Tuberculosis Situation Room Management and Implementation Guidance

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TB DIAH
Tuberculosis Data, Impact Assessment and Communications Hub

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Contents

Abbreviations

API	application programming interface
CLA	collaborating, learning, and adapting
ETL	extract, transform, and load
ICT	information and communications technology
IT	information technology
M&E	monitoring and evaluation
MOH	Ministry of Health
NTP	national tuberculosis program
NSP	national strategic plan
SOP	standard operating procedure
SR	Situation Room
TB DIAH	TB Data, Impact Assessment and Communications Hub
TBSR	Tuberculosis Situation Room
TWG	technical working group
UPS	uninterruptible power supply
USAID	United States Agency for International Development

1. Introduction

The last decade has witnessed the rapid spread of information and communications technology (ICT). The 2030 Sustainable Development Agenda highlights the opportunities and challenges presented by ICT in achieving the 17 Sustainable Development Goals. There is growing consensus in the global health community about the use of ICT to advance the collection, analysis, information sharing, and use of tuberculosis data and health data in general for decision making.[1,2]

Furthermore, TB data are critical to establish and assess the impact of an intervention, monitor progress toward improved patient care, determine barriers to care, and influence public policy. A Tuberculosis Situation Room (TBSR) provides decision makers and implementers with access to data from different sources in one place, allowing for the review, analysis, and interpretation of data in as near to real time as possible. Often there is limited stakeholder participation in TB data decision making and discussions, especially from high-level decision makers. Technical issues often dominate the discourse. In most cases, TB data applications are designed for use by a small and expert user base. However, the TBSR is designed to promote the involvement of all relevant TB stakeholders in data review and decision making. Policymakers and implementers, including program managers in the public and private sectors and in civil society, require that data be communicated through user-friendly, intuitive formats to help them make informed decisions.

The primary data sources for the TBSR in a country should be the electronic medical record platform and the TB program management information system (e.g., e-TB Manager,[3] District Health Information Software, version 2 [DHIS2],[4] and Aspect Reporter GxAlert[5]). The TBSR provides decision makers and implementers, such as NTP managers and implementing partners, with a user-friendly visual display and accessible data analysis functions that can improve an existing data management platform's uptake. The data exchange and interoperability layer will help to link or cross-reference data from different sources to provide richer insights to users. Countries can integrate non-routine data into the TBSR, such as TB surveillance and epidemiological reviews that guide the disease projections, logistics data, and, especially, human resource and financial data.

1.1. Purpose of the TBSR Management and Implementation Guidelines

The TBSR Management and Implementation Guidance document provides the technical and operations requirements for establishing a functional and responsive TBSR in a specific country. The manpower and equipment resources outlined in these guidelines are recommended for establishing TBSRs, particularly at the central level (minimum requirements). These resources may differ at the subnational levels and should be

[1] *World Health Organization.* 2015. [2019-12-16]. Digital Health for the End TB Strategy - An Agenda for Action https://www.who.int/publications/i/item/WHO-HTM-TB-2015.21

[2] Lee, Y., Raviglione, M. C., & Flahault, A. (2020). Use of Digital Technology to Enhance Tuberculosis Control: Scoping Review. *Journal of medical Internet research*, *22*(2), e15727. https://doi.org/10.2196/15727

[3] e-TB Manager: e-TB manager is a web application used to manage patients in real time. It is used for data capturing, reporting, and is an analytic tool for TB. It is also a logistics management tool used by the National TB and Leprosy Control Program (NTBLCP).

[4] DHIS2: DHIS2 is a web-based health management information system (HMIS) used to store, manage and monitor patient health data, support disease surveillance, map disease outbreaks, and enable digital access to health data for health facilities and government organizations. DHIS2 supports both aggregate and patient-level data.

[5] Aspect Reporter: Aspect Reporter has the GxAlert app embedded, which is a web-based open-source data connectivity application that networks the GeneXpert laboratories with the capability to send diagnostic test results out to national programs, supervisors, clinicians, and patients via SMS text, email, and dashboard or by connecting patient records or case management tools already in use.

customized to the specific needs of each country and health level. This document also describes the steps and processes necessary for implementing a TBSR. These guidelines recognize the need to contextualize the implementation processes.

1.2. Intended Audience

The TBSR guidelines are primarily intended for program managers, service providers, implementing partners, data managers, and MEL specialists who will be performing the data analysis, visualization, and utilization of the TBSR. Policymakers, donors, program administrators, and civil society organizations that use TB data make up the secondary audience.

2. TB Situation Room Approach

2.1. Purpose and Objectives of the TBSR

The purpose of the TBSR is to display multi-sourced TB data (EMR, program data, diagnostics and laboratory, drugs and supplies etc.) visually to support programming and decision making.

The specific objectives of the TBSR are to:

- Empower those stakeholders from facility level and above, who are focused on TB programming, to use data in real time (i.e., data available immediately after they are added to the digital system) to achieve the targets of the NSP or program interventions.
- Use data analytics and digital platforms to strengthen the analysis, presentation, interpretation, and use of TB data to monitor the performance of program interventions in the NTP. This approach allows stakeholders (policymakers, program managers, funding agencies, private sector, implementing partners, civil society organizations, and TB patients) to review and visualize priority indicators relevant to the country's stakeholders.
- Have a "one-stop" dashboard that exchanges and interconnects data coming from numerous national data sources, especially program-level data, including service statistics, drug management systems, laboratory information systems, human resources, and other data.

