

## INTRODUCTION

The World Health Organization (WHO) declared tuberculosis (TB) a global emergency in 1993, in response to a steady increase in the incidence of TB, shifting dynamics in TB disease related to the human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) epidemic, and the emergence of multidrug-resistant TB (MDR-TB). The increasing burden of TB is due to many factors, including neglect of TB control by governments; poor management of programs; the spread of HIV; poverty; population growth; and rapid, uncontrolled urbanization. In response, a cost-effective and efficient strategy, known as DOTS (the internationally recommended TB control strategy), was developed. The DOTS strategy is designed to correct weaknesses in previous models of program management and to strengthen diagnosis and treatment services. Key components of the DOTS strategy include:

1. Sustained political commitment
2. Access to quality-assured TB sputum microscopy
3. Standardized short-course chemotherapy to all cases of TB under proper case management conditions, including direct observation of treatment
4. Uninterrupted supply of quality-assured drugs
5. Recording and reporting system enabling outcome assessment.

Although some progress has been made, persistent gaps remain in coverage, case detection, and treatment success—three key global indicators recommended by the World Health Assembly for measuring national TB control program (NTP) success.

The World Health Assembly recommended that each national TB program achieve a case detection rate of 70% and a treatment success rate of 85% by 2005 in order to bring the worldwide epidemic of TB under control by treating active cases and reducing transmission.

Today, nearly one-third of the global population is infected with *Mycobacterium tuberculosis* and at risk of developing the active disease. Almost 9 million people develop active TB every year, and about 2 million die from the disease.<sup>1</sup> The poor and marginalized in the developing world are at greatest risk: 95% of all cases and 98% of deaths due to TB occur in resource-poor countries.<sup>2</sup> Although many of the national DOTS

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<sup>1</sup> *A guide to monitoring and evaluation for collaborative TB/HIV activities*. Field test version. Geneva, World Health Organization, 2004 (WHO/HTM/TB/2004.342, WHO/HIV/2004.09).

<sup>2</sup> Dye C et al. Global burden of tuberculosis: estimated incidence, prevalence and mortality by country. *Journal of the American Medical Association*, 1999, 282:677–686.

programs are doing well in at least one of the key indicators mentioned above, there are very few countries succeeding in all three.

TB control programs face many new and existing challenges. Traditionally, a lack of political commitment to TB control, which in turn leads to weak support of TB control activities from the health system and society, continues to be an ongoing challenge in many countries. Similarly, weak public sector health services, which desperately need to enhance their capacity to implement, expand, and sustain DOTS-based services without compromising the quality of case detection and treatment, hinder progress in TB control.

Among the newer challenges, the impact of the HIV/AIDS epidemic on TB incidence is daunting. Even in the presence of well-functioning TB control programs, the incidence of active disease is increasing in settings with a high prevalence of HIV. The increasing impact of HIV on the incidence of TB disease, particularly in sub-Saharan Africa, necessitates new partnerships and approaches. Therefore, both TB and HIV programs need to develop and implement collaborative interventions to effectively cope with the impact of coinfection.<sup>3</sup>

Another challenge is the exponential increase in MDR-TB. This challenge requires effective implementation of the DOTS strategy to prevent new MDR-TB cases. Broadly speaking, sustained support for DOTS programs will facilitate their integration into the primary health care system and adaptation to reforms within the health sector.

In 2002, WHO and partner organizations expanded the DOTS strategy to address the challenges mentioned above. The expanded framework reinforces the five essential elements of DOTS and emphasizes the importance of programs that address TB and HIV coinfection, MDR-TB, and other areas. The expanded strategy places equal emphasis on the technical, managerial, social, and political dimensions of DOTS. It also underscores the contribution that TB control makes to poverty alleviation by reducing the socioeconomic burden of the disease. This expanded DOTS strategy includes the following key operations:<sup>4</sup>

1. Establish a national tuberculosis program with a strong central unit
2. Prepare a program development plan and a program manual, and establish the recording and reporting system allowing cohort analysis of treatment outcomes

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<sup>3</sup> *TB/HIV—a clinical manual*. Geneva, World Health Organization, 1996 (WHO/TB/96.200).

