Strengthening tuberculosis surveillance: rationale and proposed areas of work 2016–2020

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Questions for discussion

1. Do you agree with the proposed priority areas of work for 2016–2020 for (i) notification and (ii) vital registration systems? If not, what additions or modifications would you suggest?

2. Do you think there should be any country prioritisation in all or some of these areas of work? If so, on what basis?

3. Do you agree with the major proposed updates to the TORs for TB epidemiological reviews (background document 2c, section 6.3)? If not, what additions or modifications are proposed?

4. What are the key steps the Task Force recommends to expand implementation of inventory studies (background document 2d)?

5. Who are the individuals and agencies willing to participate in each of the proposed priority areas of work?
Strengthening national tuberculosis (TB) surveillance systems was one of the strategic areas of work of the WHO Global Task Force on TB Impact Measurement (hereafter the Task Force) in the period 2007-2015, with the ultimate goal of measuring the number of TB cases and deaths from notification and vital registration (VR) systems respectively. This area of work remains a top priority in the context of the SDGs and WHO’s End TB Strategy. Post-2015 it is proposed that the Task Force’s work on strengthening surveillance is pursued as two separate strategic areas of work: one focused on the direct measurement of TB cases and one on the direct measurement of TB deaths (see background document 1). This separation is justified on the basis that (1) TB notification and vital registration are separate systems, and (2) the Task Force can play a leading role in providing guidance and advice for the development of high-performance TB notification systems, while the development of vital registration is part of a much broader agenda led by others.1,2

Post-2015 the Task Force will have to build on what was done in the past 8 years, in particular:

1. The development and use of the TB surveillance checklist.3 This defines the standards and their associated benchmarks that need to be met for TB notification and vital registration data to provide a direct measure of TB incidence and mortality. The checklist can be used to provide a baseline assessment of the current performance of surveillance including a clear identification of strengths as well as gaps that need to be addressed. By the end of 2015 this checklist had been used in 41 countries (see Figure 1).

Figure 1. The 41 countries in which the TB surveillance checklist had been used by the end of 2015

Commonly identified gaps have included the need to introduce case-based electronic recording and reporting, under-reporting of detected TB cases and insufficient safeguarding, analysis and use of available historical national and subnational data, which are being addressed by the next three products.

2. A guide on electronic recording and reporting.4 This provides guidance to countries on the design and implementation of case-based electronic recording and reporting.

3. A guide on inventory studies to measure under-reporting of detected TB cases.5 This provides guidance on the design, implementation, analysis and reporting of inventory studies that can be used to measure the extent to which TB surveillance data capture all detected TB cases.

4. A handbook for understanding and using TB data.6 This provides guidance on the analysis of national and subnational surveillance data and survey data, and the use of results for policy, planning and programmatic action.

1 http://www.who.int/hrh/documents/roadmap4health-measurement_accountability.pdf;
2 http://www.who.int/healthinfo/civil_registration/en/
4 http://www.who.int/tb/publications/electronic_recording_reporting/en/
5 http://www.who.int/tb/publications/inventory_studies/en/
5. Growing use of VR data to estimate the number of TB deaths and increasing participation in the broader CRVS agenda.

In 2015, TB deaths were estimated from VR data for 127 countries (see Figure 2), up from 3 countries (Brazil, Mexico, South Africa) in 2008. There has been increasing participation of the Task Force in broader efforts to develop and strengthen CRVS, in particular those led by other departments in WHO but also in discussions with the Global Fund.

Figure 2. The 127 countries for which TB mortality is estimated using measurements from vital registration systems

Priority areas of work for 2016–2020 are proposed below for notification and vital registration systems separately.

