



ETHIOPIA  
MINISTRY OF HEALTH



**USAID**  
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The Rapid Expansion of  
Comprehensive, High-  
Quality Tuberculosis  
Services in Ethiopia

# HEAL TB

WARREN ZELMAN



## APPENDICES

HELP ETHIOPIA ADDRESS LOW TB PERFORMANCE (HEAL TB) PROJECT 2011–2016

The Rapid Expansion of Comprehensive,  
High-Quality Tuberculosis Services in Ethiopia

## HEAL TB APPENDICES



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Appendices extracted from:

*The Rapid Expansion of Comprehensive, High-Quality Tuberculosis Services in Ethiopia*

Final Report: Help Ethiopia Address Low TB Performance (HEAL TB) Project 2011–2016

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Appendix A. Performance Monitoring Plan and Achieved Results, July 15 2011–July 14, 2016

Indicator	PY1			PY2			PY3			PY4			PY5		
	Target	Actual	%	Target	Actual	%	Target	Actual	%	Target	Actual	%	Target	Actual	%
<b>Result 1 (Expected Outcome 1): HEAL TB performance shall assist the regional/zonal TB programs to reach a minimum case detection rate of 70% and treatment success rate of 85% of detected cases in the respective</b>															
<b>Technical Area 1.1. Political Commitment</b>															
<b>1.1.1</b>	No. people covered by USG-supported health financing arrangements	23,500,000	23,500,000	100	25,700,000	25,600,000	100	41,000,000	50,800,000	50,000,000	54,546,761	101	55,000,000	54,546,761	100
<b>1.1.2</b>	Number of <i>woreda</i> annual operational planning meetings conducted	193	163	84	187	188	100	361	348	471	471	100	471	n/a	n/a
<b>Technical Area 1.2. Strengthening Laboratory Services and Systems</b>															
<b>1.2.1</b>	Total number of HFs capacitated to provide TB microscopy diagnosis	691	484	70	691	691	100	1,301	1,614	1,600	1,550	97	1,550	1,550	100
<b>1.2.2</b>	Number of laboratory professionals trained in AFB microscopy, internal and external quality assurance	1,180	1,071	90.7	n/a	870	n/a	1500	1175	528	368	70	200	0	0
<b>1.2.3</b>	Percent of USG-supported laboratories performing TB microscopy with over 95% correct microscopy results	70	90	n/a	95%	97.20%	n/a	95%	96%	95%	96.10%	n/a	95%	96%	n/a
<b>1.2.4</b>	TB microscopy laboratory coverage in USG-supported areas	90	70	n/a	100%	100%	n/a	100%	>100%	100%	>100%	n/a	100%	>100%	n/a
<b>1.2.5</b>	TB laboratory quality assurance for smear microscopy in USG-supported areas	691	353	51	691	607	87.8	1,041	957	1,600	1,550	97	1,264	1,550	122
<b>1.2.6</b>	Number of health posts that collected sputum smear from TB suspects	3,380	not approved by FMOH												
<b>Technical Area 1.3. Ensuring that Standard TB Regimens are Administered Correctly</b>															
<b>1.3.1</b>	Number of Health Centers and Hospitals providing DOT (treatment)	691	691	100	691	691	100	1301	2186	1600	2186	136	2,185	2,186	100
<b>1.3.2</b>	Number of health care workers trained on DOTs with USG funding	1,180	1,052	89.1	2,000	1,660	83	1,500	2,042	2,000	2,071	103	500	822	>100
<b>1.3.3</b>	Number of medical and para-medical practitioners trained in evidence-based clinical guidelines (HWs and HEWs)	3,380	0	0	n/a	n/a	n/a	0	0	0	0		0	n/a	n/a
<b>1.3.4</b>	Number of Health Posts able to screen for TB	3,380	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a

Indicator	PY1			PY2			PY3			PY4			PY5		
	Target	Actual	%	Target	Actual	%	Target	Actual	%	Target	Actual	%	Target	Actual	%
1.3.6	82	44.6	n/a	65	40	n/a	65	34	n/a	55	42	76	55	44	80
													146	135	92
1.3.7	50	estimated incidence rate for Ethiopia is not available to calculate the case detection	n/a	n/a	n/a	n/a	n/a	n/a	n/a	146	135.2	n/a	n/a	n/a	n/a
							70%	54.10%	n/a				n/a	n/a	
1.3.8	90	90.3	n/a	85%	92.50%	n/a	90%	92%	n/a	90%	94%	n/a	90	95.20%	
<b>Technical Area 1.4: Drug Supply Management</b>															
1.4.1	TBD	n/a		n/a	n/a		n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a
1.4.2	0	1.4	n/a	<2%	0.20%		<2%	2%	n/a	<2%	2%	n/a	<2%	2%	
1.4.3	240	325	135	n/a	n/a		n/a	n/a	n/a	n/a	n/a		n/a	n/a	
1.4.4	60	0	0	Number per PFSA supply	Prep stage		Number per PFSA supply	1,600	n/a	n/a	n/a		2,186	2,077	95
<b>Technical Area 1.5: Recording and Reporting</b>															
1.5.1	2,360	2,444	103	n/a	n/a		n/a	n/a	n/a	0	n/a		n/a	n/a	n/a

