SOUTH AFRICA TUBERCULOSIS QUALITY IMPROVEMENT (SATB-QI) INITIATIVE

Implementation Guide

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ACRONYMS

BMGF	Bill & Melinda Gates Foundation
CHC	Community Health Centre
CQI	Continuous Quality Improvement
DHIS	District Health Information System
DIC	District Improvement Coach
DQA	Data Quality Audit
D-TB-QI-T	District TB Quality Improvement Team
DSP	District Support Partner
FSP	Facility Support Partner
HAST	HIV, AIDS, Syphilis and Tuberculosis
HIV	Human Immunodeficiency Virus
IHI	Institute for Healthcare Improvement
MFI	Model for Improvement
NDoH	National Department of Health
PDSA	Plan, Do, Study, Act
PHC	Primary Healthcare
PMTCT	Prevention of Mother to Child Transmission of HIV
QA	Quality Assurance
QI	Quality Improvement
SOPs	Standard Operating Procedures
TB	Tuberculosis
WHO	World Health Organization

1. BACKGROUND

Ending TB epidemic is a global resolution, calling for intensifying the fight against TB and achieving an end to the global epidemic. In 2015 "ending the TB epidemic" was included as a target within the health-related Sustainable Development Goals (SDG-Goal 3) by the United Nations General Assembly. The end TB Strategy envisions universal access to high- quality TB care and promotes TB prevention. The South African National Strategic Plan for HIV, TB and STIs 2017- 2022 illustrates the country's commitment to the call to end TB as it promotes 50% reduction in HIV and TB related deaths, and a 30% reduction in TB incidence from 834/100,000 population in 2015 to less than 584/100,000 by 2022. To achieve these ambitious targets, a reliable system to identify, test, diagnose, and successfully treat 95% of patients with TB must be developed. The quality improvement (QI) approach is based on the successes of the PMTCT Program, the "Accelerated Plan", which implemented QI methodology successfully, resulting in a reduction of mother to child HIV transmission rates from an estimated 9.6% to 2.8%.

1.1. Defining Quality of Care

The World Health Organization definition of quality of care is:

"The extent to which healthcare services provided to individuals and patient populations improved desired health outcomes. To achieve quality, healthcare should be safe, effective, timely, efficient, equitable, and people centred."

1.2. Defining Quality Improvement

The National Department of Health (NDOH) uses the following working definition of quality improvement:

QI is achieving the best possible results within available resources. To this end, QI includes any activities or processes that are designed to improve the acceptability, efficiency and effectiveness of service delivery and contribute to better health outcomes as an ongoing and continuous process.

The "Best possible results" can be defined as:

- Meeting the standards
- Meeting targets or compliance norms
- Reliable implementation of best practice or guidelines

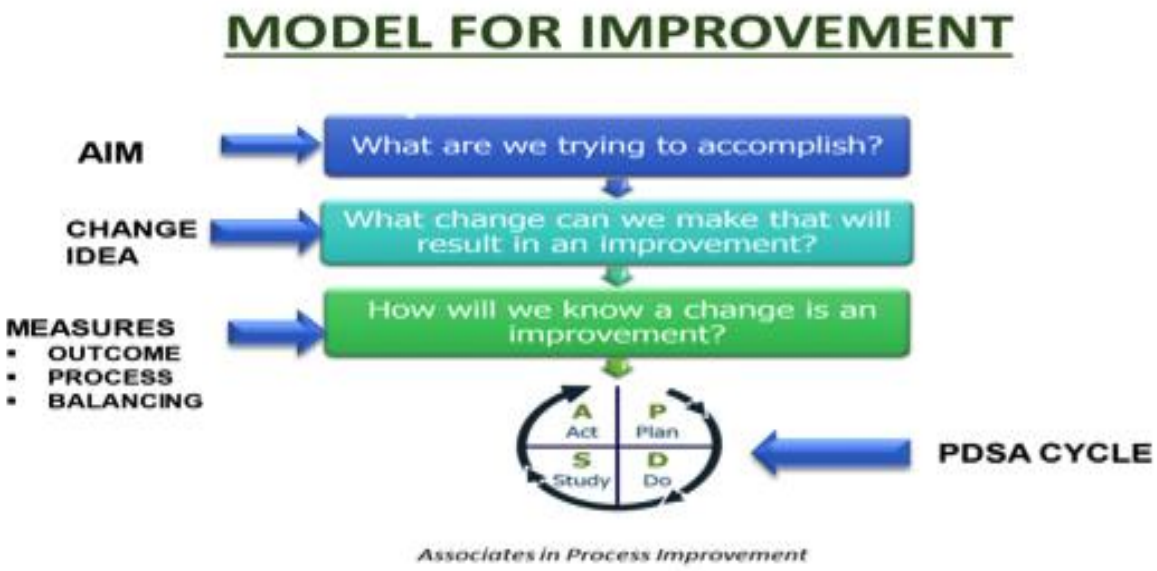
QI involves systematic and continuous activities aimed at enhancing processes that will lead to measurable improvements in healthcare services and the health status of targeted patient groups.