2.2. Expected Results

The TBSR is expected to provide accountability and stewardship of investments in TB programs to improve the well-being of those affected by the disease. The following are the expected results when a TBSR is implemented at all levels of the national program:

- Improve country stakeholders' capacity to analyze, visualize, and interpret TB data across platforms.
- Improve subnational stakeholders' ability to take timely and effective action in regard to TB responses.
- Empower subnational stakeholders to steward TB programs.
- Strengthen data ownership and use to support interventions that address TB program needs.
- Promote the participation and involvement of relevant actors and partners through this digital approach to data review and sharing.

- Major tuberculosis indicators, including TB case notifications, treatment coverage, TB yield, and the use of GeneXpert or other rapid diagnostic tests, should all improve as a result of a TBSR.

2.3. Strategic Approach

The TBSR's strategic approach comprises collaboration and partnership, technology, governance and policy change, capacity building, and exchange and/or interoperability of both the country's specific health information management systems and the TB data management system. Setting up the TBSR will require the involvement of multiple stakeholders (see "Implementation" section below) working together to share a common vision, resources, goals, and outcomes to reduce the TB burden, including by:

- Harnessing evolving technology to increase efficiency and to support the use of data for decision making.
- Strengthening the knowledge, abilities, and skills of individuals.
- Improving organizational procedures for interacting with data to guide decision-making processes to more efficiently respond to those affected by TB.
- Utilizing technologies that provide a one-stop shop for the multiple TB data sources.
- Producing action plans based on data review and interpretation to remedy any shortcomings and improve the performance of the TB program.

2.4. TBSR Management and Team Composition

The processes that ensure data security and quality in accordance with TB programming data management are described in this section, along with the roles of the many teams that will make up a working TBSR. The TBSR management team consists of an in-country administrative and operations team, technical team, and impact (dashboard viewers) team. The following is a description of the structures and functions of these teams.

Administrative and operations team roles: The Ministry of Health (MOH), through the NTP, plays a lead role in the implementation and management of the TBSR, given that the data ultimately belong to the NTP. To operate the TBSR effectively and efficiently, it should have a TBSR manager (desk officer), an information technology (IT) officer, a data analyst, and an administrative officer in place. Specific roles and responsibilities include:

- The TBSR desk officer manages the operations of the TBSR. This includes overseeing team members and being responsible for training, content creation, and delegating tasks to team members.
- The IT officer manages the functionality and maintenance of the equipment and network infrastructure.
- The data analyst ensures the quality and accuracy of data, then processes, designs, transforms, and presents data in ways that help stakeholders make decisions. The data analyst also ensures the TBSR dashboard will be insightful to the users to draw conclusions and recommendations to support policy and program decisions. They work together with the rest of the team to make sure the infrastructure is in place and functioning to ensure data exchange and interoperability among various sources.
- The administrative officer is responsible for securing the logistics and supplies needed for the smooth operation of the TBSR. This position will also be responsible for writing and distributing content to promote products and activities of TBSRs including tracking of activities and follow-up by the relevant stakeholders.

This team will carry out a series of operations to ensure the accuracy of the data used to create content and visualizations.

Technical team: The NTP department or unit responsible for data management will lead the technical management of the TBSR by providing oversight and coordination, identifying indicators and data sources, and developing analytics approaches. This team will facilitate the TBSR during meetings and serve as secretariat to ensure that the necessary documentation and follow-up actions are implemented. The technical team will involve designated staff from the ICT department for the technical architecture and solution design. Members of TB monitoring and evaluation technical working groups (TWGs) within the country will be enlisted, as needed, especially to review and interpret data, indicators, and any action plan before they are populated in the TBSR dashboard.

TBSR impact team (dashboard viewers): The NTP will be responsible for providing oversight to the activities of the stakeholders constituting the impact team. It is important that actions identified when data are reviewed or are being used should lead to change in TB programming and help improve TB patients' health outcomes. Therefore, a TBSR impact team will be created with the aim of engendering impact.

The impact team members should include policymakers, implementers, private sector representatives, facility staff, and advocacy and civil society organizations working to end TB. It should be emphasized that members are drawn from national and subnational levels where they can best affect change. The impact team should help translate decisions from the TBSR into action plans.

The technical team serves as the secretariat for the impact team in addition to management functions to ensure that data stem from different sources and that meeting notes and action points are documented.

3. Implementing a TBSR

This section presents the steps necessary to implement a functional and responsive TBSR that meets the needs and demands of different stakeholders. It is subdivided into three phases (1) design and planning, (2) implementation, and (3) sustainability. The design and planning phase describes the steps that should be considered for the setup of a TBSR, which includes the assessment of infrastructure needs, data sources for indicators to be shared, and software configuration. The implementation phase describes capacity building for stakeholders, especially for users; how data should be secured; the user forum and its composition; integration of data from disparate sources; and assurance of data quality, among other topics. The last phase describes activities that will ensure the sustainability of the TBSR after technical and financial support from partners ends. This includes the documentation of lessons learned from TBSR implementation, collaboration and learning among partners, and sustainability steps.

3.1. Phase 1: Design and Planning

3.1.1. Stakeholder Engagement

It is important for multi-stakeholder engagement to take place in the planning and implementation of the TBSR. Table 1 details a list of both internal and external stakeholders to involve, as well as what their roles and responsibilities are in the TBSR. Each stakeholder group will interact with the TBSR either through the technical team or the impact team. There is a possibility, however, for stakeholders to communicate on several levels. For

instance, the NTP will be part of both the technical and impact team while other government agencies, such as the Department of Planning and Statistics within the MOH may just participate in the impact team.

