AN ACTION FRAMEWORK FOR HIGHER AND EARLIER TB CASE DETECTION

Background document for DOTS Expansion Working Group Meeting

Geneva, 13-14 October 2009

Prepared by:
Knut Lonnroth
Mukund Uplekar
Salah-Eddine Ottmani
Léopold Blanc
1. INTRODUCTION

The global case detection target, set first for 2000, and then postponed for 2005, has not yet been reached, and the increasing trend has decelerated in the period 2005 to 2007 (Figure 1).

![Figure 1. Trend in case-detection rate (DOTS and non-DOTS) for new sputum smear positive cases, 1995-2007. Horizontal line indicates the 2005 global case detection target (WHO 2009)](image)

Poor access to quality services, diagnostic delays, complex and expensive care seeking paths, and inappropriate treatments produce poor health outcomes, and social and financial consequences for TB patients, their families, and the community.

Detecting more cases and detecting them early is essential for improving the well being of the individual as well as for reaching epidemiological impact targets. Recent analyses have pointed to the need to go beyond the 2005 global case detection rate target, and focus more on both universal access and early detection to effectively cut transmission. Though sputum smear-positive TB is the most infectious form of TB, the risk of transmission in other forms of TB should not be ignored. A major challenge for global TB control is to resume the acceleration seen in the early 2000s of case detection trends for all types of TB, while putting in place strategies that ensure early diagnosis and initiation of effective treatment for all TB patients.

From both an equity perspective, as well as a TB control perspective, it is essential to ensure that the poorest and most vulnerable groups have access to quality diagnosis and treatment. They are the ones most likely to contract infection, develop disease, have poor treatment outcomes, and experience severe social and economic consequences of the disease. If TB is not effectively diagnosed and treated among the vulnerable groups, it can perpetuate the epidemic and put the whole population at continuous risk of TB. Specific action is therefore required to ensure equity in access to quality services. Targeted interventions to reach and support vulnerable groups may be necessary.
2. A FRAMEWORK FOR IMPROVED EARLY CASE DETECTION

There are several possible reasons for low case detection rate and delayed treatment, including:

- poor understanding of TB and its symptoms in the general population;
- poor knowledge about where to seek care;
- poor health service infrastructure with limited outreach;
- access barriers;
- poor diagnostic quality;
- limited human resource for health;
- poor TB knowledge among health providers;
- perverse incentive systems for providers that foster use of inappropriate medical technologies;
- poor coordination of health services;
- poor information systems, including notification and referral routines.

A solid analysis of the existing case detection situation is required to devise locally appropriate strategies and prioritize among possible options. Figure 2 presents a framework for identification of relevant entry points for improved early case detection.

![Figure 2. A framework for analysis and action to improve early case detection](image-url)

The upper part of figure 2 depicts the pathway to diagnosis and treatment based on active care seeking by patients. The steps in this pathway include recognition of symptom by the individual (or caretaker), active health seeking, diagnosis in a health facility, referral to the appropriate place of treatment and/or notification of diagnosis.
and treatment. This pathway represents what is often called "passive case detection". It is the main approach applied by most NTPs in high TB burden countries.

"Passive" implies that the NTP is not actively looking for cases within or outside the NTP-affiliated facilities, but wait for people with TB symptoms to approach these facilities. However, the term is misleading since this pathway requires a very active and alert health system that has capacity to identify people who should undergo TB screening ones they turn to the health care facility. It requires active strategies for integration of TB diagnosis and treatment throughout the health system. Sufficient health workforce that ensures improved quality of TB diagnostic facilities and case-management is essential. A communication strategy is required to inform people with TB symptoms where to turn for help. In order to attract people to available diagnostic services it is also essential to make sure that quality treatment is available and accessible. A first essential step of any attempt to improve case detection is to ensure that these elements are in place and actively pursued.

The lower part of figure 2 depicts the pathway for "active case finding", implying actions to screen high risk groups who may not actively seek health care due to TB symptoms. Contact investigation is the first logical extension beyond the "passive case finding" approach. Active case detection may also include screening of high-risk populations or clinical risk groups. The latter type of screening among people who actively seek care in a health facility, though not for TB symptoms, conceptually falls somewhere between "passive" and "active" case finding.