The process of quality improvement should address acceptability, efficiency, integration, equity, effectiveness, timeliness, and safety of service delivery; consequently, contributing to better health outcomes.

1.3. Model for Improvement

The model for improvement is a framework that was developed by Associates in Process Improvement (API). It is a simple tool used to accelerate improvement. It is made of two parts – the first part looks at answering three questions (What are you are trying to accomplish, what change can we make that will result to an improvement, how will you know that a change is an improvement) which will inform the improvement project to be undertaken. The second part is the Plan, Do, Study, Act (PDSA), which aims to develop, test, and implement change for improvement. This framework is used as the basis for TB quality improvement.

Figure 1: Model of improvement framework



2. PURPOSE OF THIS MANUAL

The purpose of this manual is to provide guidance to first line healthcare professionals within the healthcare system and managers at different levels on the implementation of TB Quality Improvement initiative. It is intended to supplement and not replace any quality improvement initiative currently being implemented. It introduces key concepts of the QI methodology, TB-QI monitoring tools, outlines processes for implementation, setting up coordination structures and learning networks. It also encourages collective ownership of the TB QI process and emphasizes the importance of a team approach.

2.1. Target Audience

The manual is intended for use by:

1) National Program Managers, Information and Monitoring and Evaluation Managers
2) Provincial Program Managers, Information and Monitoring and Evaluation Managers, Quality Assurance Managers
3) District Program Managers
4) Facility Managers
5) Healthcare professionals
6) Quality Improvement Advisors/ Officers
7) Technical partners – District Support Partners (DSP) and Facility Support Partners (FSP)

2.2. Principles Of Quality Improvement

There are five important foundation stones on which to build a quality improvement process, as illustrated in Figure 2 below:

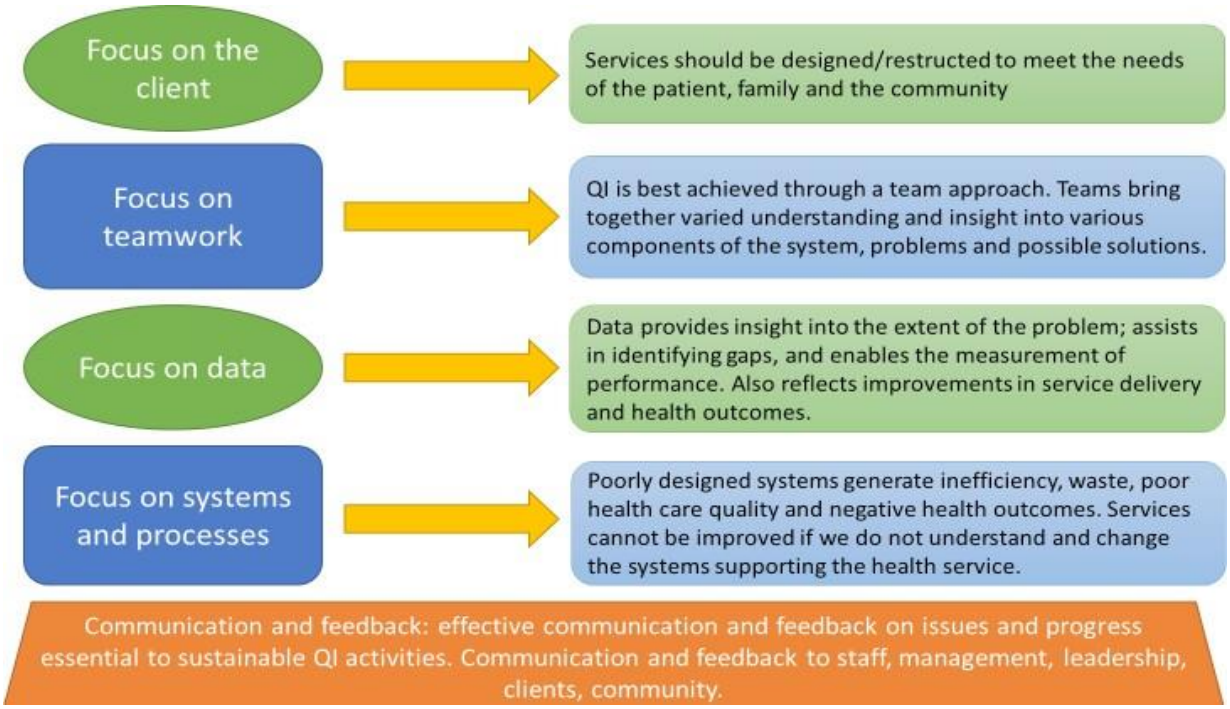
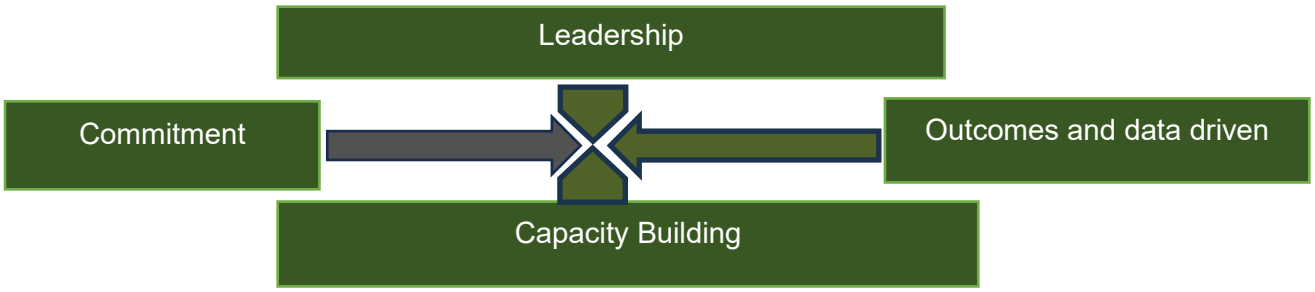


Figure 2: Five foundation stones of quality improvement

2.3. Key Success Factors for Quality Improvement

The following are the key success factors for quality improvement:



2.3.1. Leadership

Leadership at different levels is vital in quality improvement. Leaders act as change agents necessary for successful implementation of QI. Leadership influences employees, to do the right thing. Leaders need to commit to quality improvement, invest time and finances in staff development, and reinforcing core values in employees to ensure continuity of QI implementation.

2.3.2. Commitment

Improvement is not achieved overnight. Implementers need to dedicate themselves to quality practices. Commitment to quality is essential at every

level of healthcare and it must not only be verbal but should also be reflected in decision making and action.

2.3.3. Outcome and Data Driven

Improvement is a continuous process, should always lead to better outcomes for the patients and the program. Data analysis and interpretation forms a key part of quality improvement. Data assists in the identification of improvement opportunities and is used to measure whether improvement has been reached or not.

2.3.4. Capacity Development

Healthcare workers should be continuously developed to render the best possible service to patients. They should be given tools and the techniques to make decisions on their own and supported in their efforts of meeting the needs of patients.

3. ROLES AND RESPONSIBILITIES IN THE IMPLEMENTATION OF TB QUALITY IMPROVEMENT

The Department of Health is organized into different levels: National, Province, District, Sub-district (not in all provinces) and Facility level. It is the responsibility of management at each level to ensure that the best service is provided to patients with the best possible results. The importance of managers and staff at all levels of the health system being actively involved in the implementation of TB QI to improve outcomes, cannot be overemphasized. This will ensure that this QI initiative is not seen as a once off project, but as part of everyone's day to day activities. The coordination and accountability for the TB-QI remains the same as for the TB program.