Table 1. Stakeholders' roles and responsibilities

Stakeholders	Roles and responsibilities
NTP	• Provide overall oversight of the TBSR • Provide space and infrastructure for the management of the TBSR • Designate and assign staff to lead, participate, and liaise with stakeholders and other actors, including subnational levels and the private sector as well as civil society organizations • Build trust among stakeholders that the TBSR is designed to use data to improve the performance of TB programming • Identify stakeholders that should receive the analyzed data/information through periodic reports • Define the mechanism of feedback from the TBSR to national- and subnational-level stakeholders, including development partners, which are the sources of the information • Engage policymakers and stakeholders in the selection of indicators and dashboard design to meet their needs/demands
Other government agencies	• Strengthen advocacy and education around TB and the integrated health Situation Room. • Use the platform to discuss and exchange data from additional sources that are necessary for TB programming decision making but are not part of the TB data management system. • Use the platform to foster collaboration and coordination among other government workgroups/governance bodies concerning data management • Use the TBSR to raise political support and awareness, including in the Minister of Health's office
Donors and funding agencies	• Provide resources to establish and manage the functionality of the TBSR • Facilitate opportunities to evaluate funding gaps in TB programming • Strengthen collaboration and coordination of TB interventions/activities
Implementing and technical partners	• Support and provide technical assistance in coordination and implementation, design, and ingestion of data • Provide capacity building and mentorship for users of the TBSR • Provide ongoing user support • Support and ensure the quality assurance of data • Engage policymakers and stakeholders in the selection of indicators and dashboard design to meet their needs/demands
Private sector	• Advance the culture of TB data use • Advance opportunities to strengthen the engagement and involvement of the private sector in TB programming response • Provide opportunities to raise the visibility and articulate the private sector's long-term vision for reducing the impact of TB disease • Support and ensure the quality assurance of data

Stakeholders	Roles and responsibilities
Civil society organizations	• Advance the culture of TB data use • Use the TBSR for targeted interventions/activities • Provide opportunities to strengthen advocacy and education around TB

3.2. Design and Planning

3.2.1. Location Assessment

To identify gaps and the resources required to make the TBSR functioning at both the national and subnational levels, the NTP and their counterparts at the subnational level will conduct a needs assessment of the human, infrastructure, and technological resources already available. The assessment results will determine the specifications and requirements for infrastructure and equipment, including the building or space where the TBSR will be located. A sample infrastructure and equipment assessment checklist are included in the TBSR Assessment Checklist provided in Appendix 1.

3.2.2. Data Needs

3.2.2.1. Indicators for Display

The indicators to be displayed in the TBSR should be based on the needs of different stakeholders and relevant TB program interventions such as screening and diagnosis, treatment, contact investigation, TB preventive therapy, logistics and supplies, laboratory, human resources, and financial resources, among others. The technical team will be responsible for the selection of indicators and dashboards to be displayed in the TBSR. The USAID Performance Based Monitoring and Evaluation Framework will be a useful resource in the decision-making process for indicator selection. The essential list of TB indicators (see Annex 2) should be the first priority indicators to display in the TBSR. Indicators that are not covered by the essential indicators, particularly those from the national strategic plan, can be added to monitor additional progress and performance of the TB program. Indicator reference sheets should be guiding materials for the indicators displayed. Essential TB indicator reference sheets are available in the PBMEF TB Indicator Compendium.

3.2.2.2. Data Sources

Data for the TBSR will be mined from different sources being used to store TB-related data. Depending on the data and information needs of stakeholders, both routine and nonroutine data will be shared in the TBSR dashboard. Routine data will include program data, logistic and supply management data, laboratory data, and hotspot mapping of potentially high-yield localities for TB cases. The data sources should be determined in consultation with the NTP and its partners. For example, some data may come from electronic medical records and the TB program management information system (e.g., e-TB Manager, District Health Information Software, version 2 [DHIS2], and Aspect Reporter GxAlert).

Not all data fed into the TBSR needs to be derived from existing data management systems and digital platforms. This is especially true in resource-limited settings, especially at the subnational level or facility level, where access to information and technology communication may be limited. In such cases, data may need to be manually entered into the TBSR platform.

3.2.2.3. Review Period

The technical team should determine a time frame or periodicity for which a dashboard in the TBSR will be updated. The performance monitoring period should be monthly or quarterly depending on the frequency of reporting. For example, the dashboard should be updated every three months or in tandem with the NTP's program review meeting, which is focused on performance indicator evaluation.

3.2.3. Data Exchange and Interoperability

With different data sources feeding into the TBSR, Internet access and a valid e-mail address, website, telephone, and other communications resources are essential infrastructure and equipment for a functional TBSR. Processes and technologies that support data collection, validation, and aggregation should be identified with roles, responsibilities, and deadlines clearly defined.

3.2.3.1. Software Configuration

Implementing a TBSR requires selecting the appropriate combinations of software to provide, present, and illustrate data most useful for decision making. This includes software that can illustrate data in maps, charts, and tables; or a combination of them from analytical tools like Tableau, Power Bi, Elasticsearch, etc. The data can be viewed at an aggregate level (global, regional, and national) or disaggregated to subnational levels (such as districts, counties, or facilities). The data are sourced from a single or multiple data sets, which will be dynamically updated in the TBSR with the aid of web applications that link the analytical tools to the Internet for virtual and remote meetings.

