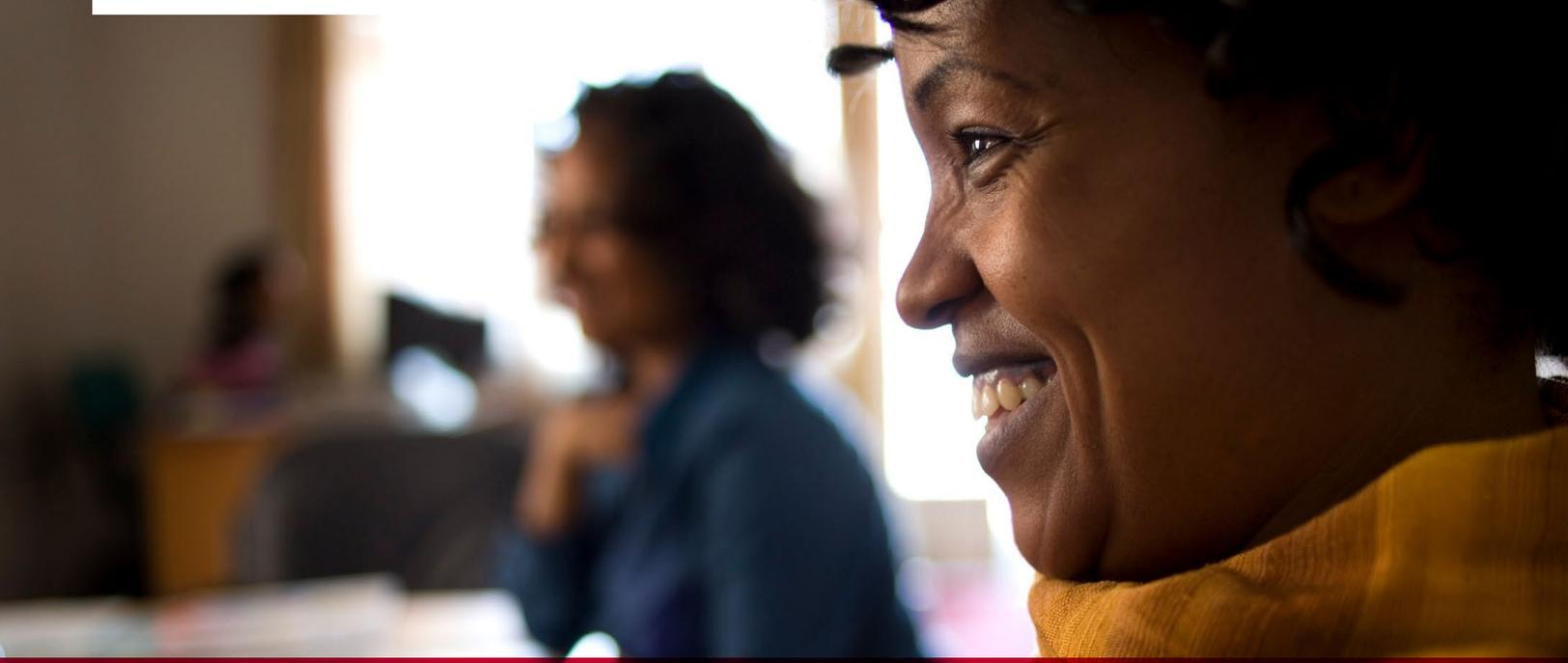


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**CHALLENGE TB**

## TECHNICAL HIGHLIGHT



# Blended learning to build the capacity of TB program officers and clinicians: Experience from Ethiopia

## BACKGROUND

Ethiopia is a high-TB-burden country with about a third of TB patients reported as missing (WHO 2016). A shortage and frequent turnover of trained health workers were among the critical barriers to expanding access to TB services. For many years, the Ethiopian TB program relied on off-site, workshop-style trainings to meet human resource training needs in its national TB program (NTP). This off-site training approach was expensive and often led to staff attrition as health workers were required to stay away from their duty station for several days. With increasing pressure for domestic resource mobilization, new and cost-effective training solutions needed to be explored.

Cognizant of these challenges, the Ethiopian Federal Ministry of Health (FMOH) issued a directive to implement more cost-efficient, in-service trainings for health workers

(FMOH 2014). The use of blended learning (BL), an approach that combines independent reading with short off-site training, was one of the recommended methods, according to the FMOH guidance.