Indicator	PY1			PY2			PY3			PY4			PY5		
	Target	Actual	%	Target	Actual	%	Target	Actual	%	Target	Actual	%	Target	Actual	%
<b>1.5.2</b>	3,380	0	0	2,000	2,717	135	n/a	n/a		0	n/a		0	n/a	
<b>1.5.3</b>	1	1	100	2	1	50	2	2186		2	2		2	n/a	
<b>Technical Area 1.6: Strengthened Referral Linkage</b>															
<b>1.6.1</b>	32,800	5,876	18	20,000	22,867	114	50,000	82,939	165	200,000	148,694	74	100,000	77,500	77
<b>1.6.2</b>	1,500	14.10%	n/a	2,500	n/a	n/a	5,000	3,150	63	50%	31.50%		50%	33.40%	
<b>1.6.3</b>	4,000	645	16	4,000	2,066	52	4,000	9,758	243	5,000	11,602	232	5,000	5,946 (two quarters reported)	
<b>Technical Area 1.7: Improving Community TB Care</b>															
<b>1.7.1</b>	3,380	0	n/a	2,500	1,660	66	n/a	n/a	n/a	0	n/a		561	0	0
<b>1.7.2</b>	76,800	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	
<b>1.7.3</b>	3,380	0	n/a	2,500	2,004	80	7,000	9,442	135	9842	9967	101	9,967	9,967	100
<b>Technical Area 1.8: Engaging Private Health Sector in DOTs (Public Private Mix-DOTS)</b>															
<b>1.8.1</b>	TBD	0	n/a												
<b>Result 2 (Expected Outcome 2): Identify re-treatment failures, expedite sputum for culture and DST and map location of MDR-TB cases</b>															
<b>2.0.1</b>	50	0	n/a	150	155	103	230	254	110	350	325	93	200	215	107
<b>2.0.2</b>	55	300	545	400	1,040	260	3,000	8,109	270	n/a	n/a		n/a	n/a	
<b>2.2</b>	n/a	n/a		n/a	n/a		n/a	n/a		5,000	9,597	191	10,000	6,729 (two quarters reported)	67

Indicator	PY1			PY2			PY3			PY4			PY5		
	Target	Actual	%	Target	Actual	%	Target	Actual	%	Target	Actual	%	Target	Actual	%
<b>Result 3 (Expected Outcome 3): Improved TB/HIV Collaborative Activities</b>															
<b>3.0.1</b>	70	89	n/a	90	93.25	n/a	90	89	n/a	90	93.70	n/a	90	90.10	
Percent of all registered TB patients who are tested for HIV through USG-supported programs															
<b>3.0.2</b>	1,180	1,052	89	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Number of people trained in TB/HIV															
<b>Result 4 (Expected Outcome 4): Health Systems Improved</b>															
<b>4.0.1</b>	1	1		n/a	n/a		n/a	n/a		n/a	n/a		n/a	n/a	
Number of baseline or feasibility studies															
<b>4.0.2</b>	TBD	2	50	6	3	50	6	6	100	6	5	100	1	2	
Number of information gathering or research activities											(one published, the rest submitted)				
<b>Technical Area 4.1: Improving Infection Control</b>															
<b>4.1.1</b>	23	60	260	150	48	32	150	837	558	1,500	1,281	85	1,200	1,472	122
Number of healthcare facilities with TB IC plans implemented															
<b>Technical area 4.2 Capacity Building of Health Care Providers</b>															
<b>4.2</b>															
Capacity building of health care providers	no target														
<b>Technical area 4.3 Support proper TB and TB/HIV planning</b>															
<b>4.3.1</b>													471	n/a	
Number of Woreda annual operation planning meetings conducted															
<b>Technical area 4.4 Support implementation of GF TB grants in the region</b>															
<b>4.4.1</b>															
Number of medical and para-medical practitioners trained in evidence-based clinical guidelines (Global Fund supported)	no target														
<b>4.4.2</b>															
Number of people trained in monitoring and evaluation (Global Fund supported)															
<b>4.4.3</b>															
Number of people trained in other strategic information management (Global Fund supported)															
<b>4.4.4</b>															
Number of Woreda annual operational planning meetings conducted where Global Fund resourcing was discussed															

This technical assistance area is canceled from HEAL TB as per the first year discussion with USAID.

## Appendix B. Standards of Care (SoC)

### (1) The similarities and differences of the traditional supervisory approach and the SoC approach

Traditional Checklist Approach of Supervision	Objective Performance Measuring through SoC Approach
Supervisor usually starts by interviewing the implementer; the information is primarily dependent on information given by the implementer.	The mentor/supervisor starts by actually measuring the performance of the implementer through a set of standard indicators.
The depth of gap or challenge identification is mainly passive and dependent on the information provider, e.g., checks what is reported, but does not check him/herself in depth.	Gap/challenge is identified by the supervisor/mentor, e.g. the supervisor calculates the past quarter performance of cure rate, compares with what was reported, and if it is low, finds out the reason.
Usually, the gap/challenge of the health facility is mainly found through an interview of the implementer.	The gaps or challenges are identified by the mentor/supervisor, and the implementer can add or explain. As an example, the lab mentor re-checks five negative and five positive slides with the same microscope used by the health facility. If there is discordance, s/he identifies the cause. It may be the microscope, the reagent, the smear quality of the health facility lab, or some human resource issue.
The approach is more supervisory and, in most cases, does not identify the true challenges.	The SoC approach is one of mentorship, and identifies objectively the cause of the gap on site. As in the example above, if there is a problem with the microscope, s/he may recommend changing the microscope; if it is reagent problem, s/he may establish an internal quality system, and if it is a human resource issue, sh/e may recommend training.
The supervisory approach does not measure the progress of activities, as it is dependent on information from the implementer.	Progress is more accurately measured, as indicators are collected by the mentor/supervisor.
On-site capacity building is limited.	With a mentorship approach, capacity building is intertwined with indicator data collection. As an example, a high cure rate reported by the health facility could be actual performance, or health workers may have confused treatment completion with cure. The mentor on the site resolves differences and oversees the formulas.
The supervisory approach has limited motivational effect on the implementer.	The mentor/supervisor calculates each indicator together with the implementer; identifies the reason for the under- or over-performance, designs solutions jointly with the implementer, and monitors the progress periodically together. It motivates staff to perform well.
The supervision is usually done by managers or related professionals even if not specialist on the subject.	The mentor/supervisor is a specialist.



