

Tuberculosis prevention, care and control

A practical directory of new advances



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1. Preface

During the late 20th century countries increasingly recognized tuberculosis (TB) as a public-health priority and intensified their TB prevention, care and control efforts. Many adopted a new strategy for effective TB control: DOTS. Expansion of DOTS was incomplete, however, and misdiagnosis of TB and poor-quality treatment persisted. Innovative new approaches and tools for TB control were needed to help countries increase access to high-quality TB care, while also responding to the deadly combination of HIV and TB and the emergence of drug-resistant strains of TB. In response, WHO and partners embraced a new six-point Stop TB Strategy that builds on and enhances DOTS in order address such new challenges.

Within the context of the Stop TB Strategy, countries and the international community have designed, implemented, evaluated and endorsed dozens of additional new approaches and tools for TB prevention, care and control. Extensive evidence and expert guidance exists for each of these advances. Supplemented by country experience, this information is a valuable resource for national TB control programmes (NTPs) that are preparing to evaluate or introduce new approaches and tools. A recent survey of NTP managers indicates, however, that despite this wealth of information it has been difficult for countries to comprehensively implement the available advances. The fast pace of innovation, combined with limited absorptive capacity, makes it hard to select and implement the advances that most effectively target existing constraints to progress.

Recognizing the gap between knowledge and practice, the Introducing New Approaches and Tools (INAT) subgroup of the Stop TB Partnership's DOTS Expansion Working Group has aimed to provide practical information for countries that can help them accelerate implementation of new proven advances in TB prevention, detection, diagnosis, treatment and care.

With this in mind the Stop TB Partnership and the World Health Organization (WHO), with financial support from the United States Agency for International Development (USAID), have produced this *Practical directory of new advances*.

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2. Introduction

This Directory supports the strategic planning efforts of NTP managers, staff and partners by offering a needs-based summary of 76 new approaches and tools for TB prevention, care and control that have been recommended or endorsed by WHO in the previous decade. Information in the Directory was collected from published guidance and standards, peer-reviewed literature and interviews with TB programme managers and international TB control experts. This is not a comprehensive list of all new approaches and tools for TB prevention, care and control. As a practical reference, it focuses on specific strategic or technical advances that can be put into practice in direct response to current constraints to TB programme implementation. To ensure that the Directory reflects the best available scientific evidence, only advances recommended or endorsed by WHO are included. All WHO policies are evidence-based.

The structure and organization of this Directory reflects the components of the Stop TB Strategy. For each advance, the Directory presents a summary of key evidence and relevant new international standards. Where appropriate, the Directory also provides information about the advance's advantages, barriers and limitations, programmatic requirements and/or other considerations. The Directory also provides simple indicators of the management/supervisory, procurement/supply and human resource costs to implement each intervention, where available.

Early advances in TB prevention, care and control

Robert Koch delivered one of the first major advances in TB control in 1882 when he discovered the TB bacillus. Many important advances followed, such as the Bacille Calmette-Guérin (BCG) vaccine and the programmatic implementation of short course chemotherapy using specific, powerful anti-TB medicines. Evidence from TB control practices led to international policies and recommendations for national programme management and implementation (1).

The endorsement and widespread adoption of the DOTS strategy was a major advance at the end of the 20th century that was later expanded upon in the WHO Stop TB Strategy. Underpinned by the Stop TB Strategy, in 2006 the Global Plan to Stop TB, 2006–2015 described strategies and financial requirements for achieving the Millennium Development Goals (MDGs) and other 2015 targets relevant to TB (2).

Recent advances (2000–2011)

With the launch of the first Global Plan to Stop TB, 2001-2005 came a revitalized focus on TB research. Encouraged by momentum towards the MDGs and the drive to reach its targets, countries and the international community delivered innovative new approaches and tools to prevent and control TB. This Directory describes many of these recent advances.

Historically, TB control activities largely focused on the most infectious patients – those who have sputum smear-positive pulmonary TB – because preventing TB from being transmitted (by preventing exposure; early detection and treatment of infectious patients; and preventing latent TB infection from developing into active TB disease) is a basic mechanism underlying the control of the TB epidemic. Recent advances reflect the evolution and expansion of NTPs and the Stop TB Strategy's emphasis on universal access for all persons to high-quality, patient-centered treatment. Nonetheless, highly infectious, smear-positive patients are still the focus of many advances, such as contact tracing and infection control.

In response to "demand from countries for immediate guidance on which collaborative TB/HIV activities to implement and under what circumstances," (3) policies and tools were developed to support collaboration between HIV and TB programmes; guidelines were established for the prevention and treatment of HIV-TB coinfection among a variety of different populations (including children and infants); and laboratory strengthening and diagnostics policy development was accelerated, especially to address the challenges of HIV-associated and drug-resistant TB.

