Analysis and use of TB data:
an overview of progress since April 2016

Prepared by:
Laura Anderson, Katherine Floyd, Babis Sismanidis
Introduction

This background document provides an overview of progress with activities related to the fifth strategic area of work of the WHO Global Task Force on TB Impact Measurement: analysis and use of TB data. This is a new area of work since April 2016, when the Task Force updated its mandate and strategic areas of work for the period 2016–2020. In addition to progress with the implementation (analysis) and follow up of recommendations (use) with national TB epidemiological reviews already presented in background document 1, there are three key sets of activities under this strategic area of work that are presented in this document:

1. Regional and national data analysis and use workshops;
2. A joint workplan (for 2017–2020) of the WHO Data Collaborative for HIV, TB, malaria and Health Information Systems; and
3. Development of a framework to optimize the use of available evidence and tools for programmatic prioritization and planning.

1. Regional and national analysis and use workshops

The first major initiative to support the routine analysis and use of TB surveillance data at national and subnational levels was to hold a series of regional workshops in 2016 and 2017 (Figure 1). Material from four key products of the Task Force, which provide a foundation for improving TB surveillance systems and the use of data they produce, was initially used to develop the workshop curriculum. These four products are: the TB surveillance checklist, 1 the guide on electronic recording and reporting, 2 the guide on inventory studies to measure under-reporting of detected TB cases, 3 and the handbook for understanding and using TB data. 4 The overall goal of these workshops was to substantially improve capacity to understand and track the TB epidemic using routine surveillance data, and to use the findings to inform policy and programmatic action at global, national and subnational levels, in the context of the End TB Strategy and the Sustainable Development Goals (SDGs).

The approach was piloted in Q2 2016 in Cotonou, Benin, in collaboration with WHO/TDR 5 with funding from the Global Fund, with 16 countries in West Africa 6 that are part of a research network established by TDR bringing together the national tuberculosis programmes (NTPs) called West Africa Research Network-TB (WARN-TB). Based on that experience, the approach was refined and implemented in other priority countries in other parts of the world.

In Q4 2016 a second regional workshop was held in Kampala, Uganda. This involved 16 countries in east and central Africa. 7 The workshop was co-organized by WHO (GTB/TME and AFRO) and the Global Fund, and was facilitated by WHO and technical partner institutions: US Centers for Disease Control and Prevention, KNCV, Macalister University, London School of Hygiene and Tropical Medicine (LSHTM) and the Royal Tropical Institute (KIT) Amsterdam. Funding for the workshop was provided by the Global Fund, USAID and the Bill & Melinda Gates Foundation.

Three additional and complementary products were introduced to countries during this second workshop, all of which aim to better inform policy, planning and programmatic action. The first

---

1 http://www.who.int/tb/publications/standardsandbenchmarks/en/
2 http://www.who.int/tb/publications/electronic_recording_reporting/en/
5 TDR is a Special Programme for Research and Training in Tropical Diseases hosted by WHO. It is a global programme of scientific collaboration that helps facilitate, support and influence efforts to combat diseases of poverty. It is sponsored by the United Nations Children’s Fund, the United Nations Development Programme, the World Bank and WHO.
6 Benin, Burkina Faso, Cape Verde, Gambia, Ghana, Guinea Conakry, Guinea Bissau, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo.
7 Cameroon, Chad, Central African Republic, Ethiopia, the Democratic Republic of the Congo, Kenya, Lesotho, Malawi, Mozambique, Namibia, Sudan, Swaziland, the United Republic of Tanzania, Uganda, Zambia and Zimbabwe.
was patient pathway analysis (PPA), in which the alignment of TB patient care-seeking and TB service delivery are assessed, led by Macalister University.\textsuperscript{8} The second was the use of subnational data from multiple sources to inform planning and decision making for locally differentiated approaches through, among others, the use of mapping techniques, led by KIT Amsterdam.\textsuperscript{9} The third was the use of the TIME Impact model to inform TB policy decisions, led by LSHTM.\textsuperscript{10}

In Q2 2017, a third regional workshop was held in Bangkok, Thailand. This involved 10 countries from Asia.\textsuperscript{11} The workshop was co-organized by the Stop TB Partnership and the Global Fund in two parts: the first facilitated by WHO (with similar content to the two regional workshops in Africa); the second was facilitated by KIT, and aimed to identify geographical areas with potentially missed TB cases through spatial analysis and triangulation of data from various sources.