(2) SoC indicators reference sheet (sample)

TB Standards of Care		Code	Quarterly measure	Numerator/Denominator	Source	Results of quarterly measure		
<b>V</b>	All patients should be monitored for response to therapy, best judged in patients with pulmonary tuberculosis by follow-up sputum microscopy (two specimens) at least at the time of completion of the initial phase of treatment (two months), at five months, and at the end of treatment.	C8	Cure rate (new smear positive cases )	No. of sputum smear (SS) positive TB cases cured during the reporting period	TB register	<80	80-85	>85
				Total No. of SS positive patients registered a cohort (evaluated during the last quarter)				
		C9	Cure rate (re-treatment)	No. of re-treatment TB patients cured in the reporting period	TB register	<80	80-85	>85
				No. of re-treatment patients registered in a cohort (evaluated during the last quarter)				
		C10	Sputum conversion rate at the end of intensive phase of treatment (of patients registered in the previous quarter)	No. of new SS positives cases registered in the previous quarter and became SS negative at the end of the intensive phase of treatment	TB register	<85	85-90	>90
				Total no. of new SS positive pulmonary TB cases registered for treatment in the previous quarter				
C11	Proportion of SS positive TB cases that weren't examined at the end of the intensive phase (of patients registered in the previous quarter)	No. of new SS positive TB cases registered in the previous quarter that weren't examined for AFB at the end of the intensive phase	TB register	>4	1-4	0		
		Total no. of new SS positive pulmonary TB cases registered for treatment in previous quarter						
C12	Proportion of SS positive pulmonary TB cases that weren't examined at the end of 5th month (of patients registered in the previous quarter)	No. of new SS positive TB cases registered in the specified period that weren't examined at the end of the 5TH month of treatment.	TB register	>4	1-4	0		
		Total no. of new SS positive cases that were registered for treatment in the previous quarter and who completed 5th month treatment						
<b>VI</b>	HIV counseling and testing is indicated for all TB patients and all HIV patients should be screened for TB during every visit.	C13	Percentage of TB patients whose HIV test result is recorded	No. of TB patients registered who had an HIV test result recorded in the TB register (last quarter )	TB register	<90	90-99	100
				No. of newly registered TB patients during the last quarter				
		C14	Percentage of TB patients who are known HIV positive cases	Number of HIV positive TB patients in the last quarter				
				No. of TB patients tested for HIV who were registered for treatment during the last quarter with test result recorded				
<b>VII</b>	All patients with TB and HIV co-infection should be evaluated to determine if ART is indicated during the course of TB treatment.	C15	Percentage of co-infected patients who were linked to chronic care	No. of TB/HIV co-infected patients linked to chronic care (ART clinic) in the last quarter (among new TB pts registered)	TB register	<95	95-99	100
				Total No. of HIV-positive TB patients registered during the last quarter (among new TB patients registered)				
		C15a	Percentage of co-infected patients who were started on ART	No. of TB/HIV co-infected patients who were on ART (among new TB patients registered)				
				Total No. of HIV-positive TB patients registered during the last quarter (among new TB patients registered)				
<b>VIII</b>	An assessment of the likelihood of drug resistance, based on history of prior treatment, exposure to a possible source case having drug-resistant organisms, and the community prevalence of drug resistance, should be obtained for all patients.	C16	No. of re-treatment cases (treatment failure, relapse, treatment failure after lost to follow-up)	Same	TB unit register	<75	75-90	>90
		C17	Proportion of re-treatment cases for whom sample is referred to DST sites (relapse, re-treatment after lost to follow-up, treatment failures) in the previous quarter	No. of re-treatment cases for whom sample is referred to DST sites in the last quarter	MDR suspect registration book			

(3) Summary sheet sample for SoC quarterly performance)