Efforts to improve early case detection need to focus on both the demand and supply side. Main avenues to improve early case detection include:

1. Improving the quality, outreach and access to diagnostic facilities (including new diagnostic tools) across the whole health system.
2. Improving referral and notification of cases already diagnosed with TB, but managed outside the NTP.
3. Influencing peoples health seeking behaviour

### 3. ACTIONS TO IMPROVE EARLY CASE DETECTION

**Step 1: Analysis of gaps and barriers for early case detection**

The appropriate strategy for improved early case detection depends on the status and nature of the TB epidemic, the performance of the NTP, the capacity of the general health system, and the health seeking behaviour of people with TB symptoms. A careful assessment of the situation with regards to these parameters is therefore required to prepare for local action.

The framework in figure 2 may help identify bottlenecks along the pathways to diagnosis, notification, and treatment initiation. A complementary approach is to assess the fraction of cases being missed by routine TB notification data, based on the "Onion" model (figure 3). The two models are overlapping, but a major difference is that the model in figure 2 more explicitly considers the health seeking pathway,
aspects on treatment delay, and aspect of active case finding, whereas the "Onion" model more explicitly aims to quantify the fraction of TB cases not accounted for in TB notification data and thereby improve TB burden estimates.

Figure 3. The "Onion" model: The “onion” model: a framework for assessing the fraction of TB cases accounted for in TB notification data.

In addition, it may be useful to analyse where there are "missing cases" by considering three categories of gaps, and focus actions accordingly:
1. **By provider:** Which providers are diagnosing and treating TB, but not referring/notifying? How many patients are likely to be diagnosed and under treatment with these providers? What is the existing policy and regulation concerning notification of TB cases?
2. **By geographical area:** What is the geographical variation in case detection? Which areas will require special attention?
3. **By risk group:** Which sub-populations have highest risk of TB? Which are underrepresented in the NTP? What risk factors, risk groups and risk populations are most important in the country?

Much of the analysis may rely on data from existing surveillance systems and programme management data. However, for several questions, additional data will have to be collected through additional assessment, surveys and operational research. Guiding questions for the analysis of gaps and barriers for early case detection and recommended tools for such analysis are listed in table 1.
### Table 1. Sample questions to assess case detection gaps, possible tools and sources for the analysis, and examples of actions to address the gaps