3.2.4. Training for Users and Stakeholders

Training on the use of the TBSR dashboard should be organized for users and stakeholders to broaden their knowledge and skills in data interpretation and drawing conclusions about the indicators and data displayed on the dashboard.

To ensure the effective use of the TBSR as a platform for data use, stakeholders need improved capacity to analyze and interpret data, and to identify the policy and programmatic implications of their findings. Materials and resources to improve the knowledge and skills of stakeholders should be produced and made available to the NTP and its stakeholders. Such materials and resources will include training materials on the use of the TBSR dashboard; the interpretation of charts in the dashboard and their use for monitoring and operational decision making; and webinars, coaching, and mentoring.

The development of user guidelines and manuals to support those responsible for the smooth running of the TBSR should be in place as a stopgap measure to address staff attrition.

3.3. Phase 2: Implementation

3.3.1. Technical Requirements

This subsection focuses on the procedures that should be implemented to optimize the digital health solutions conceptualized in the TBSR. It describes the steps to identify users' needs, adaptation, and the potential for integration of other diseases in the TBSR. The technical requirements discussed are procedures and steps required to deliver the desired functioning of the data use and sharing platform in the context of the TBSR to satisfy stakeholders' standards and needs. It also highlights the essential capabilities, associated requirements, performance measures, and the process or series of steps required to address any gaps and threats to the functionality of the TBSR.

3.3.1.1. Meeting Users' Needs

The key goal of the TBSR is to inform and support policymakers and stakeholders. The policymakers and stakeholders include the NTP's coordinators, program managers and parliamentarians, and their counterparts at subnational levels (state/province; local government area/district). Other stakeholders involved in the TBSR are donors, the private sector, and community leaders/civil society organizations. The indicators to be displayed in the TBSR dashboard will reflect their information needs/demands and the dashboard will be customized from the data sources in accordance with the TBSR technical team's specifications (see Data and Indicator Needs Assessment and Prioritization Template in Annex 2).

3.3.1.2. Flexibility for Adaptation

The design and structure of the TBSR dashboard will follow the Principles for Digital Development[6] and allow for modifications to meet existing and future needs/demands. It will contain quality and comprehensive data in line with the NSP, PBMEF, and World Health Organization global requirements and other TB global initiatives. The TBSR will allow opportunities for new dashboards to be created when stakeholders require them. Moreover, new data sets may be added to emphasize emerging health conditions that influence TB epidemic control, especially comorbidities such as mental health, malnutrition, COVID-19, diabetes, and HIV.

3.3.1.3. Human Resources and Staffing

NTP management will designate specialized personnel to the administrative and operations team to manage the TBSR's control room (described in section below). One or two officers—to ensure continuous operation (minimum of eight hours per day). Depending on how the NTP wants to use the staff, these may be current employees who are already working on the TBSR as part of their regular responsibilities or the NTP may choose to create a permanent role.

3.3.1.4. Coordination with Other National Situation Rooms/Disease Programs

This section considers the importance of coordinating the TBSR with other Situation Rooms, such as HIV, if they exist in the country.

If other health program Situation Rooms (SRs) exist, then the TBSR technical team should coordinate with other health areas' SRs to leverage resources and use existing platforms allowing for a more diverse set of indicators

[6] https://digitalprinciples.org/principles/

(i.e., to include comorbidities such as HIV, diabetes, malnutrition, mental health, pediatrics, etc.) and a broader tool for decision making during TB specific review meetings. Ideally, this consideration is taken into account during the designing and planning phase of the TBSR and involves stakeholders who work directly with the other health program SR. An assessment of the existing platforms and standards should be conducted to ensure that the TBSR is built to be compatible if other SRs exist, allowing for additional analysis with key data sources. MEASURE Evaluation's Interoperability Toolkit[7] is a good example of tools that can be used in such an assessment.

In contexts where no other health program SR exists before the TBSR is launched, a framework that includes sources from other health areas (i.e., HIV, mental health, diabetes, etc.) should still be built into the design and planning of the TBSR. The technical team and other government agencies involved in the impact team (dashboard viewers) should include an expanded list of stakeholders from these health areas involved in the TBSR. Data standards should be followed to ensure optimal and secure data sharing between different platforms. A TBSR should use the opportunity of membership by other government agencies and donors on the impact team (dashboard viewers) to create awareness of extending the TBSR beyond TB programs where relevant. The TBSR should also be promoted during the MOH's health management information system TWG meetings to elicit support for its broader implementation.

3.3.2. Infrastructure

TBSR infrastructure, provided by the NTP with support from implementing partners, is the core component of the technical innovations developed and digital SRs. This infrastructure enables multimodal group-computers dialog, learning, and understanding of group activities, reasoning, and planning and facilitation of collaborative decision making. Infrastructure is comprised of the basic physical and organizational structures and facilities required for the operation of the TBSR. For a functional TBSR, the following equipment needs will include:

- monitors (display units);
- laptops;
- Internet facilities (router, Wifi, etc.);
- furniture (chairs and tables);
- power infrastructure (inverter, voltage regulator, power backup, generator);
- telephone equipment;
- microphone and speakers;
- cables, wires, and accessories;
- video conferencing equipment;
- webcam; and
- projector; and
- cabinet (filing systems).