Code	Quarterly measure of SoC (clinical quality indicators)	Q1	Q2	Q3	Q4
<b>C1</b>	Percent/proportion of patients screened for TB in all adult OPD in the quarter				
<b>C2</b>	Percentage of presumptive-TB cases identified/detected among adult OPD visitors in the quarter				
<b>C3</b>	Proportion of sputum smear (SS)-positive TB cases among newly registered TB patients in the last quarter				
<b>C4</b>	Percentage of SS-positive patients with successful treatment (TSR) during the quarter				
<b>C5</b>	Lost to follow-up rate; SS-positive TB cases evaluated in the last quarter				
<b>C6</b>	Percentage of TB Rx interrupters during intensive phase among patients enrolled during the previous quarter				
<b>C7</b>	Proportion of new TB patients enrolled in the previous quarter with appropriate dose/regimen				
<b>C8</b>	Cure rate (new SS-positive cases)				
<b>C9</b>	Cure rate (re-treatment cases)				
<b>C10</b>	Sputum conversion rate at the end of the intensive phase of treatment (of patients registered in the previous quarter)				
<b>C11</b>	Proportion of SS-positive TB patients who weren't examined at the end of the intensive phase (previous quarter)				
<b>C13</b>	Percentage of TB patients whose HIV test result is recorded (new and re-treatment patients)				
<b>C15</b>	Percentage of co-infected patients who were linked to chronic HIV care (ART clinic)				
<b>C18</b>	Level of accuracy of reporting for number of new SS positive patients (previous quarter)				
<b>C19</b>	Level of accuracy for number of new SS negative pulmonary TB patients (previous quarter)				
<b>C20</b>	Level of accuracy for no. of new EPTB cases (last quarter)				
<b>C21</b>	Level of accuracy for no. of TB patients tested for HIV (new and re-treatment-RDF)				
<b>C23</b>	Level of accuracy for # of cured (among new SS-positive cohorts)				
<b>CI1</b>	% screened among close contacts SS-positive index cases				
<b>CI2</b>	% TB cases identified among presumptive-TB cases of close contacts of SS-positive TB cases				
Quarterly Measure of SoC (drug supply management indicators)					
<b>DM1</b>	Stock-out days of adult RHZE				
<b>DM2</b>	Stock-out days of adult RH				
<b>DM5</b>	Percentage of bin cards updated for anti-TB drugs (adult RH and RHZE)				
Quarterly Measure of SoC (laboratory quality indicators)					
<b>LAB1</b>	% of suspects with 3 samples collected in the reporting quarter				
<b>LAB2</b>	Percentage of positive slides among new slides examined in the quarter				
<b>LAB3</b>	Percentage of positive slides graded in the reporting quarter (see calculation)				
Quarterly Measure of SoC (community TB care quality indicators)					
<b>CTBC1</b>	Proportion of health posts reporting CTBC activities to the health facility (CTBC report)				
<b>CTBC2</b>	Percentage of health posts referring TB suspects during the quarter				
<b>CTBC3</b>	Number of presumptive-TB cases referred from health posts during the quarter				
<b>CTBC4</b>	Percentage of TB cases detected among TB suspects referred from health posts				
<b>CTBC5</b>	Number of TB cases referred to health posts for follow up of treatment by HEW (follow up DOT)				

(4) SoC sample logbook, health facility action points

Name of *Woreda* \_\_\_\_\_ Name of Health Facility \_\_\_\_\_

Date \_\_\_\_\_

Service area	Major strengths	Major challenges	Corrective action		
			Agreed action points	Responsible Person	Time Frame
Community TB care					
TB IC and HSS					

## Appendix C. TB Infection Control

### (1) Sample Comprehensive TB Infection Control Plan

Name of Health Facility \_\_\_\_\_ Year \_\_\_\_\_

No.	Applicable Procedure	Activities	Place	Responsibility		Timeline	Budget estimate	Source	Measure of success (target)	Remarks
				Position	Name					
<b>Managerial Activities</b>										
M1	The facility will strengthen/ establish Infection Prevention (IP) Committee, which also oversees TB infection control; a TB IC focal person will be assigned, with accountability to the CEO/Medical Director.	—establish IP committee OR —strengthen IP committee	office level	CEO/Medical Director			N/A	N/A	IP committee & TB IC focal person present	It has no cost
M2	The IP committee will undertake facility TB risk assessment, using standard checklist; this will be an annual routine.	—conduct risk assessment for first time OR —conduct repeat risk assessment	various service delivery points	IP committee			N/A	N/A	Updated facility risk assessment document available	It has no cost
M3	The IP committee will develop a written TB IC plan based on the facility TB risk assessment; revision will be made on yearly basis. The plan will be incorporated to the main facility work plan and it will be posted on the main notice board for easy referencing.	—prepare TB IC plan for the first time OR —update TB IC plan	office level	IP committee			N/A	N/A	Updated & budgeted TB IC plan available	It has no cost
M4	All staff will be oriented on TB IC before work assignment and sensitized each year	—conduct TB IC orientation for all staff OR —orient new employees as they come OR —sensitize all staff (yearly)	office level	Trained CEO/ Medical Director and Trained Matron					100% of staff trained at any given time	The TB IC focal person will act as a facilitator
M5	Patients and visitors will be offered oral and written information on TB IC	—print, photocopy, and distribute brochures on TB IC to patients and visitors —post reminders —replace reminders when lost/torn	Waiting area(s)	IP committee or TB IC focal person		ongoing			Health education given on TB IC, daily, by health workers	
M6	Implementation of the TB IC annual plan will be regularly monitored using the following indicators: TB suspects missed at entry, proportion of staff oriented on TB IC, TB incidence among staff, and proportion of smear-positive TB patients who received timely anti-TB treatment	—print, photocopy, and bind staff training log	Staff clinic	Matron/Head Nurse/Staff clinician		ongoing			—# of TB suspects found at OPDs, but missed at triage, should be progressively decreasing —at least a yearly 50% decrease in the incidence of TB among staff	Find additional indicators under M4 & A6
M7	Operational research will be conducted on major gaps identified, following implementation of the TB IC plan	—collect and analyze data —write article	office level	Any interested staff					At least 1 research article produced per year	There are different research journals in Ethiopia and abroad (online) in which to publish
<b>Administrative Controls</b>										
A1	All clients will be screened for TB symptoms at triage & OPDs. Additional screening will be offered to medical in-patients and their caretakers	—print, photocopy, bind, and distribute TB screening log								