Management Sciences for Health (MSH), under the guidance of the NTP and in partnership with the All-Africa Leprosy, Tuberculosis and Rehabilitation Training Center (ALERT), pioneered the BL approach for TB training in Ethiopia. The work was supported through two successive USAID projects (HEAL TB and Challenge TB [CTB]), and ALERT was a partner in both projects. In this technical highlight, the process and outcomes of this successful partnership toward ensuring sustainable delivery of quality TB services in Ethiopia are described.

ETHIOPIA

## STRATEGIC RESPONSE

A phased approach was used that began with a pilot which generated evidence, followed by wider-scale implementation under routine

program conditions. In both phases, MSH took the role of technical coordination in partnership with the ALERT training center and regional

health bureaus; financial support was provided through HEAL TB and CTB for the pilot and scale-up phases, respectively.

## IMPLEMENTATION

The main objective of the pilot phase was to assess the effectiveness of BL for the in-service training of health care workers on the national TB training material in Ethiopia, particularly in comparison to traditional training techniques.

The intervention group received blended training and was located in the Finfinnee Zuria zone while the control group was trained through

the traditional workshop approach in South West Oromia. The participants did not know if they were part of the intervention or control groups.

The tuberculosis, leprosy, and HIV (TBL/HIV) guideline (5th edition), endorsed by the NTP, was used in both groups. The intervention group received a printed copy of the national TBL/HIV guideline to read a month prior to the trainings. At the

end of the 30 days, a three-day, face-to-face training was conducted in required practical sessions by using traditional facilitation. The control group participated in a six-day, face-to-face training workshop that used the traditional facilitation approach recommended by the NTP.

Evaluation of the intervention was conducted using three of the four levels of the Kirkpatrick model of post-training evaluation by comparing knowledge retention, level of participant satisfaction, and behavioral changes (figure 1). Additionally, the cost and time for course delivery was compared for both groups.

Qualitative and structured data collection tools were used, including pretest and post-test results, training reports, participant course evaluations, financial documents, participant interviews, and TB clinic registers. All in-person trainings, both in the intervention and control groups, took place between May and June 2014. During this time, data was collected on satisfaction of training, knowledge retention, number of in-person training days, and cost of each training. Three months later, in September 2014, a post-training follow-up was conducted to assess differences in participants' practice behaviors.

FIGURE I. Kirkpatrick's four levels of training evaluation



Fourth-level programmatic outcomes are excluded from this technical highlight because of challenges with data.

## RESULTS

During the pilot phase, 221 participants took part in the training—157 received BL and 64 received traditional training (as a control group). For both the intervention and control groups, participants rated their level of satisfaction with the training and were assessed on knowledge retention. Figures 2 and 3 show participants' attitudes toward traditional training methods and BL methods, respectively, for eight selected questions.

There was no statistical difference between the intervention and control groups when it came to retaining course material and satisfaction with the training (table 1). Participants had similar positive attitudes toward their training—both the intervention and control groups were satisfied with the training they received.

When the cost and duration between the intervention and control groups were compared, using the BL approach saved three days and \$118.20 per participant. For the control group, it cost \$235 per participant for six days of in-person training. For the intervention group, it cost \$116.80 per participant and three days of in-person training.

FIGURE 2. Trainees' perspectives on traditional learning using eight selected questions (Southwest Oromia, 2014–2016) evaluation

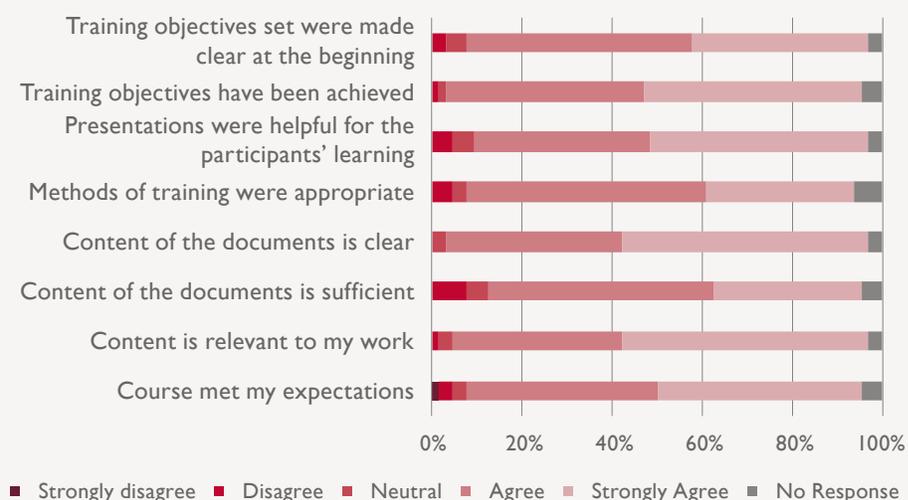


FIGURE 3. Trainees' perspectives on BL using eight selected questions (Southwest Oromia, 2014–2016)