The serious emerging threat of resistance to anti-TB drugs led to the development of international guidelines for programmatically managing multidrug resistant TB (MDR-TB), as well as new clinical and laboratory tools to diagnose and treat it in a variety of settings (4). Recognizing that many cases go undetected and that those infected are likely not receiving proper treatment (5), new tools for engaging and partnering with all health providers have also been developed. Additional advances have been designed to help countries achieve universal access and earlier detection in order to effectively cut TB

"No health system can achieve everything possible and desirable all at once, and all health systems face resource constraints. Therefore systematic, rational and explicit ways of identifying priorities are necessary... The greater the resource constraints, the more important prioritization becomes, in order to ensure the most effective use of the limited resources available."

Strategic framework to decrease the burden of TB/HIV. Geneva, WHO, 2002

transmission, avert deaths and prevent suffering due to TB. At the same time, efforts continue to improve existing guidelines for basic TB care services and to provide new tools for ensuring the appropriate human and financial resource capacity of the programmes implementing them.

3. Evaluating and implementing new advances

This Directory is a strategic planning tool that provides summary information about dozens of new advances. Specific guidance has been published for each advance, is referenced here and should be read for more detailed and nuanced information, if you think that a particular advance may benefit your programme. For more assistance, contact technical experts who have previously helped countries to select, implement and/or scale-up the advance (or directly implemented the advances themselves). For the purposes of this Directory, an *advance* is a recently endorsed tool or approach that, if implemented properly, can measurably improve TB prevention, care and control.

Understanding your needs

Every country faces different TB control needs and challenges that must be understood to assess the relevance and potential value of a new approach or tool. Before selecting a new advance to implement, carefully consider:

- **Known TB control challenges** Based on data collected, consider prioritizing advances that will have the greatest primary and secondary health impact among the populations and in the areas you are targeting. For example, current TB/HIV collaborative activities may be a priority if there is evidence of high ($\geq 1\%$) HIV prevalence among TB patients in the population.
- **Suspected challenges** Consider advances that will confirm the scope of potential problems and can inform effective solutions. For example, conducting a national public-private mix (PPM) situation assessment may be a priority if you suspect that many TB patients seek treatment from the private sector or from public health care providers that are not linked to the NTP network.
- **Future challenges** Consider advances that preemptively address challenges or constraints you anticipate. For example, implementing a programme to develop managerial capacity at district or regional level may be a higher priority if you are preparing to decentralize TB programme administration.

Selected sources of assistance/support for new advances		
WHO Stop TB Department	http://www.who.int/tb (email: tuberculosis@who.int)	
Stop TB Partnership	http://www.stoptb.org (email: stoptbadvocacy@who.int)	
Area requiring assistance/support	Starting points for assistance/support	Website
Advocacy, communication and social mobilization	Stop TB Partnership ACSM Subgroup	http://www.stoptb.org/countries/acsm/subgroup
Anti-TB drug development and procurement	Global Drug Facility (GDF) Working Group on New Drugs	http://www.stoptb.org/wg/gdf http://www.newtbdrugs.org
Diagnostics / laboratory strengthening	Global Laboratory Initiative (GLI)	http://www.stoptb.org/wg/gli
Engaging all care providers	Stop TB Partnership PPM Subgroup	http://www.stoptb.org/wg/dots_expansion/ppm
Increasing case detection	DOTS Expansion Working Group TB REACH	http://www.stoptb.org/wg/dots_expansion http://www.stoptb.org/global/awards/tbreach
Managing drug-resistant TB	Green Light Committee (GLC) Stop TB Partnership Working Group on MDR-TB	http://www.who.int/tb/challenges/mdr/greenlightcommittee http://www.stoptb.org/wg/mdrtb
Planning / implementing TB technical assistance	TBTEAM and the GLI	http://www.stoptb.org/countries/tbteam
TB/HIV collaboration	Stop TB Partnership TB/HIV Working Group	http://www.stoptb.org/wg/tb_hiv

Assessing an advance

Each new approach or tool for TB prevention, care or control has a specific purpose and a unique set of requirements to be effective. Keep in mind the following when reviewing potential new advances for your programme:

- **The evidence-base** This includes evidence not only of the efficacy of the tool under the conditions of controlled trials but also its effectiveness in actual field conditions. Define your needs based on your specific implementation context and ensure there is evidence that the advance meets them.
- **Costs** Some advances can be implemented with minimal incremental cost. Others have high initial costs (such as for some types of equipment) and/or ongoing costs (such as for maintenance or consumable products). The cost-versus-benefits of each tool should be carefully considered. Remember that many costs are not specific to TB and can be shared with the overall health system and other disease control programmes. Consider starting with the most cost-effective and aim for the greatest impact with available resources.
- **Infrastructure requirements** Some advances can only have the desired benefits if other health system components are already in place. Consider advances that can be implemented using existing capacity – or plan to develop the capacity before implementing the advance. For example, if you do not have the infrastructure to support certain diagnostic tools, account for the costs and time to develop that infrastructure when assessing the benefits of the advance. Likewise, expanding case detection or community involvement may be counterproductive if there is not a steady supply of high-quality anti-TB drugs or if treatment quality is poor.
- **Staff capacity and training needs** A key factor when assessing a new advance is the human resource capacity that you need to implement and scale it up. In some cases, a new advance will require additional staff, training and on-going supervision. In other cases, an advance can be implemented with very little additional capacity; however you may need to train existing staff in the benefits the advance and how to apply it in their work. Creative solutions can leverage existing infrastructure to support new TB prevention, care and control activities. For example, networks of community leaders and health volunteers that you already work with may be able to help you implement new local advances.
- **Tool-specific requirements** Finally, every new approach and tool has its own specific requirements. Before selecting an advance, review published guidance and confer with experts and TB control staff in other countries in order to understand these well. For example, when assessing new laboratory diagnostic tools, take into account such factors as the turnaround time for results; the regulatory and quality control measures required; the effect on work flow; and any biosafety considerations associated with the new tool.

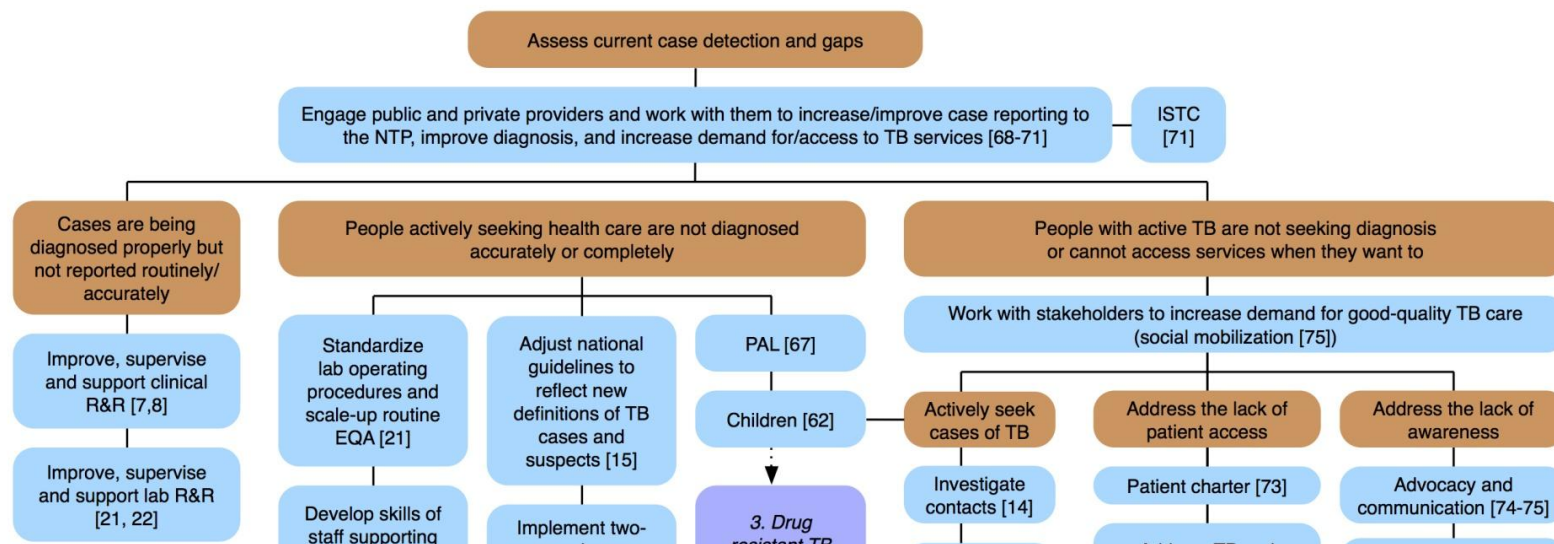
4. Applying new advances to address key problems in TB control

Every NTP faces unique challenges, but some challenges are common across many countries. Large-scale problems typically require more comprehensive approaches that involve multiple advances described in this Directory. The following maps demonstrate how advances can be implemented in combination to address four of the most common challenges faced by NTPs. The number in brackets refers to the ID of the advance: *not* the resources at the end of this Directory.

Important note These maps only show advances that are described in this Directory and are applicable to the problem being addressed by the map. Important existing approaches (such as sputum smear microscopy) and some approaches that have not yet been formally endorsed do not appear here. *Although the sequence of advances shown may be helpful, you do not **need** to implement them in that order.*

Map 1: Detecting more TB cases

TB cases often go undetected. This may be because cases are diagnosed but not reported to the NTP. However, it is known that many suspects do not seek diagnosis (or face barriers that do not allow them access to diagnosis) and that some cases are not diagnosed accurately. To reduce transmission and save the lives of those infected, NTPs have implemented and assessed new approaches to increase case detection.



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