**Figure 1: Global status of regional and national TB data analysis and use workshops since 2016, including those planned within the next year**

![Map of global workshop locations]

*An in-country workshop was held in Pakistan in November 2017. Pakistan is also one of the countries that participated in a multi-country workshop scheduled for February 2018.

For each workshop, preparatory work was required. This focused on the compilation of all available historical national and subnational TB surveillance data required to undertake the analyses recommended in the handbook on analysing and using TB surveillance data, and completion of the TB surveillance checklist. During the workshops, national teams reviewed and shared results from their checklist assessment, conducted analyses of surveillance data and shared the main findings, defined actions required to strengthen TB surveillance, and identified key areas for policy and programmatic action.

\textsuperscript{8} Hanson CL et al. *Conducting patient-pathway analysis to inform programming of tuberculosis services: methods.* JID. 2017 Nov 3;216(S7):S679

\textsuperscript{9} KIT approach (currently known as MATCH) – use of subnational data for differentiated TB programme planning.


\textsuperscript{11} Bangladesh, Cambodia, India, Indonesia, Myanmar, Nepal, Pakistan, Philippines, Thailand, Viet Nam.
For each workshop there were specific objectives, listed below.

**Pre-workshop**

1. To compile the national and sub-national level TB surveillance data of each country, 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.

**During workshop**

1. To document the current performance of TB surveillance using the WHO TB surveillance checklist of standards and benchmarks.
2. To undertake country-led analyses of TB surveillance and other data based on the guidance provided in the WHO handbook on analysis and use of TB data.
3. To promote the use of a District Health and Information Software (DHIS2) solution for the safeguarding, analysis and visualization of historical aggregated TB surveillance data.
4. To present a DHIS2 solution for MDR-TB case-based surveillance based on a core set of indicators, which will be compatible with the overall national health management and information system (HMIS).
5. To discuss and identify key areas for action required to strengthen the performance of TB surveillance and improve the direct measurement of burden, based on the findings of the TB surveillance checklist, and results from the analysis of data.
6. To present three complementary approaches that aim to guide targeted programmatic action; patient pathway analysis, use of subnational expanded data for locally differentiated approaches, TIME Impact modelling for projections of burden and potential impact of TB prevention and care activities – only relevant for the second workshop in Kampala.

**Post-workshop**

1. Facilitate follow-up actions required based on workshop findings and recommendations, including provision of direct support to countries.\(^{12}\)

For the purposes of these workshops and to safeguard, analyse and visualize historical aggregated TB surveillance data, a WHO TB DHIS2 platform was developed (https://tbhistoric.org/).\(^{13}\) This platform has a set of dashboards used for routine monitoring of key data quality and epidemiological indicators that can then be used to inform programmatic action. Example dashboards are shown in Appendix 1, while the status of subnational level data already uploaded into the system is shown in Figure 2. Further details on TB-specific DHIS2 modules are provided in background document 1.

For some priority countries with an interest in training NTP staff at the subnational level, national workshops have been held using the same approach and material as those used in the regional workshops. To date, such national level workshops have been held in South Africa, Pakistan, Mongolia, and Guinea (countries listed from the earliest to the most recent), while there are plans to hold them in Cote d'Ivoire, DR Congo, Haiti, Indonesia and Nigeria (countries listed in alphabetical order).

---

\(^{12}\) This may include all three levels of WHO, as well as technical and funding partners, independent consultants, people in national institutions, etc.

\(^{13}\) For a demo on the link above using data from Benin: user name: Demo2017 password: Ben\'n2017
Figure 2: Global status of subnational data stored in the WHO TB DHIS2 platform in March 2018 (top), and subnational level TB case notification rates per 100,000 from countries in Africa with data uploaded in the platform (bottom)
2. WHO data collaborative for HIV, TB, malaria and HMIS

*Health Data Collaborative*

The Health Data Collaborative (HDC) is a joint effort of multiple global health partners to work alongside countries to improve the availability, quality and use of data for local decision-making and tracking progress toward the health-related Sustainable Development Goals. The Secretariat sits with the Department of Information, Evidence and Research (EIR), WHO HQ. The role of the HDC is to build on existing efforts by establishing a network of working groups that will address specific technical issues and identify and fill technical gaps. The working groups develop standards, indicators and other tools that help countries to collect, analyse and use good health data. The working groups are time-limited groups of technical experts from partners, countries, academia and civil society that are brought together to work collectively on specific deliverables of the HDC’s work plan.