1. **TB notification systems**

   - Regular TB epidemiological reviews (see background document 2c and Appendix I) including systematic assessment of the performance of the surveillance system with the checklist of standards and benchmarks, and associated investment framework for improving system performance and direct measurement of disease burden (see Appendix II for summary results from the implementation of the checklist in 41 countries).
   - Support countries to safeguard (see Appendix III), analyse and use routine surveillance data through country visits and regional workshops (see background document 2b).
   - Support countries to transition from paper to electronic case-based reporting of TB cases (see Appendix IV).
   - Support the planning for and implementation of TB inventory studies (see background document 2d).
   - Guidance on the establishment and management of a real-time, case-based TB surveillance system (e.g. setting up alerts to detect clusters in space and trigger rapid investigation).

2. **Vital registration systems**

   - Promoting the use of vital registration data to measure TB mortality and measure equity in access to health through the monitoring of case fatality ratios (CFRs) across and within countries.\(^7\)
   - Creating and sustaining links with stakeholders that are providing funding and/or technical support for the development of vital registration systems and associated research.

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\(^7\) For example, WHO can continue to report on progress in the coverage and quality of vital registration systems in Global TB Reports, highlight the gaps that still exist, and illustrate how data from vital registration systems can be used to assess within country equity (based on subnational estimates of CFR).
Appendix I. TB epidemiological reviews

A lot of effort and funding has been invested to carry out TB epidemiological reviews around the world since 2013 with overall coordination and significant input provided by GTB/TME. Consolidating and making available the lessons learnt, the common findings, as well as practical examples of how to conduct these reviews and ensure recommendations are taken up and appropriately funded is, therefore, of critical importance. To this effect, the Task Force is developing and will be making available: (i) a global repository with key findings from most, if not all, TB epidemiological reviews conducted, (ii) a repository of model reports, and (iii) an implementation document describing required actions and suggested tips for the planning and preparation stage, the in-country mission, as well as the finalisation of the report and follow-up phase to ensure uptake and funding of recommendations after the in-country mission (see background document 2c).

Furthermore, important steps have been taken towards building global and regional capacity to conduct TB epidemiological reviews. An experienced epidemiologist joined GTB/TME in late 2014 to conduct reviews in six priority countries. The epidemiologist offered on-the-job mentoring to consultants who joined these six missions (one additional person per mission), while at the same time building stronger links with the institutions of these consultants that have additional staff with the right expertise and experience to provide technical assistance to other countries (e.g. KNCV, CDC, RIT). Finally, GTB/TME will be holding a training workshop for conducting TB epidemiological reviews for a small roster of an additional 12 consultants (able to support all six WHO regions), between 16-20 May 2016 in Crete, Greece. These consultants were identified through an open invitation for expressions of interest that went out to many academic and technical agency networks.

In preparation for the next round of Global Fund funding that will start in early 2017, it was important to solicit feedback from those involved in the conduct of TB epidemiological reviews and use of their results in terms of what worked, what did not work and what we should consider changing in the future. This was accomplished through: (i) a small technical workshop attended by all key technical and funding agencies who supported work on TB epidemiological reviews, and (ii) an online survey developed and distributed widely to all those who participated in epidemiological reviews via WHO regional offices, as well as networks of key funding and technical agencies.

In addition to solicited feedback, the standardised TORs of TB epidemiological reviews need to also address important dimensions necessary to monitor within the SDG framework (much more prominent compared with the MDGs); namely disaggregation of data at least by age, sex, location, income percentile and related assessments of within-country equity in access to resources, opportunities, services and basic human rights.

For recommended updates to current TORs addressing feedback and SDG dimensions see background document 2c.

8 https://extranet.who.int/dataform/427626/lang-en
Appendix II. Summary results from the implementation of the TB surveillance checklist up to December 2015

**Standards and Benchmark summary n=41**

B1.1 - Case definitions are consistent with WHO guidelines

B1.2 - TB surveillance system is designed to capture a minimum set of variables for reported TB cases

B1.3 - All scheduled periodic data submissions have been received and processed at the national level

B1.4 - Data in quarterly reports (or equivalent) are accurate, complete, and internally consistent (For paper-based systems only)

B1.5 (Electronic) – Data in national database are accurate, complete, internally consistent, and free of duplicates