<table>
<thead>
<tr>
<th>Questions</th>
<th>Sources and tools</th>
<th>Possible actions to address situation</th>
</tr>
</thead>
</table>
| **What is the burden of TB, what are the trends, what are the geographical difference within the country? Is the country moving towards TB elimination? Is the TB epidemic concentrated to certain risk populations only?** | • Routine surveillance data, broken down on sub-national level, and for different subgroups if possible  
• Prevalence surveys  
• Operational research | • If epidemic concentrated to certain subpopulations, focus additional action on certain geographical areas or risk groups. |
| **What is the case detection gap in the country, and in different subgroups?** | • Routine surveillance data, broken down on sub-national level, and for different subgroups if possible  
• The “Onion” model approach (WHO 2009)  
• Special surveys and operational research | • If case detection gaps are larger in certain subpopulations, focus additional action on special geographical areas or risk groups.  
• If case detection gap is small, but transmission still seem to be high, focus on diagnosing cases earlier. |
| **What is the treatment delay, how does it vary between sub-groups (gender, age, SES, etc), and seem to be the main reasons for delay?** | • Operational research, particularly survey of newly diagnosed with retrospective questions about health seeking (tool to determine health seeking and patient costs has been developed by KNCV, WHO, and JATA) | • If patient delay is long, focus on actions to improve knowledge, attitudes and access.  
• If health system delay is long, focus on diagnostic capacity and routines, referral mechanism, notification systems, and coordination of health services. |
| **What is the coverage of the NTP? Does it cover all geographical parts of the country? Does it cover essential parts of the health system, and all important health providers that diagnose and treat TB?** | • Routine programme implementation data, broken down on sub-national level  
• Tool for situation analysis to engage all health care providers (WHO 2008)  
• Operational research | • If <100% coverage, complete geographical coverage.  
• If important parts of health system is not engage, engage all relevant health care providers, and all relevant levels of the health system |
| **What is the quality and outreach of diagnostic services in the NTP-affiliated facilities? How are people with TB symptoms identified and screened?** | • Routine programme implementation data  
• Special assessments (lab assessment tools?)  
• Operational research | • Update diagnostic routines, introduce relevant new tools as required  
• If screening routines not followed in key parts of the system, e.g. hospitals, focus training and capacity strengthening in those facilities |
| **Are people with HIV actively screened for TB? Which other "clinical risk groups" are systematically screened for TB?** | • Routine programme implementation data  
• Special assessments of TB/HIV collaboration (tools?)  
• Operational research | • Improve TB/HIV collaborative activities if suboptimal |
| **What are current policies and practices with regards to contact investigation and active screening for TB outside health facilities? Which are the main risk groups?** | • Routine surveillance and programme implementation data, broken down on sub-national level  
• Special surveys and operational research to identify TB risk factors and risk groups | • If contact investigations are not carried out, or are suboptimal, strengthen those activities |
| **Which are the main access barriers that are contributing to low case detection and delays? How is TB control integrated into the general health system ? What are the weaknesses of the general health system that hampers access to quality TB services?** | • Routine surveillance/programme data, broken down on sub-national level  
• Assessment of access barriers, using the framework of “Addressing poverty in TB control (WHO 2005)  
• Framework to assess general health systems barriers (WHO 2008) | • If financial barriers dominate, explore enabling mechanisms such as ensuring all parts of the diagnosis are free of charge; diagnostic services are decentralized; and/or cost of transport is subsidized,  
• If public services not fully integrated into the general health system, integrate activities |
| **What is the level of knowledge and attitudes towards TB, TB symptoms and the NTP in the population? How does TB stigma affect peoples health seeking?** | • KAP surveys and other operational research | • Design communication strategies targeting main gaps in knowledge and attitudes |
Step 2: Prioritize actions

Depending on findings in an assessment of current case detection gaps and barriers, the following intervention entry points should be considered and prioritized. Some examples of how to link the gap analysis to action prioritization are included in table 1. Critically, the cost and cost-effectiveness of desired actions need to be considered.

1. DOTS expansion

Strong political commitment, including sufficient financial support for full coverage and equitable access to evidence-based and quality-controlled TB diagnosis and treatment, are the most important requirements for successful national TB control, and essential for complete and early case detection. The Stop TB Strategy\(^9\) clearly defines the appropriate approach to diagnosis, treatment and case management, as also defined in the ISTC\(^10\). When sufficient resources, infrastructure and manpower for basic DOTS implementation are not in place, this should be the first priority, followed by actions to improve outreach and access to those services.

2. Intensifying case finding strategies in health care facilities

**Ensure comprehensive implementation of existing diagnostic algorithm**

This requires that all staff in all parts of the health system are alert and know how to ask patients about TB symptoms and refer for TB diagnostic test as per guidelines. This entails training (pre- and in-service) of all health care providers, public and private. Restricting the efforts to NTP-affiliated facilities only, or the specific staff designated for TB care only, misses an opportunity to identify all those cases that seek care elsewhere in the system.

Actively asking all out-patients in primary health care facilities and hospitals for cough (including those who do not mention cough spontaneously) can yield substantial additional number of cases\(^11,12,13\). Expanding implementation of screening practices may also mean involving non-health care staff as symptom surveyors, such as clerks managing the registration in the out-patient department, who may ask a simple question about cough to all attendees and send eligible patients directly to a diagnostic test.