No.	Applicable Procedure	Activities	Place	Responsibility		Timeline	Budget estimate	Source	Measure of success (target)	Remarks
				Position	Name					
A2	TB suspects & TB cases will be identified and placed in separate waiting areas; they will not be allowed to walk on the path to ART room or sit with PLHIV	—renovate existing waiting room/ward OR —construct new additional waiting room/ward OR —put benches under shades for separation purposes OR —other options								
A3	TB suspects will get service priority at OPDs, laboratory, and X-ray department	—fast tracking	OPDs, laboratory & X-ray dept	OPD clinicians, lab & X-ray professionals		ongoing	N/A	N/A	TB suspects observed getting service priority	It has no cost
A4	Chronic coughers will be educated on how to cover their mouth and nose while sneezing and coughing; each cougher will be given a container with lid to spit into	—provide daily health education —distribute sputum collection material for coughers	Waiting area(s), medical/ TB/MDR-TB wards	Triage officer/ assigned HW/ assigned cleaner		ongoing	N/A	N/A	TB suspects observed covering their mouths and noses while coughing and sneezing; no one observed spitting on the floor	It has no cost
A5	Sputum smear result will be ready within 2 days; the result will be communicated to the clinician before noon	—provide prioritized service	Laboratory	Laboratory personnel		ongoing	N/A	N/A	The majority of TB suspects get sputum smear results in less than 48 hours	No additional cost
A6	Initiation of anti-TB treatment will be carried out on the 3 <sup>rd</sup> day of HF visit, by engaging clinicians and lab personnel on duty	—adequate counseling —prompt initiation of standard anti-TB drug regimen	TB room	TB focal person		ongoing	N/A	N/A	Diagnosed SS+PTB cases put on anti-TB treatment within 3 days of appearance	No additional cost
A7	TB cases will get supervised treatment 7 days a week, by assigning duty clinicians on weekends, and holidays	—assign duty clinician —provide treatment on weekends & holidays	TB room	assigned duty clinician		ongoing			All TB patients get supervised treatment until completion	
A8	TB patients will have scheduled sputum follow-up tests, while on treatment. The aim is bacteriologic cure	—do sputum follow-up examinations per the schedule	TB room laboratory	TB focal person, laboratory personnel		ongoing	N/A	N/A	Follow-up sputum examination done for all new SS+ cases on the 2nd, 5th, and 6th months; on the 3rd, 5th, and 8th months for previously-treated cases	No additional cost
A9	A special staff clinic and staff clinician will be designated	—designate a room as a staff clinic	office level	IP committee					A special staff clinic designated	
A10	Confidential TB & HIV services will be provided to staff, by staff clinician	—assign staff clinician	office level	IP committee					A special staff clinic assigned	
A11	Staff diagnosed with TB will not be allowed to report to work until sputum smear conversion	—conduct annual TB symptomatic screening —provide sick leave	office level	Staff Clinician Medical Director Personnel (HR)		routine or need-based	N/A	N/A	Staff on anti-TB treatment, not reporting to work until sputum smear conversion	No additional cost
A12	Staff diagnosed with HIV will be linked to chronic care; staff living with HIV will not be assigned to TB room, adult OPD, medical ward or MDR-TB ward	—encourage staff to undergo HCT periodically —link to ART if HIV-positive for chronic care —relocate HIV-diagnosed staff	office level	Staff Clinician ART Clinician Medical Director		routine or need-based	N/A	N/A	Staff living with HIV relocated to less risky areas	No additional cost