3.3.2.1. Meeting Room (Physical Room or Virtual)

A Meeting room is required for the TBSR and is managed by the Administrative and Operations team. The TBSR meeting room can either exist as a virtual working space or as a physical room in which the analytics can be

[7] Health Information Systems Interoperability Toolkit: Assessment Tool: https://www.measureevaluation.org/resources/publications/tl-17-03b.html

discussed and acted upon, or both to include stakeholders who are not able to travel for an in-person meeting. If no such physical room is available, then members will be expected to meet on a virtual meeting platform (e.g., Zoom or Google Meet). Although it is expedient to locate the physical room in a division or department of the MOH/NTP, it can also be a place where other disease interventions/programs have easy accessibility.

The availability and functionality of these equipment items will help the TBSR operate at an optimal level, along with the appropriate technical teams. The NTP should partner with and leverage the interest of the stakeholders, especially donors/funding agencies, to procure the equipment.

3.3.2.2. Control Desk

A control desk is required for the TBSR. The control desk is a small furnished area where the graphics for display are composed and/or reviewed. In other words, it is a desk from where activities related to the data visualization are coordinated and is the final review point before data visualization or content are displayed on the TBSR's monitor, which is a screen that the impact team will view when discussing the data.

3.3.2.3. Data System Requirements

Data integration and interoperability should be prioritized when considering how to operationalize TBSR because it will handle and retrieve diverse types of data from a range of TB-related sources (program statistics, supply chain, laboratory, etc.) and store it in a centralized location for processing and use. The technical team, in collaboration with the operating team, can consider using the pulling approach to retrieve data from relevant data sources through an application programming interface (API) call. This implies a one-directional system of exchange, and it aims to maintain data quality. Additionally, data visualization software that facilitates data analytics and generates user-friendly dashboards must be taken into account by TBSR implementers. This is especially true if the health management information system is set up to support real-time data.

However, creating a data warehouse to gather the data for the TBSR is important if the country does not have a well-established digital HMIS or procedure that enables TBSR reporting. The data warehouse will assist with data collection, validation, aggregation, and archiving. One possibility for creating the warehouse could be Excel. The API should be used to communicate the data with the visualization tool directly if the Excel data warehouse is set up as a real-time system.

3.3.3. Data Quality Assessment

The administrative and operations team will use various mechanisms to validate the information and data generated before uploading them into the dashboard. The administrative and operations team should integrate validation rules in the template for data collection and analysis to ensure that the information is complete and correct and identify who is going to be responsible for consulting, confirming, or correcting questionable information.

The administrative and operations team should organize internal data review meetings to check on the correctness of data and create a thread of emails when data are being corrected from sources. This should be done with the help of a checklist and remedies as part of data analysis.

3.3.4. Technical Adjustment

The administrative and operations team needs to regularly review the source data to identify changes and make the relevant adjustments. Changes to existing data systems will impact the TBSR's functionality. This implies that ongoing maintenance is an integral part of the TBSR, which will require significant human resource inputs, especially when data from multiple sources are extracted. The technical team should explicitly identify the data sources required, map them out, and keep an eye out for changes in the environment that can have an influence on future data collection and reporting because TBSR depends on data from numerous sources and systems. The technical team must make sure there are resources available to assist in the acquisition and maintenance of the software used for TBSR.

3.3.5. Live Transmission of Reports

With the installation of video conferencing equipment, transmission of reports occurs with ease. In collaboration with the impact team (dashboard viewers), the technical team should agree on the contents to be broadcast. It is recommended that the TBSR will be connected to the NTP website. This will aid visibility of the TBSR to those outside of it.

3.3.6. Launch

Launching the TBSR is an important opportunity for sensitization and awareness-raising among users of the TBSR, and the TB community, in general. The launch should showcase the use of data for evidence-based decisions and how the TBSR is being used for evidence-based decisions. The launch should plan to have the highest political engagement and participation possible; for example, involving the head of the MOH, parliamentarians, donors, the private sector, and civil society organizations. The launch should be organized within three months of the live transmission of the TBSR dashboard. This will help ensure the functionality of the applications and that the administrative and operations team is able to effectively demonstrate it to stakeholders. The involvement of high-level stakeholders and key decision makers and policymakers in the operationalization of the TBSR is envisioned to enhance the potential for sustainable financing and support from government entities.

3.3.7. Technical Review Meeting

Particularly at the subnational level and facility level, a meeting to review performance of TB program data using the TBSR platform should be scheduled at least once a month; at the central level, this can happen once a quarter. The TBSR manager, in collaboration with the head of the NTP or a designee, should determine the time for and the agenda of the review meeting. The review meeting should be composed of relevant TBSR technical management, the impact team, and other necessary individuals. The administrative and operations team will be responsible for taking notes and minutes of the meeting. The meeting minutes should include a section on the action plan, where any suggestions or preventive/corrective actions identified during the meeting are recorded. The TBSR manager will monitor and document the implementation of all agreed action items resulting from the meeting. The action plan should follow the template suggested below, especially when identifying who will be responsible and resources for the implementation of tasks.

3.3.8. Data Review and Interpretation

The TBSR aims to help speed up and streamline communication among stakeholders, especially policymakers and implementers, to stay on track to reach defined national and global TB targets, and to suggest actions to be taken to improve the performance of various interventions and activities. During the data review and

interpretation exercise, either virtually or in-person, the technical and impact team are expected to develop initial and subsequent action plans.