B1.6 - TB surveillance data are externally consistent

B1.7 - Number of reported TB cases is internally consistent

B1.8 - All diagnosed cases of TB are reported

B1.9 - Population has good access to health care

B1.10 - Vital registration system has high national coverage and quality

B2.1 - Surveillance data provide a direct measure of drug-resistant TB in new cases

B2.2 - Surveillance data provide a direct measure of the prevalence of HIV infection in TB cases

B2.3 - Surveillance data for children reported with TB are reliable and accurate OR all diagnosed childhood TB cases are reported

- Met
- Partially met
- Not met
- Not applicable
- Not assessed
Appendix III. Safeguarding aggregate historical TB data

A key requirement for the success of these workshops is the availability of aggregate historical national and subnational TB surveillance data in a format that is easily analysable. Combined experience from conducting TB epidemiological reviews in over 40 countries since 2013, has shown that the vast majority of countries maintain historical subnational data in hundreds of separate spreadsheets, making it extremely difficult to conduct meaningful time series analyses, resulting in serious underuse of important data. To address this shortcoming, in preparation for these workshops each invited country must compile and capture the national and sub-national aggregate level TB surveillance data, going as far back in time as available, in a standard platform that meets the standards required to undertake the analyses recommended in the handbook for understanding and using TB data. Since District Health Information System (DHIS2)\(^9\) is an open source, widely used solution for collecting, managing, visualising and exploring data by many countries, technical and funding agencies already, the Task Force developed a DHIS2 platform for safeguarding historical TB data (see Figure 1).\(^{10}\)

**Figure 1.** DHIS2 platform for safeguarding aggregate historical subnational level TB surveillance data. Snapshots from sign-in page (Panel A), opening the data entry module (Panel B), and selecting parameters to enter data depending on where (Panel C), what type of data (Panel D) and when the collection period was (Panel E).

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\(^9\) [https://www.dhis2.org/](https://www.dhis2.org/)

\(^{10}\) [https://tbhistoric.org](https://tbhistoric.org)
The platform is currently being tested by countries in West Africa who will be participating in the pilot of these regional workshops to be held in Cotonou, Benin between 2–6 May 2016 (see background document 2b). At first instance data entry will focus on the first administrative level (e.g. province), with a view to expand to the second (e.g. district) soon after. There are two versions of data entry forms, one based on the 2006\(^{11}\) and another on the 2013\(^{12}\) standard WHO definitions and reporting framework for TB to facilitate data entry.

Subnational population estimates, if available disaggregated by age and sex, will also be captured into the platform. This will require coordination with national census agencies unless it is already available in countries using DHIS as their health management information system.

GIS shapefiles are also being incorporated into the platform that will allow generation of maps for all available surveillance indicators (see Figure 2).

The establishment of this platform also promotes the prospective collection of aggregate data for checking and analysis to inform policy and programmatic action at subnational level, at least during the transitioning period from a national paper to electronic case-based system.

\(^{11}\) http://apps.who.int/iris/bitstream/10665/69608/1/WHO_HTM_TB_2006.373_eng.pdf

\(^{12}\) http://www.who.int/tb/publications/definitions/en/
Appendix IV. Supporting the transitioning from paper to electronic case-based surveillance

The obvious advantages of case-based electronic compared with paper based surveillance systems are described in the Task Force’s guide on electronic recording and reporting, provided a careful and appropriate planning and transition period is allowed. This is proposed to be a continued priority area of work for 2016–2020.

To support countries that are considering this transition, the Task Force has recently embarked on a process to define a core set of TB surveillance indicators that should be captured in a case-based surveillance system. Criteria under consideration for defining these indicators include: (i) TB indicators required for the monitoring of progress with SDG and End TB Strategy monitoring (see background document 1), (ii) indicators required for completion of the TB surveillance checklist and other components of TB epidemiological reviews (see background document 2c), and (iii) indicators that are considered core in countries with state-of-the-art surveillance systems.

This minimal set of indicators will in turn inform the design and establishment of a DHIS2 (see Appendix III) case-based application which will be developed later this year and made available to countries for their potential use and adaptation.