**Further develop the diagnostic algorithm for pulmonary TB**

The recommended indication for performing diagnostic test for pulmonary TB is 2-3 weeks duration of cough. A shorter recommended duration of cough leads to higher diagnostic sensitivity but lower specificity. Appropriate cut-off depends on both the prevalence of TB in the community (which determines the positive predictive value), as well as the available diagnostic resources. When sufficient diagnostic capacity is available, it will be an advantage to use 2 weeks as cut-off pointy, since it can help increase case detection\(^14\). In principle, any cough of any duration may be used as a screening indication in a high burden setting. This will maximize sensitivity, but of course many more tests will be performed on people who do not have TB.
Sputum smear microscopy is the internationally recommended first diagnostic tool for pulmonary TB. The test is effective in quickly identifying those individuals that are most infectious. The overall sensitivity of sputum smear microscopy is however low, while specificity is high\textsuperscript{15}. Sensitivity can be improved through use of special techniques such as fluorescent microscopy and bleach techniques.

The definition of smear-positive TB has recently been changed so that it is now sufficient with one positive sputum smear to fulfil criteria for smear positive TB\textsuperscript{16}. Adapting this definition means higher sensitivity. Furthermore, when patients can be diagnosed based on the first spot sputum, there is less risk of defaulting during the diagnostic process. Therefore, the overall case detection may increase while diagnosis is made more quickly and with less resources.

The recommended algorithm for cases that have a negative sputum smear conventionally involves a course of broad spectrum antibiotics and a follow up X-ray. This approach minimizes the risk of treating false positive X-ray diagnosed TB cases. However, the approach is associated with risk of delay in diagnosis as well as risk of drop-out during the diagnostic phase, which is particularly critical for people with TB/HIV co-infection, who are also more likely to present with smear-negative TB. Good access to high quality X-ray diagnosis combined with an effective communication strategies that minimizes drop out during the diagnostic phase can potentially improve early case detection of smear negative cases. A diagnosis based on an initial X-ray has been recommended for people with HIV\textsuperscript{17}.

**Practical Approach to Lung Health**

Respiratory conditions are usually the first or the second leading cause of care-seeking in primary health care (PHC) settings\textsuperscript{18}. Evidence from countries suggest that patients with persistent respiratory symptoms, including TB suspects, are often mismanaged in PHC facilities, and that TB screening among eligible patients is often neglected\textsuperscript{19}. The Practical Approach to Lung Health (PAL) aims at improving the quality of the management of respiratory patients, and is intended to ensure the coordination among different levels of health care and between TB control programmes and general health services\textsuperscript{20}. Country experience has shown that PAL implementation can improve the technical capacities of PHC workers to manage respiratory patients, including TB suspects\textsuperscript{21}. Data from country pilot sites also suggest that the screening for TB among respiratory patients who meet the definition of a TB suspect increases with PAL\textsuperscript{22}, and that case detection increases as a consequence\textsuperscript{23,24}. Therefore, PAL is a recommended approach to maximize case detection, especially for middle-income countries.

**Culture, DST and new diagnostic tools.**

Culture is the gold standard for TB diagnosis, and the method is more sensitive and specific than sputum-smear microscopy. Wide implementation of quality-assured culture services can help increase bacteriologically confirmed case detection. However, the method is expensive and requires an advances lab network. Conventional culture also takes a long time (up to 8 weeks). TB diagnosis would be considerably simplified if and when new sensitive, specific, and cost-effective diagnostic tools, which are also applicable at point-of-care in field conditions in very poor settings, become available.
Improving diagnosis of extrapulmonary TB and TB in children
Existing diagnostic tests for TB in children have shortcomings, and the full range of tests (including bacteriological culture and TST) is often not available in settings where the vast majority of TB cases are diagnosed. The development of affordable diagnostic tests for TB in children in low-resource settings should be a priority for researchers and policy makers. Challenges for diagnosis of extrapulmonary TB concerns shortcomings in several diagnostic tests and clinical assessments across many medical specialities. Improved diagnostic algorithms, as well as improved diagnostic capacity, infrastructure and training, may be required to ensure effective and early diagnosis.

Screening people living with HIV
The Stop TB Strategy emphasizes the need to screen all people with HIV for TB, regardless of symptoms. The diagnostic algorithm is different for these cases, primarily because the need to start treatment early is even more critical among people with HIV. Recent experiences show that active screening of people with HIV has made substantial contribution to overall TB case detection in some countries. The active engagement of HIV/AIDS programmes, as well as all health care providers involved in HIV/AIDS care is essential to pursue this approach.

