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Use of indicators of standards of care to improve tuberculosis program management in Ethiopia

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A R T I C L E   I N F O

A B S T R A C T

Background: Systematic monitoring of health programs and on-site mentoring of health workers are essential for the success of health care. This operations research was designed to measure the effectiveness of a new mentorship and supervisory tool for supervisors.

Methods: In 2011 the Help Ethiopia Address the Low TB Performance (HEAL TB) Project used WHO or national TB indicators as standards of care (SOC) for baseline assessment, progress monitoring, gap identification, assessment of health workers' capacity-building needs, and data quality assurance. Cut-off points were selected for poor, average, and best performers for each indicator. In this analysis we present results from 10 zones (of 28) in which 1,165 health facilities were supported from 2011 through 2015. Other zones were excluded from the analysis because they entered the project later. The data were collected by trained mentors/supervisors and entered into Microsoft Excel. We used rates and ratios to show the impact of the intervention.

Results: The improvement in the median composite score of 13 selected major indicators (out of 22) over four years was significant ($p = 0.000$). The proportion of health facilities with 100% data accuracy for all forms of TB was 55.1% at baseline and reached 96.5%. In terms of program performance, the TB cure rate improved from 71% to 91.1%, while the treatment success rate increased from 88% to 95.3%. In the laboratory area, where there was previously no external quality assurance (EQA) for sputum microscopy, 1,165 health facilities now have quarterly EQA, and 96.1% of the facilities achieved a $\geq$ 95% concordance rate in blinded rechecking.

Conclusion: The SOC approach for supervision was effective for measuring progress, enhancing quality of services, identifying capacity needs, and serving as a mentorship and an operational research tool.

1. Background

Tuberculosis (TB) remains a major cause of morbidity and mortality in many countries and a significant public health problem worldwide. Ethiopia is one of the 30 high-TB, TB/HIV, and MDR TB-burden countries globally and TB remains one of the leading causes of death. According to the 2017 World Health Organization (WHO) report, the incidence of all forms of TB in Ethiopia was 177 per 100,000 [1]. Major progress in global TB control followed the widespread implementation of the DOTS and later Stop TB strategies in countries with a high burden of TB. Establishing a reliable monitoring and evaluation system in TB programs, with regular communication between the central and peripheral levels of the health system, is very important [2–4].
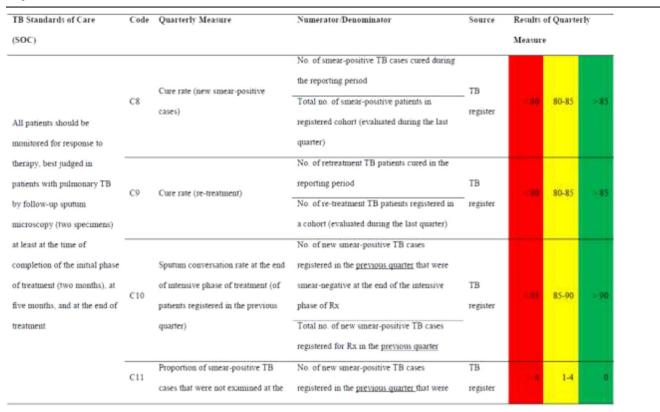
Since good-quality data are needed to monitor the performance of TB programs and identify gaps, systematic TB program supervision should be carried out to verify the quality of information and address performance problems. Data at both the health facility and district levels can be used to monitor performance and identify gaps [3,5].

In analyzing these data, there is increasing recognition of the importance of using standard approaches to diagnose and treat TB patients, as well as to screen for and prevent TB, at all levels. A standard set of WHO-endorsed indicators captures the processes and outcomes of

Table 1
Sample reference sheet for indicators of standards of care.

TB Standards of Care (SOC)	Code	Quarterly Measure	Numerator/Denominator	Source	Results of Quarterly Measure		
All patients should be monitored for response to therapy, best judged in patients with pulmonary TB 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 smear-positive TB cases cured during the reporting period / Total no. of smear-positive patients in registered cohort (evaluated during the last quarter)	TB register	<80	80-85	>85
	C9	Cure rate (re-treatment)	No. of retreatment TB patients cured in the reporting period / No. of re-treatment TB patients registered in a cohort (evaluated during the last quarter)	TB register	<80	80-85	>85
	C10	Sputum conversation rate at the end of intensive phase of treatment (of patients registered in the previous quarter)	No. of new smear-positive TB cases registered in the previous quarter that were smear-negative at the end of the intensive phase of Rx / Total no. of new smear-positive TB cases registered for Rx in the previous quarter	TB register	<85	85-90	>90
	C11	Proportion of smear-positive TB cases that were not examined at the	No. of new smear-positive TB cases registered in the previous quarter that were	TB register	>4	1-4	0

TB treatment, but these are often analyzed primarily at central levels rather than at the district or facility level. Even when workers at the health facility or district level do analyze their TB data, there is typically no standard description of what indicator values would be considered a "good" or "poor" outcome in that particular setting, nor any method for prioritizing which indicator values to target for improvement in the future. The standards of care (SOC) tool was developed in Ethiopia to address these needs and is described in this paper.

Various studies have linked supervision to standards of health care, performance improvement, and subsequent quality of care [4]. But the efficacy of supervision in changing providers' practices is unclear: one study confirmed better provider performance with supervision than without supervision, while another study showed no significant difference [6,7]. Other studies reported that community health workers allocated to a supportive supervision group performed significantly better than those in the group with standard supervision [8,9]. Supervisors using an indicator-based checklist realized greater improvement in the performance of midwives as compared to standard supervision [10]. A systematic review showed that there is insufficient high-quality evidence to advocate for any particular approach of implementing supervision [7].

This intervention was designed to develop a tool for supervisors that serve as an objective tool of mentorship/supervision and at the same time helps to identify program gaps. The tool is also used to prioritize health facilities for resource allocation based on their objective performance.

2. Methods

2.1. Definition of terms

Although there is no agreed-on definition of standard of care in medical practice, for this purpose we defined SOC as the quality of care

that a patient should get based on WHO or national performance indicators.

2.2. The setting

The Ethiopian health care system. The Federal Ministry of Health has overall responsibility for the health of Ethiopians, a responsibility that it carries out by designing national policies, strategies, and regulations. The country is organized into nine federal states and two city administrations, each with a Regional Health Bureau, which is responsible for planning, implementing, monitoring, and evaluating health programs. Under the region, there are zones with Zonal Health Departments. The zones are divided into *woredas* (equivalent to districts), with Woreda Health Offices. The lowest-level administrative structure is a *kebele* (community), with a population of 3,000–5,000. Each kebele has two Health Extension Workers. Ethiopia has a three-tiered health care system: at the lowest level, primary hospitals, health centers, and health posts provide primary health care; general hospitals offer secondary care; and specialized hospitals provide tertiary care [11].

2.3. Development of the indicators of standards of care

The USAID-funded HEAL TB project supported the implementation of a comprehensive TB program in the Amhara and Oromia regions of Ethiopia, with a population of 55 million, between 2011 and 2016 and in collaboration with the Amhara and Oromia Regional Health Bureaus, developed indicators of standards of care (SOC). The indicators are WHO TB indicators, indicators from the national health management information system, and indicators customized to measure specific needs. The SOC tool was designed for serving as a baseline assessment, monitoring the progress of activities, identifying gaps, mentoring staff based on the gaps, and planning to address capacity-building needs.