The current working groups (2016-2017), with corresponding institutions that lead the work, are:

1. Routine Health Facility Information Systems (co-leads: WHO, MEASURE Evaluation, University of Oslo)
2. Household surveys (led by WHO)
3. Facility surveys (co-leads: WHO, WBG)
4. Community data (co-leads: USAID, UNICEF)
6. Data analytics and use (co-leads: JHU, UNAIDS, WHO)
8. Civil Registration and Vital Statistics (co-leads: UNICEF, WBG)
11. Health Financing (led by WHO)

GTB/TME has been actively collaborating with other WHO departments (IER, Global HIV and Hepatitis Programme, Global Malaria Programme) and the University of Oslo since early 2017 on the working group for routine health facility information systems (also see background document 1). More specifically, the objectives of the working group are to:

1. Review, harmonize and endorse standards for improved facility reporting (standard indicators, data quality, data analyses, data use).
2. Identify ways in which investments in facility information systems (e.g. DHIS2) can be better aligned to ensure scaled and sustainable systems (e.g. in governance, data architecture, human resources, etc.).
3. Identify and agree protocols and standards for integrating disease surveillance into routine health information systems and document best practices and learning.

The global deliverables of this working group that are now available, in terms of reference health data standards, are shown in Figure 3.  

---

14 https://www.healthdatacollaborative.org/
Country level deliverables of the group are related to the implementation of the global reference health data standards. The first key related activity was “The Country Planning and Capacity Building Workshop: Strengthening Routine Facility Data Analysis & Use”, which took place in Athens, Greece, 26 February – 2 March 2018. The overall aim of the workshop was to introduce
the newly completed package of harmonized data standards for five disease and health programmes (HIV, TB, Malaria, Immunization and Metrics and Monitoring) in six countries (Malawi, Myanmar, Pakistan, Tanzania, Uganda and Zimbabwe). For key objectives, participants, partners as well as identified country priorities and next steps see Figure 4.

Figure 4: Country level deliverables of the health facility data technical working group of the HDC; roll-out of standards in an integrated

Country deliverables: Achieving impact at country level
6 country demonstration and learning, Athens, 2018

1. What are the current country data practices, needs for improving facility data systems?

2. To what extent do standards & integrated approach meet country/programmatic needs?

3. What are the main issues to be addressed to ensure strong sustainable routine facility data systems? - Initiate plan of work

Countries: Malawi, Myanmar, Pakistan, Tanzania, Uganda, Zimbabwe

MOH focal points: HMIS + HIV + TB + Malaria+ Immunization ++

Partners: WHO, BMGF, CHAI, CDC, GFATM, GAVI, PMI, UIO, USAID, UNICEF, UNAIDS

Supported by Global Fund and GAVI

Country priorities & next steps
Malawi, Myanmar, Pakistan, Tanzania, Uganda, Zimbabwe

Common challenges
- Fragmented and/or parallel data management systems
- Persistent data quality challenges – irregular & uncoordinated
- Limited capacity for data analysis & use at district and facility levels
- Electronic patient level systems: fragmented, inadequate coverage
- Private sector data not well captured
- Infrastructure, connectivity, interoperability
- Human resource capacity

Session 3: Global standards for collecting, analysing and using facility data
Can facilitate harmonization at country level
Can increase data quality resilience
Can improve data use
CHIS Health Apps can help with their implementation

Main barriers to implementing cross-programme platforms?
- Governance and collaboration
- IT / Technical / Infrastructure
- Training and HR
- Financial resources

Next steps
- Countries to finalize workplans and hold high level national stakeholder meetings to launch approach
- Alignment of financial & technical support behind country plan
WHO data collaborative for HIV, TB, malaria and HIS, and joint work plan, 2017-2020

The HIV, TB, malaria and health information departments in WHO are all pursuing work related to strengthening health information systems (in general and for specific diseases), strengthening analysis and use of the data generated by these systems, and ensuring quality in both of these areas through the development of guidance, tools, technical assistance and institutional capacity building with regional and national institutes. This agenda has strong commonalities with priorities identified by the Global Fund to Fight AIDS, TB and Malaria (the Global Fund).

A joint group representing the HIV, TB, malaria and health information systems departments has therefore been established to facilitate collaborative work across WHO and with the Global Fund. This work will include:

- Regular coordination and sharing of priorities for monitoring & evaluation, surveillance and strategic information activities;
- Provision of technical oversight where required for particular projects;
- Joint planning and implementation of work related to priority areas of work.