No.	Applicable Procedure	Activities	Place	Responsibility		Timeline	Budget estimate	Source	Measure of success (target)	Remarks
				Position	Name					
<b>Environmental Controls</b>										
E1	A stand-alone, cross-ventilated, and spacious room will be assigned to TB-DOTS	—change room OR —renovate room	office level	IP committee					Stand-alone, cross-ventilated room available for TB-DOTS	
E2	Natural ventilation will be maximized by opening windows and doors on opposite sides in all OPDs and wards; signage will be placed to reinforce the message	—install windows —shorten doors —post signs —other	OPDs and wards	IP committee					All OPDs and wards are cross ventilated.	When Vaneometer measurement feasible, each consultation & admission room will have 12 or more ACH value
E3	Separate ward or rooms will be made available for admitting sputum smear PTB cases; care will be taken not to admit PLHIV in the same room as confirmed PTB patient	—renovate ward OR —construct new ward —designate separate admission rooms	medical ward	IP committee					Separate ward or rooms exist for admitting SS+ PTB cases	
E4	Separate sputum collection area will be identified and/or constructed	—identify an open area for sputum collection —construct a well-ventilated sputum collection booth	office level	IP committee					Sputum collection site available	
E5	Overcrowding in hallways, waiting areas and around OPDs will be prohibited	—patrolling	hallways, waiting areas, OPDs	Security guard TB IC focal person		ongoing	N/A	N/A		No additional cost
E6	When available, mechanical devices like Whirly Birds and window fans will be inspected on monthly basis and get fixed by appropriate personnel if found dysfunctional	—regular cleaning of fans —monthly inspection and maintenance	rooms, wards with mechanical ventilation	HF electrician		ongoing			Functioning ventilators	
E7	Seating arrangement in OPDs will be such that air flows in between the health worker and the patient; periodic check of wind direction will be made using incense sticks	—make periodic check of wind direction	OPDs	OPD clinicians IP committee		ongoing			Appropriate seating arrangements seen in all OPDs	
<b>Personal Protection</b>										
P1	Particulate respirators of different sizes and models will be gathered from different sources and made readily accessible	—store respirators in safe place	Matron's office	Matron/Head Nurse		ongoing	N/A	N/A	Particulate respirators are accessible	No additional cost
P2	Staff treating (or caring for) confirmed and highly suspected DR-TB cases in TB room and/or DR-TB ward must wear particulate respirator. Caretakers will also be provided with respirators; the quota for daily users is one or two respirators per week	—wear respirator, if indicated	DR-TB ward, TB room	clinicians cleaners caretakers food catering staff		ongoing	N/A	N/A	Consistent wearing of respirators by staff & caretakers while dealing with DR-TB patients	No additional cost
P3	When the test kit is available, all particulate respirator users will be subject to fit testing before use. The IC committee will ensure adequate pool of trained personnel to perform the test	—do respirator fit test for each user	DR-TB ward, TB room	Matron/Head Nurse, TB IC focal person, any other trained staff		ongoing	N/A	N/A	All users of respirators are fit tested before use and thereafter, as appropriate	Depends on availability of fit test kit No additional cost

No.	Applicable Procedure	Activities	Place	Responsibility		Timeline	Budget estimate	Source	Measure of success (target)	Remarks
				Position	Name					
P4	Patients with DR-TB will use surgical masks while in ART, lab, X-ray unit or ward; the quota is 1-2 surgical masks per week. They will be instructed to dispose used masks in to wastebaskets/dustbins	—wear surgical masks	DR-TB ward, TB room	DR-TB patients		ongoing	N/A	N/A	Consistent wearing of surgical masks by DR-TB patients while in the ward and moving around	No additional cost

Optional additional control details:

We, the undersigned IP committee members, have read and agreed on the content of the TB IC annual plan.

NAME \_\_\_\_\_ SIGNATURE \_\_\_\_\_  
NAME \_\_\_\_\_ SIGNATURE \_\_\_\_\_  
NAME \_\_\_\_\_ SIGNATURE \_\_\_\_\_  
NAME \_\_\_\_\_ SIGNATURE \_\_\_\_\_

(2) Terms of Reference for Infection Prevention Committee

Name of Health Facility \_\_\_\_\_ Year of Establishment \_\_\_\_\_

Date IP committee formed \_\_\_\_\_

**Goal:** To provide high quality care with adequate safety for patients, visitors and health care providers.

**Purpose:** This term of reference is to establish the area of operation for the infection prevention committee.

**Rationale:** Effectiveness of infection prevention practices depend on regular monitoring and follow-up of their implementation. Accordingly, the health facility has formed the IP committee to oversee these activities.

**Roles and responsibilities**

1. Draft the health facility infection prevention operational plan
2. Monitor and evaluate the performance of infection prevention practice and assess implementation of the operational plan
3. Establish policy for infection control and prevention at the health facility level
4. Establish a system for the surveillance of health facility acquired infection in patients and staff
5. Identify and investigate outbreaks of infection in the health facility
6. Define policy for safe handling and disposal of waste
7. Identify training needs of staff on infection prevention and filling of the gaps

**Representation of the Infection Prevention Committee**

Name	Position	Department
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____
7. _____	_____	_____

**Management**

The chairperson:

- Coordinates the infection prevention committee meetings in collaboration with the secretary
- Sets agenda for each meeting in coordination with the secretary
- Reports infection prevention committee activities to senior management of the health facility

The secretary:

- Coordinates with the chair person to set meeting agenda and date
- Takes minutes and send to members of the committee
- Sends documents to members, keep files and archives

Members will:

- Actively participate in all meetings, preparation of action plan, and implementation of all activities

Meeting frequency

Monthly  
Weekday \_\_\_\_\_ Time \_\_\_\_\_



(3) TB IC health facility risk assessment checklist

GENERAL INFORMATION			
Name of Health Facility:		Facility Ownership: <input type="checkbox"/> MOH <input type="checkbox"/> NGO <input type="checkbox"/> FBO <input type="checkbox"/> Other	
Category of Health Facility:: <input type="checkbox"/> Hospital <input type="checkbox"/> Health Center			
Address of health facility:			
Region:	TB-related services provided at this facility: <input type="checkbox"/> TB-DOTS <input type="checkbox"/> ART <input type="checkbox"/> DR-TB <input type="checkbox"/> GeneXpert		
Zone:			
Woreda:			
Telephone number:			
TB Infection Control measures implemented at this health facility			
#	QUESTIONS	IF RESPONSE IS	SKIP TO:
<b>Managerial</b>			
1.	Is there an IC committee?	Yes ① No ②	
2.	Is there a TB IC focal person?	Yes ① No ②	
3.	Is there a facility TB IC plan?	Yes ① No ②	4
	3.1. Is the plan part of the facility plan?	Yes ① No ②	
	3.2. Is the plan properly budgeted?	Yes ① No ②	
4.	Is there any staff member who developed TB during the past (one) year?	Yes ① No ②	5
	4.1. If YES, how many staff developed TB?	# _____	
	4.2. Which categories were affected? <input type="checkbox"/> Medical <input type="checkbox"/> Administrative <input type="checkbox"/> Both		
<b>Administrative</b>			
5.	Is the triage near the main gate?	Yes ① No ②	
6.	Do patients with a cough go directly to a separate OPD?	Yes ① No ②	
<b>Environmental</b>			
7.	Is there cross-ventilation in OPDs, including TB clinic?	Yes ① No ②	
8.	Is there cross-ventilation in waiting area(s)?	Yes ① No ②	
9.	Is there cross-ventilation in wards?	Yes ① No ②	
10.	Are there separate wards for TB-DR/TB patients?	Yes ① No ②	
11.	Is there a separate/designated sputum collection area?	Yes ① No ②	