An action plan will be a list of tasks and steps that need to be completed to achieve identified goals and objectives to remedy any shortcomings in the performance of TB programming in meeting results and targets. An action plan clarifies what resources stakeholders need to achieve the goals and objectives, provides a timeline for the tasks or action items, and identifies which team members among the TB stakeholders are responsible for completing each task or step. Below is a template for an action plan.

Table 3. Sample action plan

Objective(s)	Tasks/ activities	Resources	Timeline	Responsible party	Comments/ remarks

3.3.9. Data Demand and Use Forum

The TBSR's primary users are the NTP, their subnational-level counterparts, and relevant stakeholders, including donors, the private sector, civil society organizations, and implementing partners. Based on the data sharing guidance for the TBSR, the technical team will direct the administrative and operations team to implement guidelines on the access to TBSR data and information. In addition, guidance on the indicators and data to be included in the dashboard or displayed in the TBSR will be reviewed and approved by the technical team. The decision for inclusion of more indicators or data in the TBSR will be based on the alignment with the NTP's goal of reducing morbidity and mortality associated with TB.

3.3.10. Data Security

Data security refers to protecting data against unauthorized access or use that could result in exposure, deletion, or corruption of the data. An example of data security is encryption to prevent hackers from using source or archived data if a system is breached. Various data sources should be assessed to ensure that data feeds are encrypted. A standard for data encryption should also be established. Systems and data should be accessible only to authorized users of the TBSR and permitted users outside the TBSR, while guaranteeing integrity (systems and data are accurate and complete) and availability (systems and data are accessible when they are needed in the TBSR).

3.3.11. Continuous Quality Improvement

The TBSR should help identify gaps in the quality of the data that are being used for policy and program decisions and for the design of interventions/activities to address TB. The TBSR will also help identify gaps in the quality of services to reduce the burden of TB. Tools and supportive supervisory interventions/activities will be implemented to improve healthcare workers skills in data management. Periodic data quality reviews will be paired with stakeholder coaching and mentoring, with an emphasis on subnational units. There will be continuous improvement activities to strengthen data quality across the healthcare system, including community-level data management.

3.4. Phase 3: Sustainability

3.4.1. Review and Evaluation

Review and evaluation of the TBSR should be conducted regularly by the NTP and technical partners to make it responsive to the needs/demands of its users. Terms of reference for the review/evaluation with clear objectives should be presented to the impact team (dashboard viewers) by the technical team within 12 months of the TBSR's implementation. The findings should be used as a guide when determining changes needed in the TBSR.

3.4.2. Collaborating, Learning, and Adapting

Collaborating, learning, and adapting (CLA) are critical elements in monitoring, evaluation, and learning. Developing the capacity for reflection, research, analysis, and dialogue are required to ensure that TBSR implementation continually learns from what works programmatically and what does not. By applying CLA, TBSR partners will

- collaborate with NTPs and other stakeholders;
- ensure that progress toward the TBSR vision is guided by continuous learning and informed by evidence-based data;
- and apply lessons learned.

These efforts will ensure that the TBSR is coordinated, grounded in evidence, and adjusted as necessary to remain effective, and that it contributes to the body of knowledge about improved TB programming and those affected by the disease. NTPs will focus on ensuring that the TBSR helps guide evidence-based decisions by building more rigorous data analysis and use. The TBSR's technical team and the NTPs will develop a communications plan to ensure that TB data are curated and packaged for use by both internal and external stakeholders to further the TBSR's objectives. The multilayered stakeholders' participation and collaboration in the TBSR to share information with each other and implement an action plan resulting from their interactions, both internally and externally, are a means of promoting CLA. The TBSR will also be continuously reviewed and evaluated to learn and take steps to improve its functionality.

3.4.3. Sustainability Plan

These guidelines outline the technical and operations requirements that the NTP and stakeholders must assure for a functioning TBSR. In addition, training materials on use of the dashboard for TB data analysis, the interpretation of charts in the dashboard, and their use for monitoring and operational decisions should be part of capacity building and meeting activities to broaden stakeholders' skills and knowledge of the TBSR.

The monitoring and evaluation (M&E) TWG can also support the sustainability of TBSRs. TWGs have been successfully utilized to enhance and strengthen the data management and research agenda for TB programming in numerous countries. Experts in planning, research, and M&E from the government and implementing partners in the TB domain are typical members of the TWG. Because TWGs are a component of the governance and organizational framework of TB programming—just like other health programs—TBSR will leverage this structural support for long-term sustainability. For example, the TWG can offer its technical assistance and advice to the impact team for interpretation, analysis, and usage in making programming decisions.

Annex 1. Tuberculosis Situation Room Assessment Checklist

Introduction	
Country	
State	
Name of organization	
Address	
Telephone/Email	
Name of Head of Organization	
Designation of Head	
Phone number of the Head	
Date of the assessment (DD/MM/YYYY)	
Name and contact details of assessor/s	
Name and contact details of responding person/s	
Estimated number of local government areas and health facilities covered	
Affiliated Ministry/Agency (if applicable)	

Existing Situation Room		
Is there a Situation Room (SR)?	☐ Yes	☐ No
If yes, mention the disease program it is used for and the location:		
If no, go directly to Section E.		