3.1. Roles and Responsibilities at National Level

Implement ation framework	Providing leadership for implementatio n	Monitoring and Evaluation	Skills development and capacity building
– Develop and disseminate the TB-QI guide. – Review and update TB- QI guide, incorporating lessons learned and available evidence. – Ensure availability ofthe TB-QI guide andtools at all levels of healthcare.	– Mobilize resources necessary for effective implementation of TB-QI. – Provide ongoing technical supportto provinces, districts, sub- districts, facilities, and support partners. – Provide oversight for TB-QI activities in the country. – Convene the TB-QI technical working group.	– Monitor and evaluate TB-QI implementation inthe country. – Provide feedback to provinces on TB. program performancein TB-QI implementing districts. – Develop, disseminate monitoring and supervision tools.	– Develop capacity in the in the implementation ofTB-QI. – Support capacity buildingactivities in districts. – Develop, and disseminate TB-QI training materials. – Review and update TB-QI training materials.

3.2. Roles and Responsibilities at Provincial Level

Implement ation framework	Providing leadership for implementati on	Monitoring and Evaluation	Skills development and capacity building
- Print and Disseminate tools. and guidelines. - Monitor availability of QI guidelines and tools at district, sub-district and facility levels	- Mobilize resources. necessary for effective implementation of TB-QI. - Provide ongoing. technical support to districts, sub-districts, facilities, and support partners. - Coordinate all TB-QI activities in the province.	- Monitoring and evaluation of TB-QI implementation in the province. - Provide regular feedback to districts on TB program performance in TB-QI implementing districts. - Disseminate monitoring and supervision tools to districts. - Report on implementation and progress to national level	- Support learning networks. for implementing districts within the province. - Facilitate and support capacity development activities for district, sub-district and health facility staff. - Disseminate TB-QI training material and tools.

3.3. Roles and Responsibilities at District Level

Implementati on framework	Coordinate and provide leadership for implementation	Monitoring and Evaluation	Skills development and capacity building
- Disseminate TB-QI guides to all facilities. - Disseminate tools and materials required for effective implementatio n. - Promote use of	- Mobilize resources necessary for effective implementation of TB-QI. - Provide ongoing technical support to sub-districts and facilities. - Establish a TB-QI coordination structure in the district. - Integrate TB-QI	- Monitor and evaluate. TB-QI implementation in the district. - Report on implementation and progress to provincial. - Monitor district performance against TB	- Plan and facilitate learning sessions. - Provide coaching, mentoring, and supportive supervision. - Coordinate and facilitate training for sub-district and health facility staff.

TB-QI guide in health facilities. - Identify and address barriers to implementation. of the TB-QI.	activities into district plan. - Conduct quarterly review meetings with all sub-districts and DSPs in the district. - Advocate for and promote TB-QI activities within the district.	targets and provide feedback. - Prioritize sub-districts for intensive support.	- Disseminate TB-QI training material. - Identify training needs on TB and QI and develop an appropriate capacity building program. - Facilitate formation of learning collaboratives.

3.4. Roles and Responsibilities at Subdistrict Level

Implementation framework	Coordinate and provide leadership for implementation	Monitoring and Evaluation	Skills development and capacity building
- Disseminate TB-QI guides to all facilities. - Disseminate tools and materials required for effective implementation. - Monitor availability of QI guidelines in facilities. - Address barriers to improvement.	- Motivate for resources necessary for effective implementation of TB-QI. - Conduct monthly technical support and mentorship to prioritized facilities. - Assist facilities to develop a TB-QI coordination structure in their facilities. - Conduct quarterly review meetings with health facilities. - Advocate and promote TB QI activities in health facilities.	- Monitor and evaluate TB-QI implementation in the sub-district - Disseminate monitoring and supervision tools. - Report on implementation and progress to district. level. - Monitor performance of health facilities against TB targets. - Prioritize facilities for intensive support. - Collate and submit facility reports to the district and provide feedback.	- Conduct coaching, mentoring and supportive supervision. - Facilitate and support training activities for health facility staff. - Identify training needs on TB and QI and develop an appropriate capacity building program - Establish learning networks for implementation. - Facilitate learning sessions.