<b>Personal protection</b>			
12.	Are respirators available for staff working in MDR-TB ward?	Yes ① No ②	
	12.1. If YES, what is the distribution quota like? ① 1-2 per week    ② 1 per 2 weeks    ③ 1 per month    ④ Variable		
13.	Are surgical masks available for DR-TB patients?	Yes ① No ②	
#	QUESTIONS	IF RESPONSE IS	SKIP TO:
<b>Laboratory safety</b>			
14.	Is there a written health and safety manual?	Yes ① No ②	
15.	Are used sputum cups decontaminated with a 0.5% sodium hypochlorite solution before incineration?	Yes ① No ②	
16.	Is the sputum smear preparation area cross-ventilated?	Yes ① No ②	
17.	Are sputum containers and contaminated materials disposed/ incinerated in incinerators? (observe)	Yes ① No ②	

## Appendix D. Abstracts Presented in National and International Forums between 2012 and 2016

No.	Abstracts presented by HEAL TB team in national and international forums
1	Yield of tuberculosis among children with presumptive TB using GeneXpert MTB/RIF assay in two regions of Ethiopia
2	Experiences and challenges in the scale up of GeneXpert services in Oromia and Amhara Regions, Ethiopia
3	Survival and predictors of mortality among multi-drug resistant tuberculosis patients on treatment in two regions of Ethiopia
4	Geographic variation of tuberculosis case notification in two regions of Ethiopia and its implication on TB program management
5	The yield of TB contact screening in two regions of Ethiopia: Comparing the yield between contacts of bacteriologically confirmed and clinically diagnosed index TB cases
6	TB, HIV, and diabetes mellitus tri-directional screening in four hospitals of Ethiopia
7	Risk scoring system and symptom-based screening as initial steps for detecting diabetes mellitus in TB and HIV clinics in Ethiopia
8	Tuberculosis and pregnancy in a cohort of women receiving antiretroviral therapy in Ethiopia
9	The pattern of rpoB gene mutations from Mycobacterium tuberculosis isolates of pulmonary TB patients using Xpert® MTB/RIF in Ethiopia
10	Correlation of childhood TB case notification with bacteriologically confirmed pulmonary TB case notification: results of two regions of Ethiopia
11	The yield of TB screening in over 16 million outpatient department visitors in two regions of Ethiopia
12	Improved TB/HIV collaborative activities via health system strengthening in two regions of Ethiopia
13	Improved access to MDR TB services via decentralized service delivery model in Amhara and Oromia Regions of Ethiopia
14	Burden of MDR TB among contacts of MDR TB cases: results from routine program implementation in Amhara and Oromia Regions of Ethiopia
15	Incidence of tuberculosis among health workers at public healthcare facilities in two regions of Ethiopia
16	Task shifting in TB laboratory service delivery: the experience of non-laboratory technicians in two regions of Ethiopia
17	Towards zero anti-TB drugs stock-out: focusing on system strengthening brought a difference in two regions of Ethiopia
18	Electronic laboratory specimen (eSpecimen) referral system in Ethiopia: a feasible approach
19	Narrowing the gap between cure and treatment success over four years: sign of improved quality of drug sensitive TB treatment follow up
20	Improved tuberculosis contact investigation and isoniazid preventive therapy (IPT) among under-5 children in two regions of Ethiopia
21	Factors affecting treatment outcome of childhood tuberculosis in two regions of Ethiopia
22	Rapid scale up of MDR-TB services through a decentralized patient management system in Ethiopia
23	Yield of TB lymphadenitis with cytology versus GeneXpert and culture in Ethiopia
24	Contribution of GeneXpert in MDR-TB case finding in Ethiopia
25	The yield of contact investigation in a rural setting in Ethiopia
26	Integrated care for tuberculosis, HIV, and diabetes in four public hospitals in two regions of Ethiopia
27	District-level performance monitoring improves the accuracy of TB program reporting in Ethiopia
28	Progress in TB/HIV collaborative activities in two regions of Ethiopia
29	Comparison of fine needle aspiration cytology and GeneXpert in the diagnosis of TB lymphadenitis in Ethiopia
30	Trends in the rate of follow-up sputum smear examination and conversion rate among smear-positive pulmonary TB patients in two regions of Ethiopia
31	Trends in treatment outcome of new and re-treatment tuberculosis cases in two regions of Ethiopia
32	Tuberculosis drug kit implementation eases drug supply management in two regions of Ethiopia
33	Isoniazid preventive therapy for under-five children in two regions of Ethiopia
34	Prevalence and incidence of smear-positive pulmonary tuberculosis in Hetosa District of Arsi Zone, Oromia Regional State of Central Ethiopia
35	Decentralized MDR-TB service model increases access to case finding in Amhara and Oromia Regions of Ethiopia
36	Blended learning as capacity building option for TB/HIV services: results from a comparative study in Ethiopia
37	High transfer out affecting hospitals' performance of treatment outcomes of new tuberculosis cases in Ethiopia
38	The yield of household contact investigation of MDR-TB index cases in two regions of Ethiopia
39	The yield of TB among contacts of TB patients treated in the last three years (retrospective screening) in Ethiopia