Section A. Management and operation of the Situation Room				
1.	How long has the Situation Room existed?			
2.	Which partner/organization funded the setup of the Situation Room?			
3.	Is the Situation Room functional?	☐ Yes	☐ No	
4.	Were there consultations with your organization before setting up the Situation Room?	☐ Yes	☐ No	
5.	Who were the key stakeholders involved in setting up the Situation Room?			
6.	Did you have input into the structure, design, and content of the Situation Room?	☐ Yes	☐ No	
7.	Who decides what information is shared in the Situation Room?			
8.	Is there a technical working group (TWG) responsible for managing the Situation Room?	☐ Yes	☐ No	
8a.	If yes, who are the members of the TWG?			
9.	If yes to number 8, how often do they meet?			
10.	Are there standard operating procedures (SOPs)/guidelines for managing the Situation Room?	☐ Yes	☐ No	
11.	Are roles and responsibilities of the different stakeholders clearly defined in the SOPs/guidelines?	☐ Yes	☐ No	
12.	Are there review meetings on the content displayed in the Situation Room?	☐ Yes	☐ No	
12a.	If yes, how often is this meeting?			
13.	What are the primary sources of data?			
14.	Is the Situation Room only for the TB program?	☐ Yes	☐ No	
14a.	If no, list other disease programs using the Situation Room.			
15.	What is the content on display in the Situation Room? (Indicators, data elements)			

Section A. Management and operation of the Situation Room				
16.	What is the frequency of display?			
17.	Is the information from the Situation Room used for decision making?	☐ Yes	☐ No	
17a.	If yes, at what level?			
18.	Is any electronic medical record or client-based information system connected to the Situation Room?	☐ Yes	☐ No	
18a.	If yes, indicate name.			
19.	How many days per week is the Situation Room operational?			
20.	Is the public aware of the existence of the Situation Room?	☐ Yes	☐ No	

Section B. Data use and dissemination				
1.	Are reports generated from the Situation Room?	☐ Yes	☐ No	
1a.	If yes, what format are the reports?			
2.	What channels are used to disseminate the reports? (cite previous reports)			
3.	Who are the recipients of these reports?			
4.	Is the Situation Room online?	☐ Yes	☐ No	
5.	Is the Situation Room available to end users to log in and use?	☐ Yes	☐ No	
6.	Are data in case based or aggregate format?	☐ Yes	☐ No	

Section C. Infrastructure availability				
Please confirm the availability of the following:				
1.	Internet services	☐ Yes	☐ No	
2.	Telephone: landline, PBX system, and answering machines	☐ Yes	☐ No	
3.	Speakerphones and video conference equipment	☐ Yes	☐ No	

Section C. Infrastructure availability				
4.	Workstations and peripherals	☐ Yes	☐ No	
5.	Desktop and laptop computers	☐ Yes	☐ No	
6.	Monitors and screen stand	☐ Yes	☐ No	
7.	Printers and copiers	☐ Yes	☐ No	
8.	Software packages and cloud services	☐ Yes	☐ No	
9.	Cabling	☐ Yes	☐ No	
10.	Server room equipment	☐ Yes	☐ No	
11.	Network connectivity, servers, and storage	☐ Yes	☐ No	
12.	Furniture (table, chairs, conference room table & chairs)	☐ Yes	☐ No	
13.	Power supply (main and backup)	☐ Yes	☐ No	
14.	Safety precautions (fire, flooding, security)	☐ Yes	☐ No	
15.	Doors, locks, windows, cabinets	☐ Yes	☐ No	
16.	CCTV, cameras	☐ Yes	☐ No	
17.	Audio and visual sets	☐ Yes	☐ No	
18.	Projectors, video screens, and whiteboards	☐ Yes	☐ No	
19.	TV sets	☐ Yes	☐ No	
20.	Are key/sensitive equipment protected by stabilizers & UPS (uninterruptable power supply)?	☐ Yes	☐ No	
21.	Air conditioner	☐ Yes	☐ No	

Section D. Sustainability and funding				
1.	Is there currently funding support for the Situation Room?	☐ Yes	☐ No	
1a.	If yes, who is responsible for this?			
2.	If the Situation Room is not supported by the government, are there plans in place to hand over to the government?	☐ Yes	☐ No	

Section D. Sustainability and funding				
3.	Is/Are there dedicated staff managing the Situation Room?	☐ Yes	☐ No	
3a.	If yes, how many staff? (Indicate positions, organization, and roles)			
4.	Are these staff supported by the government?	☐ Yes	☐ No	
4a.	If no, indicate the partner supporting the staff	☐ Yes	☐ No	
5.	Have staff received relevant training?	☐ Yes	☐ No	
6.	Are the roles and responsibilities of key Situation Room staff clearly defined? (request to cite them)	☐ Yes	☐ No	
7.	Who is responsible for managing day-to-day activities in the Situation Room?			
8.	Who is responsible for managing programmatic and dashboard development in the Situation Room?			

Section E. New Situation Room			
Is there an available building/room for setting up a new Situation Room?	☐ Yes	☐ No	
If yes, measure the dimensions of the room:	Length:	Width:	Height:
If a room is available, continue to section F. Otherwise go to section G.			