The group meet regularly and is linked to the HDC. Partners are invited to meetings on key issues as appropriate.

The group has identified three priority areas of work for the period 2017‒2020. These are consistent with those defined within the Global Fund’s strategic initiative related to data (which is part of a wider catalytic funding initiative) as well as its M&E framework for the period 2017–2020.

a) Strengthening surveillance systems and the data they produce through strong national and subnational integrated routine health information systems

The two major components are:

- Development and implementation of routine HMIS and DHIS2. This includes completing the WHO data analyses curriculum, and implementing the WHO health data app for DHIS2, including standard indicators, dashboards and outputs for HTM and other priority programmes/diseases.
- Case-based and patient-level reporting to ensure the availability of disaggregated data for analysis and use, including community reporting. This includes development of DHIS2 modules for case-based reporting for HTM and other priority programmes/diseases, national/subnational capacity building in reporting of individual level data, and strengthening of links between individual level and district level data where feasible.

b) Analysis, interpretation and use of data

The major components are:

- Epidemiological and impact reviews. These should be undertaken periodically, and closely linked to national cycles of strategic planning and health sector reviews.
- Regional and national workshops. These will be joint workshops to ensure regional capacity building in key common M&E areas, tools, and quality, including institutional capacity building with regional and national institutes. National workshops may be required for countries with particularly large populations and disease burdens.
c) Ensuring Quality (cross-cutting for all elements of joint priorities 1 and 2)

The major components are:

  a. *Guidance documents and tools.*
  b. *Quality review* of sound and harmonized M&E plans and M&E investments.
  c. *A qualified pool of consultants,* NPOs, in-country or MOH staff or institutions, who can provide technical assistance. These people will be trained according to key WHO standards and tools, and deployed to undertake work across priority areas 1 and 2. Capacity would be available for East and Southern Africa, West Africa and Asia.
  d. *Peer-review.* This includes review of the quality of implementation, tools, plans, investments and epidemiological/impact reviews.

TB-specific deliverables that are complete are: the DHIS2 modules for aggregate data (see paragraph 1) and case-based data and the curriculum for routine analysis and use of health facility data, in the form of *guidance* document and an *exercise book* (Figure 5).

**Figure 5: Curriculum (guidance and exercise book) for the routine analysis and use of health facility data for TB programme managers**

---

**3. Framework for optimization of evidence and tools for action**

Globally, there has been a concerted effort towards increasing the availability of quality data, and ensuring that these data are used for decision-making and planning. Since the launch of the Millennium Development Goals (MDGs), there has been increased focus on tracking and measuring country-level progress against key TB outcomes. Investments in data systems, surveys, and tools have led to a substantial increase in national and subnational data that are available for analysis and use. This progress provides the opportunity for much greater use of data and evidence to drive programmatic impact towards ending the TB epidemic, which should not be missed.

To date, the greater availability of data has not consistently been translated into decision-making for programmatic impact (Figure 6), and evidence generation has sometimes been
driven by top-down planning rather than in response to key programmatic questions formulated by NTPs.

**Figure 6: Problem statement: NTP priorities and funding allocations are insufficiently reflective of all available data and evidence**

To address these issues and optimize the use of evidence for TB programme planning in a coordinated and complementary way that is supportive of, and does not overwhelm, NTPs, a working group of international TB partners has been formed. The overall goal is to work collectively in support of country needs and interests, and address overlaps and inconsistencies in data and approaches to use of evidence. The working group includes representatives from BMGF, US-CDC, Emory University, Global Fund, KIT Amsterdam, KNCV, Linksbridge, USAID and WHO. Linked with this working group is a WHO-led, BMGF-funded project (since January 2018), in collaboration with NTPs of Indonesia, Kenya, Philippines and South Africa, Linksbridge and FIND, with key deliverables the development of a conceptual framework for priority setting based on in-country experience in these four countries. The first deliverables of the working group and the project team, which will be discussed in more detail during group work on Day 3 of the Task Force meeting, are:

- a **white paper** for improving the use of evidence for TB programme planning, which includes a suggested priority setting framework (Figure 7);
- a **summary report** from the in-country experience in Kenya (17-19 April 2018) of NSP development using the suggested priority setting framework;
- an "**encyclopaedia**" of data and evidence resources to support TB programming and planning (Appendix 2).
Figure 7: Priority setting framework
Appendix 1: Example dashboards from the WHO TB DHIS2 platform, using data from Benin
Annual time series of provincial level number of case notifications, Benin, 2000-2017