40	Heterogeneous TB case notification rates in Ethiopia: what is the implication for TB control?
41	On-site staff mentoring and assessments improve laboratory service quality and microscopy diagnostic accuracy in Ethiopia
42	Prevalence of smear positive pulmonary tuberculosis among health facility patients and their escorts in Bahir Dar, Ethiopia
43	Routine supportive supervision guided by standard-of-care indicators improved TB service quality in Ethiopia
44	Expansion of microscopic service, staff training, and supportive supervision improve smear microscopy follow-up for smear positive TB patients
45	Predictors of mortality among TB-HIV co-infected patients being treated for tuberculosis in Northwest Ethiopia: a retrospective cohort study
46	Comparison of the yield from contact screening among smear positive versus smear negative tuberculosis patients in North Western Ethiopia
47	Delay in diagnosis and treatment of tuberculosis in different agro-ecological zones in the Oromia Region of Ethiopia
48	Implementation experience of light-emitting diode fluorescence microscopy in TB microscopic centers in the Amhara Region of Ethiopia, 2013–2014
49	Improving TB cure rate of new TB SS+ cases through strengthening local implementation capacity in the Amhara and Oromia Regions of Ethiopia, 2011–2013
50	The impact of the implementation of an integrated pharmaceutical logistic system in reducing anti-TB drug stock outs in two vast regions of Ethiopia
51	Childhood tuberculosis is directly linked to the smear positive tuberculosis case notification rate: results from Amhara and Oromia Regions, Ethiopia
52	Standard of care indicators as a capacity building and TB program improvement tool: an innovative approach
53	Interventions improve TB infection control at hundreds of health facilities in Ethiopia, 2012–2013
54	GeneXpert early implementation experience in Ethiopia: how to plan for implementation and address challenges before further roll-out
55	High yield of TB cases among household contacts of smear positive pulmonary tuberculosis patients using GeneXpert MTB/RIF in Ethiopia
56	Early results from a large scale implementation of health facility based contact investigation in Amhara and Oromia Regions of Ethiopia, 2013–2014
57	Tuberculosis incidence among HIV infected adolescents and children at eight health facilities in Ethiopia
58	GeneXpert MTB/RIF implementation scale up and its contribution to decentralized management of MDR-TB in Ethiopia
59	Biomedical engineering: addressing the neglected component of the health system to reduce its deterrence to TB control efforts
60	Causes of death among MDR TB patients: findings from a mortality audit in four MDR TB treatment centers in Ethiopia
61	The performance of fluorescence microscopy to diagnose tuberculosis lymphadenitis from fine-needle aspirates in Ethiopia
62	District level performance monitoring improved the accuracy of TB program reporting in Ethiopia
63	Capacity building and mentorship improved tuberculosis infection control practices at health facilities in two regions of Ethiopia
64	Integrated care for tuberculosis, HIV, and diabetes in four public hospitals in two regions of Ethiopia
65	High yield of contact investigation among household contacts of smear positive pulmonary tuberculosis patients using GeneXpert MTB/RIF in Ethiopia
66	Early results from a large scale implementation of health facility based contact investigation in Amhara and Oromia Regions of Ethiopia, 2013–2014
67	Implementation experience of light-emitting diode fluorescence microscopy TB in TB microscopic centers in Amhara Region of Ethiopia, 2013–2014
68	Implementation of a decentralized AFB microscopy quality assurance system in the Amhara and Oromia Regions of Ethiopia, 2014
69	Strengthening community-based TB care improves TB case notification rates in Amhara and Oromia Regions, Ethiopia
70	Delay in diagnosis and treatment of tuberculosis in different agro-ecological zones in Oromia Region, Ethiopia

## Appendix E. List of Success Stories

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No.	Success stories from the HEAL TB project (2011–2016)
1	A mother's wish fulfilled: rolling out TB contact investigation in rural Oromia, Ethiopia
2	TB screening at health facilities reduces missed opportunity for early detection of TB for rural populations
3	Microscopes and diagnostic training increase TB case detection in Ethiopian region
4	Training and monitoring improve tuberculosis in rural Ethiopia
5	New tool reduces TB drug stock outs in Ethiopia
6	Health extension workers bring personal connection to TB case detection and treatment
7	Facility renovations and staff training improve multi-drug resistant TB control in Ethiopia
8	Implementation of TB drug kits eases drug supply management and improves adherence to treatment
9	Sample collection and transportation system enable non diagnostic health centers to diagnose TB

HEAL TB Partners:

Management Sciences for Health (MSH) (prime)  
Program for Appropriate Technology in Health (PATH) (sub)  
Kenya Association for the Prevention of Tuberculosis and Lung Diseases (KAPTLD) (sub)  
All Africa Leprosy, Tuberculosis, Rehabilitation, Research, and Training Center (ALERT) (sub)

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