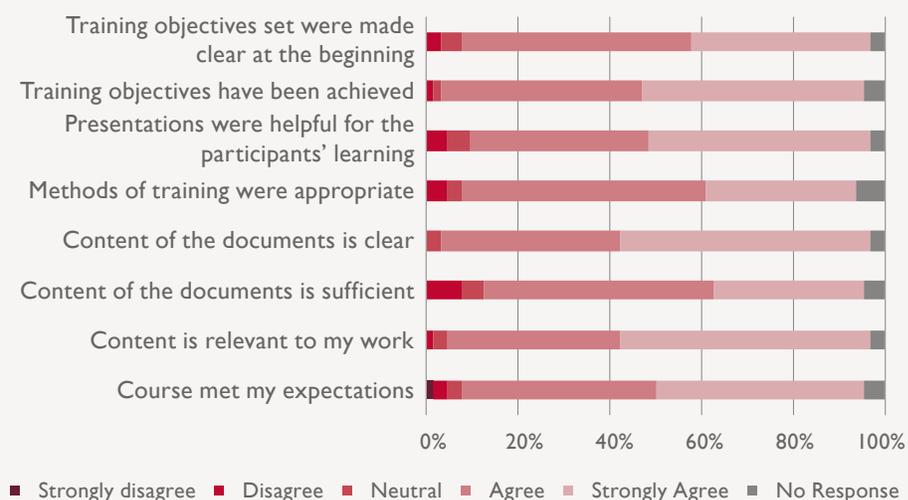


TABLE 1. Satisfaction and knowledge assessment of trainees and unit cost of instruction delivery for both training approaches

CHARACTERISTICS	RESULT	TRADITIONAL	BLENDED
Knowledge assessment out of 100*	Pre-test [mean, SD]	53.9 (10.1)	49.5 (11.3)
	Post-test [mean, SD]	62.9 (13.4)	61 (15.3)
Composite attitude score out of 65*	Range	38–65	15–65
	Median (IQR)	57 (53–60)	55 (52–59)
Cost of training delivery in USD per person	Mean	235	116.80

\*Difference in knowledge and attitude score between traditional and BL ( $p < 0.05$ ).

TABLE 2. Change in service delivery behavior measured three months post-intervention in intervention (BL) and control (traditional learning) groups

BACKGROUND	TRADITIONAL LEARNING (N = 64)		BL (N = 107)		CHI-SQUARE (P-VALUE)
	FREQUENCY	%	FREQUENCY	%	
<b>Trainee currently on service</b>					
Yes	46	71.9	94	87.9	5.852 (p = 0.016)*
No	18	28.1	13	12.2	
<b>Trainee used documents provided in the training</b>					
Yes	46	71.9	84	78.5	0.636 (p = 0.425)
No	18	28.1	23	21.5	
<b>Shared the training information to colleagues</b>					
Yes	45	70.3	81	75.7	0.354 (p = 0.552)
No	19	19.7	26	24.3	
<b>Training knowledge and skill applied to routine activity</b>					
Yes	46	71.9	94	87.9	5.852 (p = 0.016)*
No	18	28.1	13	12.2	
<b>Sent TBL report quarterly</b>					
Yes	42	65.6	79	73.8	0.937 (p = 0.333)
No	22	34.4	28	26.2	
<b>Gives priority to coughing patients</b>					
Yes	45	70.3	77	72.0	0.003 (p = 0.955)
No	19	19.7	30	28.0	
<b>Availability of IP focal person</b>					
Yes	27	42.2	71	66.4	8.598 (p = 0.003)**
No	37	57.8	36	33.6	
<b>Takes proper history</b>					
Yes	42	65.6	91	85.0	7.652 (p = 0.006)**
No	22	34.4	16	15.0	
<b>Undergo relevant physical exam</b>					
Yes	39	60.9	82	76.6	4.041 (p = 0.044)*
No	25	39.1	25	23.4	
<b>Practices DOTS appropriately</b>					
Yes	44	68.8	91	85.0	5.456 (p = 0.019)*
No	20	31.2	16	15.0	
<b>Provide appropriate treatment</b>					
Yes	45	70.3	89	83.2	3.187 (p = 0.074)
No	19	19.7	18	16.8	
<b>Proper patient counseling</b>					
Yes	44	68.8	96	89.7	10.494 (p = 0.001)**
No	20	31.2	11	10.2	
<b>Appropriate documentation</b>					
Yes	45	70.3	85	79.4	1.364 (p = 0.243)
No	19	19.7	22	20.6	