Screening other clinical risk groups
The risk of TB is also increased among people with smoking-related conditions, diabetes, malnutrition, alcoholism, and a wide range of other conditions that impair the host defence against TB infection and disease, such as silicosis, malignancies, various systemic immunosuppressant conditions, and treatment with immunosuppressant drugs. In addition, people who have previously had TB are at higher risk than then general population to develop active TB. The case finding yield may be high when screening these risk groups in clinical settings, especially if they have TB symptoms. It is a logic part of the individual clinical management of these conditions, at least in high TB burden settings, to screen for TB. However, few NTPs have policies to screen these risk groups, and no international standards for such screening has been developed. More research and documentation is needed on the feasibility, effectiveness and cost-effectiveness of such approaches are required before general recommendations for NTP policies can be developed.

3. Minimize access barriers, especially for the poor and vulnerable
A basic principle for NTPs is to provide essential diagnostic tests as well as the full treatment course free of charge to patients. Many NTPs aim to decentralize service delivery to ensure access to all patients, including those in remote areas. However, there may be important gaps in the geographical coverage of such service decentralization. Moreover, it is well recognized that the poorest of the poor, those living in remote rural areas, in conflict zones, and in urban slums that lack basic health care infrastructure often have poor access to quality services. Disempowered, poorly educated, marginalised, informal or illegal residents may have great difficulties both accessing care and fully avail the available services even if they can reach the appropriate facility. Many turn to informal providers or depend on self-treatment, and delay formal health care utilization. Women seem to face special access barriers in
many settings, related to, among other things, disempowerment, stigma and lack of financial resources\textsuperscript{32,33,34,35}. Guidelines have been developed for NTPs on how to improve access for these groups\textsuperscript{2}. Many of these actions, such as further decentralization of service delivery, outreach activities, simplification of diagnostic routines, and improved communication with patients, can be pursued by NTP alone. However, much of these activities need to be done in collaboration with actors engaged in general health systems strengthening\textsuperscript{36} as well as with civil society and community activists who are engaged in improved health services for the poor and vulnerable\textsuperscript{37,38}. The guidelines present a step-wise approach including: assessment of specific access barriers and specific vulnerable groups; development of interventions based on the assessment; harnessing of resources for action within and outside NTP and the health sector; and monitoring and evaluation of those approaches\textsuperscript{7}. Currently, few NTPs have sufficient information to assess which groups are left out. Indicators and tool for such assessment are under development\textsuperscript{39}.

4. Engaging all health care providers

People with TB symptoms utilize a wide range of public and private providers. In many high TB burden countries, the first point of contact for the majority of people with TB, including the poor, is a private provider (private doctors and hospitals, private pharmacies or informal private providers). For example, various studies have shown that the proportion of patients that had turned first to a private provider was 50% in Vietnam\textsuperscript{40}, 75% in India\textsuperscript{4156}, and 96% in Myanmar\textsuperscript{42}, and there were only minor differences between the poor and the non-poor. These providers are normally involved in formal national TB control efforts to a very limited extent, they rarely follow international standards, and usually do not notify TB cases to NTP. A similar problem exists in parts of the public health care sector in many countries, especially in the hospital sector. While NTP may be fully integrated into PHC, public hospitals, medical colleges, special health insurance-affiliated health facilities, and health facilities belonging to special health services of the armed forces, prison system, police service, etc, may not be linked to the NTP\textsuperscript{43}.

All the private and public providers that are consulted by people with TB symptoms, and who diagnose and/or treat TB, need to be engaged in national TB control efforts in order to ensure early diagnosis, appropriate treatment, and full notification of all TB cases. Guidelines have been developed for the engagement of all health providers through so-called "public-private mix" (PPM) approaches\textsuperscript{44}. These guidelines are based on documented experiences of such initiatives in over 40 projects in more than 20 countries, and a large body of operational research on initiatives targeting various types of providers in diverse settings\textsuperscript{45}. This research shows that all types of providers can be productively engaged; that case detection (registration for treatment under DOTS/ISTC) can increase between 10% and 50% depending on baseline case detection, and intensity of the effort. The PPM approach has been shown to be cost-effective from providers, patients as well as the societies viewpoint\textsuperscript{46,47}.