Section F. Assessment of proposed Situation Room			
What is the general condition of the Situation Room **building and infrastructure?** For the following questions, indicate either: Yes or No. If yes, provide additional information.			
Ease of access to location	☐ Yes	☐ No	
Walls	☐ Yes	☐ No	
Floors	☐ Yes	☐ No	
Roof	☐ Yes	☐ No	
Windows (indicate if with protector, such as a security bar)	☐ Yes	☐ No	

Section F. Assessment of proposed Situation Room			
Doors (indicate if with protector)	☐ Yes	☐ No	
Furniture	☐ Yes	☐ No	
Air conditioner/ventilation	☐ Yes	☐ No	
Lighting	☐ Yes	☐ No	
Computers	☐ Yes	☐ No	
UPS	☐ Yes	☐ No	
Power supply (indicate source and if alternative sources are available)	☐ Yes	☐ No	
Internet services (indicate which network works better here)	☐ Yes	☐ No	
Water supply (indicate source of water supply)	☐ Yes	☐ No	
Designated rooms for staff office	☐ Yes	☐ No	
Storage area	☐ Yes	☐ No	

Section G. Building/room		
Are there plans to identify a building/room for the proposed Situation Room?	☐ Yes	☐ No
If no, STOP assessment. If yes, go to section H.		

Section H. Proposed plan for a building/room for the Situation Room		
1.	Is the proposed building government-owned or donated?	
2.	How long will it take for the building to be ready for setting up the Situation Room?	
3.	Who is the contact person for this project?	

Annex 2. Indicators Table by TB Strategic Objectives and Level for Prioritization in TBSR

The TBSR technical team should use the essential list of indicators provided here as a guide for selecting indicators to be displayed in the TBSR. The WHO TB indicators that are pertinent to country-level programming are aligned with the PBMEF indicators. Essential indicators include Core, Core Plus, National Level, and Project Level measures. Core indicators demonstrate a project's national contribution to end the TB epidemic, while Core Plus indicators provide an additional layer of detailed data to monitor progress towards the core indicators. National and Project Level indicators offer more detailed data and provide a deeper understanding of epidemiology and program performance at national and subnational levels.

Category	Level	Indicator by PBMEF level
REACH 	**Core**	
		TB Detection Rate (Treatment Coverage)
		Percent Bacteriologically Confirmed
		Childhood TB Notifications
		RR/MDR-TB Notifications
		Private Sector TB Notifications
		Percent of Contacts Screened for TB
	Core Plus	
		Rapid diagnostic testing at time of initial diagnosis
		Percent of people with new and relapse TB with drug susceptibility testing (DST)
		Percent of people with previously treated TB with drug susceptibility testing (DST)
		Pre-XDR/XDR Notifications
	National Level	
		Percent children and adolescents (0–14 years old) with new and relapse pulmonary TB who are bacteriologically confirmed
		MDR-TB notifications among children and adolescents (0-14 years)
		Percent of people with notified TB with a contact investigation initiated
		Number of contacts with presumptive TB
		Number of contacts who received TB diagnostic testing
		Number of contacts diagnosed with active TB disease
		Number of contacts who initiated TB treatment
	Project Level	
		Number of people screened for TB disease outside of health facilities
		Number of people screened for TB
		Number of people with presumptive TB
		Number of people with presumptive TB who received diagnostic testing

Category	Level	Indicator by PBMEF level
REACH (cont.) 		Number of people with presumptive TB who were tested with a rapid diagnostic test
		Number of people with presumptive TB who received a chest X-ray (CXR)
		Number needed to screen
		Number needed to test
		Percent of people with DR-TB who had contact investigations initiated
		Number of contacts tested for TBI
		Percent bacteriologically confirmed in private sector
		Percent of people diagnosed with TB and screened for mental health disorders
		Turnaround time (TaT): Percent of specimens submitted to a laboratory within specified target timeframe
		Turnaround time (TaT): Percent of specimens received at testing laboratory and tested within specified target timeframe
		Turnaround time (TaT) Percent of specimens tested and results report to referring facility (or provider) within specified target timeframe
CURE 	**Core**	
		DS-TB Treatment Success Rate
		DR-TB Treatment Success Rate
	Core Plus	
		DR-TB treatment initiations
		DR-TB "all oral" short treatment regimen initiations
		DR-TB "all oral" longer treatment regimen initiations
		Number of people with adverse reactions to DR-TB treatment
	National Level	
		DS-TB treatment outcomes
		DR-TB treatment outcomes
		Treatment success rate in children and adolescents (0-14 years)
		Treatment success rate among PLHIV
		DS-TB treatment initiations
	Project Level	
		Number of contacts tested positive for TBI
		Percent of people on DR-TB treatment who received treatment support
		Percent of people on DS-TB treatment who received treatment support
		Percent of people with TB who received psychotherapeutic interventions
		Percent screened positive for diabetes among people confirmed with TB

Category	Level	Indicator by PBMEF level
PREVENT 	**Core**	
		TPT Initiations
	Core Plus	
		TPT initiations among contacts
		TPT Completions
	National Level	
		Number of TPT initiations among contacts <5
		Number of TPT initiations among PLHIV
	Project Level	
		Number of contacts tested positive for TBI
		Percent of HCWs screened for TB
		Percent of HCWs diagnosed with TBI
		Number of people with adverse reactions to TPT
		Congregate settings with IPC
SUSTAIN 	**Core**	
		Percent of TB Financing Received from Domestic Sources
	Core Plus	
		Existence of a national or social health insurance system whose benefit package includes TB clinical services
	National Level	
		CQI programs in place
		TB drugs meeting international minimum quality standards
	Project Level	
		Percent of HCWs who received TB-related training
		Stockout of any first-line TB treatment drugs
		Stockout of any second-line TB treatment drugs
		Stockout of TB rapid molecular tests and related commodities
		TB stigma reduction in NSP
		TB stigma assessment/gap analysis available

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