<sup>4</sup> *Treatment of tuberculosis: guidelines for national programs*. Geneva, World Health Organization, 2003 (WHO/CDS/TB/2003.313).

3. Plan and initiate a training program
4. Set up a microscopy services network in close contact with primary health care (PHC) services and subject to regular quality control to ensure that detection and cure of smear-positive TB cases remain a priority, through effective decentralization of diagnosis
5. Organize treatment services within the PHC system where directly observed short-course chemotherapy is given priority
6. Secure a regular supply of drugs and diagnostic material
7. Design and implement a plan of supervision of key operations at the intermediate and district levels.

An important feature of the expanded framework is that it broadens the scope of monitoring and evaluation (M&E) of TB activities to include both traditional program outcome indicators, such as case detection and treatment success rates, and indicators that measure the technical, managerial, social, and political dimensions of DOTS. Consequently, the expanded framework demonstrates why it is necessary to routinely collect information on a standard set of programmatic inputs, processes, and outcomes to better identify strengths and weaknesses and track progress.

## **Objectives of the Compendium**

TB control has been one of the leading fields to routinely collect information that measures the most critical output and outcome indicators used for national and global reporting. TB programs in the vast majority of countries are currently using these indicators for M&E for TB control at the national and local levels. Still, there is some variability in the definitions of core indicators, and guidance is needed on additional indicators that are critical for M&E of the rapid scale-up of TB programs.

The overall objective of this compendium is to encourage and facilitate internal and external M&E of TB control programs to improve quality and effectiveness. This compendium provides a comprehensive and standardized listing of the most widely used indicators relevant to developing countries, and it strives to achieve uniformity in defining indicators to allow comparisons over time and between different programs. The compendium draws on numerous important, previously established guidelines from WHO and the International Union Against Tuberculosis and Lung Disease (UNION) on the selection and use of indicators. Although WHO and the UNION have

been using a range of process indicators for a long time, a few process-level indicators presented in this compendium have been adapted from related fields.

The specific objectives of the compendium are to:

- Provide standardized M&E terminology across indicators and TB control programs
- Encourage consistent use of indicators to monitor and evaluate programs
- Provide guidance for the development of comprehensive evaluation plans, including selection of indicators to measure progress in specific areas
- Serve as a resource for the different components of the M&E process.

## **Intended Audience**

This compendium is designed for health professionals with varied levels of training and experience in M&E. Several different audiences should find this compendium relevant to their activities, including:

- Directors, managers, and technical staff of TB programs worldwide
- International partners and consultants responsible for designing and evaluating collaborative TB control projects with host country institutions
- In-country evaluation specialists responsible for monitoring performance and for evaluating the effectiveness of health systems, including TB programs
- Health system planners.

## **Organization of the Compendium**

This compendium provides a detailed review of M&E for national TB programs and indicators for measuring DOTS implementation and expansion. The review includes information on M&E for TB control programs, sources of data, and effective use of M&E data for program improvement and advocacy. The indicators in this document are divided into three sections—global outcome indicators, routinely reported program outcomes, and indicators for measuring implementation of DOTS components. The indicators for measuring the implementation of DOTS correspond to the five components of the DOTS strategy—political commitment, smear microscopy for diagnosis, directly observed short-course chemotherapy, reliable drug supply, and recording and reporting. This section also includes indicators for tracking the progress

of activities related to program supervision, human resources development, and health systems.

A supplement to this compendium will present indicators for M&E of specific programmatic approaches, such as TB and HIV integration, MDR-TB, public and private mix, community-based DOTS, TB control in prisons, health systems capacity, and social mobilization and IEC (information, education, and communication).