5. Health communication and social mobilization
If specific awareness about TB, TB symptoms, and TB care services are high in the community, this will help ensure that people do not neglect TB symptoms and take appropriate action early and turn to the right facility for care. However, knowledge in itself is not sufficient. People need to believe that the available services offer something valuable at an affordable cost, and they need to be ensured that availing TB services does not come at a social price due to stigma attached to the disease and/or the offered TB services. Any communication strategy to influence the demand side along those dimensions should be based on a good understanding of the current knowledge and attitudes. Therefore, the active engagement of community members and civil society is essential for the planning and execution of an effective strategy.

There is a lot of anecdotal evidence of the value of communication strategies, and a few well-documented successes. For example, an educational campaign in Cali, Colombia resulted in a 50% increase in case detection, while there was no increase in control areas. In Indonesia, community education (as part of a broader community-based TB programme) was associated with a tripling of case detection, while only a very modest increase (13%) was recorded in the same period in control areas.

A powerful way to increase utilization is to ensure that high-quality, accessible and affordable services are in place. People's health seeking is to a large extent influenced by the experiences and attitudes of their family, local community and peers. Ensuring client satisfaction is therefore key to successful communication to the community about the utility of the available TB services. Cured TB patients can be actively involved to increase awareness in the community, and also be formally engaged to identify and refer people with TB symptoms.

6. Contributing to general Health System Strengthening

Most NTPs are fully integrated into PHC with respect to diagnosis and treatment of TB. Therefore, the performance of NTP is dependent on the performance of the general health system. Guidelines have been developed for how NTPs can actively contribute to HSS. There is no single key intervention that all NTPs need to pursue. The key point is that NTPs, in order to improve case detection and general performance of the programme need to assess weaknesses in the general health system and contribute to addressing them together with other public health programmes and relevant stakeholders in the general health system. The WHO health systems strengthening strategy identifies six health systems building blocks -- leadership/governance, financing, health services, health workforce, health information, and medical products -- that may be a useful starting point for such analysis. A specific regulatory intervention that can help improve case detection is a disease control law that incorporates compulsory notification of all TB cases. If there are sufficient resources to enforce such a regulation, the number of diagnosed TB cases that are officially accounted for can be substantially increased, which has been recently experiences in China.

7. Active case finding
**Contact investigation**

A recent systematic literature review of studies assessing the effects of TB contact investigations in low and middle income countries has shown that 4.5% of identified household contacts had active TB (8.5% of children less than five years old)^52^. The prevalence of bacteriologically confirmed TB was 2.3%. Recent data collected on routine basis in Morocco have shown that 4 to 8% of TB cases registered annually by the NTP were identified among household contacts. In children less than 10 years of age, approximately 20% of TB cases registered were identified in household contacts^53^.

These findings highlight that TB contact investigation can give a high yield of active TB cases, particularly in children. It is not known what proportion of these cases would have been diagnosed anyway, but at a later stage, through "passive case finding". Therefore, while it is plausible that contact investigation would significantly contribute to earlier TB case detection, the contribution in terms of additional number of cases detected is less certain. In many low and middle income countries, TB contact investigation is not performed as a routine activity of TB control even if it is included in the national TB control policy and strategy. Often, neither the index cases nor the contacts who should be investigated for TB are clearly defined in NTP policies. Moreover, the procedures to be used by NTP services in assessing contacts for TB is often not specified.

**Other active case finding strategies**

Mass radiography screening has historically been a standard element of many TB control programmes. Even before chemotherapy was available, this was a way to identify TB cases eligible for isolation in TB sanatoria. There are numerous examples of successful screening campaigns covering entire populations, which have been effective in identifying additional and previously unknown TB cases^54^. While the potential benefit of such approach is undisputable, the overall experience is that the resources and logistic arrangements required renders such approaches unfeasible and cost-ineffective as compared to other case finding approaches^55^. Already in the 1960s and 1970s, the WHO Expert Committee on Tuberculosis discouraged mass screening^56^.