3.5. Roles and Responsibilities at Facility Level

Implementation framework	Coordinate and provide leadership for implementation	Monitoring and Evaluation	Skills development and capacity building
- Ensure availability and use of TB-QI guides within the facility. - Ensure availability and use of TB-QI tools, and materials. required for effective implementation - Institutionalize best practices and lessons learnt.	- Motivate for resources. necessary for effective implementation of TB-QI. - Establish a TB-QI coordination structure and appoint a focal person within the facility. - Promote TB-QI activities within the health facility. - Develop and implement a facility TB-QI plan.	- Monitor TB-QI implementation against facility TB targets. - Conduct baseline. assessment and set facility TB targets. - Collate and analyze data for decision making and planning for further improvement. - Prepare and submit facility reports to sub-district. level. - Conduct weekly facility data review meetings. - Document tested changes in facility QI meetings.	- Identify areas of technical support in TB-QI and communicate them to the coach. - Arrange for coaching and mentoring sessions. - Identify training needs of staff and communicate to sub district. - Coordinate training (on/ offsite) for facility staff

4. QUALITY IMPROVEMENT IMPLEMENTATION

4.1. District Level Preparedness and Planning

4.1.1. Identify TB QI Champion

The TB QI champion is the focal person for quality improvement and the contact person for QI implementation at the district level. The champion should work with district support partners and sub-district coordinators to identify priority areas that need QI within the TB care cascade.

4.1.2. Preparation for District Baseline Assessment

Quality Improvement relies strongly on the use of data. It is imperative to have data systems to aid monitoring of improvement. Overtime, baseline data is used to determine the effectiveness of any intervention. Baseline assessment is conducted at the beginning of the QI process. It should be done objectively to benefit improvement process. It focuses on reviewing data sources for

completeness, accuracy, and consistency (patients' records, registers, TB Identification Register and PHC monthly Notepad/ Monthly Data Input Forms), observation of processes within the facilities and performance against targets.

The baseline assessment should be conducted in all or a representative sample of facilities in a sub-district. The aim of this assessment is to determine the baseline against which progress will be measured and determine health system barriers to implementation. The key steps in preparing for this assessment are outlined below:

1) prepare the baseline assessment tool or use the existing baseline tool.
2) identify teams to conduct the assessments in the sub-district.
3) conduct orientation of the teams on the standardized tool for baseline assessment
4) develop a schedule of visits for the teams.
5) inform facility managers about the planned facility visits and dates.
6) make all the relevant logistical arrangements for the facility visits.

4.1.3. Conducting Baseline Assessments

During the baseline assessment

- A standardized baseline assessment tool must be used for data collection across all identified facilities and a copy should be left with the facility.
- Conduct interviews with facility manager or delegated staff.
- Observe processes within the facility and map current patient and data flow processes.
- Conduct data quality audits by reviewing patient clinical records, TB identification registers and PHC monthly summary reports, Tier.net.
- Data should be analyzed, summarized and feedback provided to the facility before departure.
- Compile facility specific reports, these should be given to the facility managers to guide the initial QI activities.

4.2. Learning Sessions

The TB QI initiative uses a learning collaborative methodology (Figure 3), where facilities come together quarterly to learn and share best practices in a two-day session. This improvement method relies on the spread and adaptation of existing knowledge to multiple settings to accomplish a common aim.