\*p &lt;0.05; \*\*p &lt;0.01

Following the training, the study compared behavior changes toward work practices between the intervention and control groups in the same health facility. Overall, six behaviors were found to be statistically insignificant and practiced comparatively between the intervention and control groups. The other seven behaviors had a statistically significant difference between those who received traditional training and those who took a BL approach (table 2).

The behaviors that were practiced by both groups with no significant difference include using documents provided in training, sharing information from training, sending quarterly reports on TB/HIV, prioritizing coughing patients, providing appropriate treatment, and documenting appropriately.

Behaviors completed in higher proportions by the intervention group included currently serving as a health care worker, applying knowledge and skill from training to routine activities, a TB focal person being located in their health facility, taking proper history from patients, conducting proper patient counseling, undergoing relevant physical exam, and practicing directly observed treatment, short course (DOTS) appropriately.

## SCALE-UP PHASE (2016-2018)

Based on the positive outcomes of the evaluation during the pilot phase, the BL approach was endorsed for routine implementation. To expand use of the approach, the CTB Project provided additional infrastructure and technical and financial support. Box 1 summarizes the package of support provided to ALERT to strengthen the BL approach.

Moreover, the scope of services provided through the video conferencing facility was expanded to include live clinical consultations on multidrug-resistant TB (MDR-TB) services. After the success of BL trainings and MDR-TB live consultations, other service units of the ALERT Hospital started using the facility to conduct specialty trainings in other clinical areas, including subspecialty training in plastic surgery.

Achievements during the scale-up phase included the following:

- Ensured institutionalization of the BL approach by developing implementation guides, training curriculum, training manual, and monitoring and evaluation (M&E) framework
- Decentralized video conferencing capacity to three additional regions
- Trained 219 health workers on the comprehensive TB and TB/HIV curriculum
- Conducted regular clinical consultation on MDR-TB case management (table 3 summarizes the training data)
- Trained MDR-TB clinicians from all over the country on using smartphone-based audiometry for monitoring the side effects of MDR-TB drugs



Doctors attending training on shoebox audiometry for MDR-TB patients led by Canadian trainer (photo: Andualem Aklilu)

### Box 1. Package of support provided to ALERT to strengthen the BL approach

- Updated the BL curriculum for comprehensive TB/HIV training based on the revised national guidelines
- Supported the FMOH to develop national guidelines and a training manual for BL
- Provided full sets of video conferencing equipment to three sites in Amhara, Oromia, and the Southern regions
- Developed a functional website to enhance the capacity of the training center
- Supported the development of an M&E framework

TABLE 3. Summary of training data for the scale-up phase

TRAINING/CONSULTATION	NUMBER OF TRAINEES/ROUNDS
Comprehensive TB/HIV training	219
Shoebox audiometry orientation	40
MDR-TB clinical consultation	7 rounds

## WAY FORWARD

Because Ethiopia has low rates of computer literacy and computer ownership, using technology and the internet to enhance learning is not always feasible. The BL approach incorporated low-tech with independent, self-paced study and shortened, in-person trainings. BL is an affordable approach that can be sustained with minimal external funding.

Using the blended approach, it is possible to engage 50 to 60 participants at a time, compared with the traditional classroom capacity of 15 to 20. An average of three working days of displacement was minimized with this approach and the cost of training was reduced by 50%. During the scale-up of this approach, video conferencing was

successfully explored as another non-traditional option to maximize the reach of training. This approach should be explored and replicated for distance learning and service delivery purposes.

About half of the service delivery behaviors were practiced more often by those who received the BL training, whereas the remaining behaviors were practiced equally between the two groups. Further investigation is needed to better understand this approach and how it affects the connection between service delivery behaviors and patient-level outcomes. The approach may be particularly useful in private health facilities; in future efforts, the approach should be evaluated among private health-facility practitioners.

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