However, there are several alternatives to mass screening, which are more targeted, less resource demanding, and more cost-effective. These include screening of risk groups with high TB exposure, such as, for example, certain health care workers^57^, prisoners^58^, refugees^59^, drug addicts^60^, homeless people, slum dwellers or other identified high-risk populations^2-4^ Such screening may be combined with communication strategies to encourage people to approach health facilities if they have TB symptoms (rather than using ambulatory diagnostic units to screen entire communities). There is ample evidence of the feasibility and effectiveness of such approaches for improving case detection and some evidence on shortening of diagnostic delays. However, no rigorous cost-effectiveness analyses have been done comparing these initiatives with passive case finding or with each other^53^.

The choice to pursue active case finding approaches, as well as the choice of which approach or combination of approaches to use, should be guided by the local epidemiology (including size and characteristics of various risk groups), capacity of the national programme, effectiveness of passive case finding approaches, and
available resources\textsuperscript{53}. Any initiative should include careful monitoring and evaluation of additionality, cost and cost-effectiveness, before scaling up. This would also contribute to the global evidence base on active case finding.
Prioritization template

The template below may be a useful tool to stimulate discussion about activities that should be prioritized. In the second column, score the importance of the activity, in the third column judge to what extent the activity is already implemented. The fourth column gives a score which is derived by multiplying scores in column two and three. This score is for general guidance only. In the last column, evaluate the score in column three while taking into account feasibility, cost, and any other factor that you feel is important for final prioritization, and prove comments, as necessary, qualify your final judgement. The purpose is not to arrive at a list of five actions that should be implemented in the order they were ranked. The purpose is to identify key areas for future action, which then need to be further discussed and assessed, and action plans need to be developed in light of existing planning framework, current funding situation, etc.

Table 2. Prioritization template (with fictive examples of scores and comments)

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>Activity</th>
<th>Importance</th>
<th>Implementation status</th>
<th>Score</th>
<th>Top five priorities for further action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miglioristan</td>
<td>Geographical DOTS coverage</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>Scoring should take into account cost and feasibility</td>
</tr>
<tr>
<td></td>
<td>Basic lab network of good quality</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>It is critical to complete scale up of QA, but plan is already well under way, with GF support</td>
</tr>
<tr>
<td></td>
<td>Implementation of existing diagnostic algorithm</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Further evolve the diagnostic algorithm for pulmonary TB</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>High score, but need more research to demonstrate effect and cost-effectiveness</td>
</tr>
<tr>
<td></td>
<td>Practical Approach to Lung Health</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Culture / DST services</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>New diagnostic tools</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>High score, but not realistic, not available</td>
</tr>
<tr>
<td>Action</td>
<td>Priority</td>
<td>Impact</td>
<td>Resource</td>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>----------</td>
<td>--------</td>
<td>----------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>High quality diagnosis of extrapulmonary TB</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>too expensive</td>
<td></td>
</tr>
<tr>
<td>High quality diagnosis of TB in children</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Screen people living with HIV</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screen other clinical risk groups, e.g., diabetics, alcoholics, etc</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific actions to minimize access barriers, especially for the poor and vulnerable</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>3 Step one is to do a more detailed assessment of access barriers</td>
<td></td>
</tr>
<tr>
<td>Engage all health care providers</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Health communication and social mobilization</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contribute to general Health System Strengthening</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact investigation</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Other active case finding strategies, e.g., screening of high risk population groups, such as prisoners, migrants, slum-dwellers, etc</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other, specify:</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>We are preparing a national stop TB partnership, that will, among other things, help raise awareness</td>
<td></td>
<td></td>
<td></td>
<td>It is already in the pipeline, so we have not prioritized it as a new required action</td>
<td></td>
</tr>
</tbody>
</table>
References

52 Morrison J, Pai M, Hopewell PC. Tuberculosis and latent tuberculosis infection in close contacts of people with pulmonary tuberculosis in low-income and middle-income countries: a systematic review and meta-analysis. Lancet Infect Dis 2008; 8:359-68.