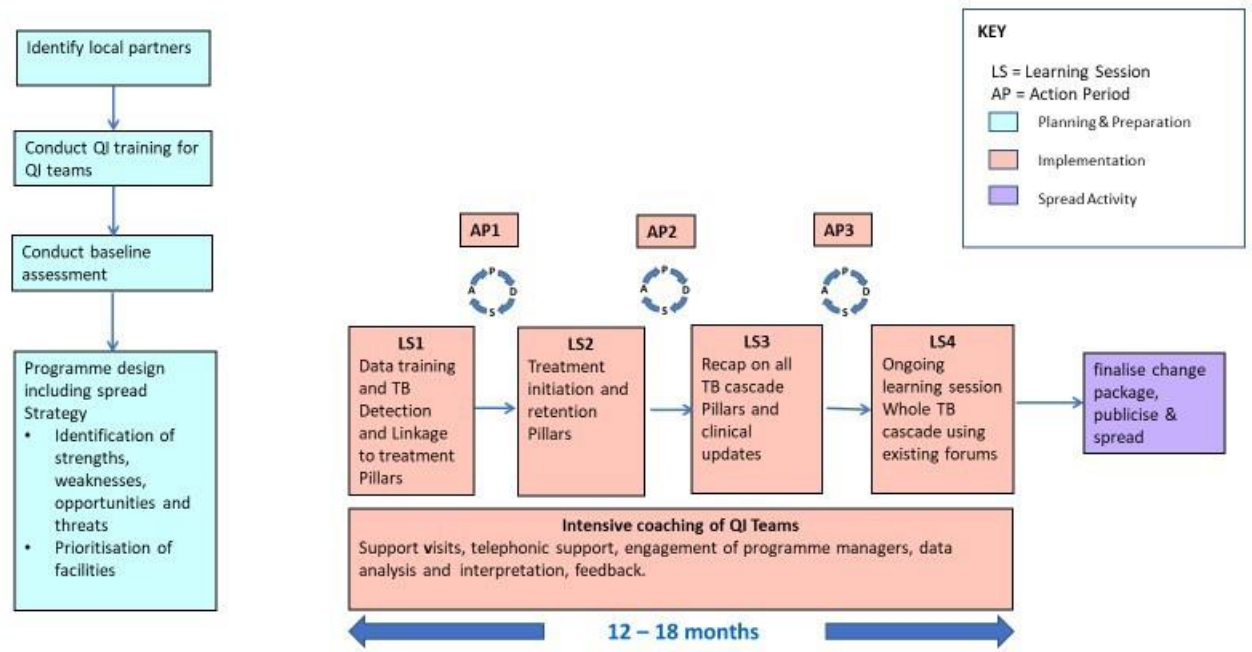


Figure 3: Learning Collaborative Design

These sessions bring together QI teams from healthcare facilities in a sub-district with sub-district, district, and district support partners. They are coordinated and facilitated by the district/sub-district teams. Provincial and national representatives can use these platforms to provide guidance and monitor progress on implementation.

The purpose of the learning session is to foster peer learning, accelerate change, and create a culture of QI. During these sessions facility improvement teams will:

- review facility data as per cascade.
- identify and prioritize gaps in performance.
- agree on at least one gap they will address.
- generate change ideas for improvement.
- develop a change management plan to test in their facilities.
- learn how to track data over time for improvement.

The Quality Improvement coaches will help facility improvement teams to:

- develop change management plans.
- determine the data needed to monitor each change idea to determine whether it has resulted in an improvement.

4.3. Facility Level Preparedness, Planning and Implementation

4.3.1. Establish a QI Team

Selecting the right team is important for successful implementation of a QI project. It is much easier to embrace change when you are involved in solving the problem rather than being told how to fix it. Choose team members based on their knowledge of, and involvement in, the processes that will be affected by your selected improvement project. A core team may consist of four to eight individuals, with additional "ad-hoc" team members to contribute to the work. In small health facilities the team may consist of as few as three members.

4.3.2. Composition of a QI Team

The composition of a QI team includes, but not limited to the following:

- Facility Manager/Operational Manager/ Clinical Manager
- TB focal person/ Professional Nurse from each stream in ideal clinic setting
- Data Capturer/Clerk, Information Officer

And may include:

- Lay Counsellor
- Community Health Worker
- Health Promotor
- Pharmacist / Pharmacy Assistant
- Any other staff
- Community member
- Patients

This will vary between facilities depending on the staff capacity and availability. Patients may be included in the team where feasible.

4.3.3. Roles and Responsibilities of the QI Team

Role of a Facility QI Team	Role of a Facility Manager

• Conduct and document weekly or biweekly meetings to review progress, identify gaps/barriers.
• Identify gaps within the TB care cascade.
• Identify health facility processes that need improvement.
• Prioritize gaps and choose one gap at a time to address.
• Conduct root cause analysis and prioritize interventions (changes) to address the identified gap.
• Test the change ideas using the QI process.
  ○ Develop a plan to test the change (Plan), carry out the test (Do), observe and learn from the consequences (Study) and determine what modifications should be made to the test (Act). Fill out one PDSA Worksheet for each test conducted.
  ○ Each change will go through several PDSA cycles. Keep a file (either electronic or hard copy) of all PDSA Work-sheets for all changes the team tests. This includes results for records reviews if conducted.
• Analyze and interrogate facility data, monthly.
• Develop or adapt action plans.
• Develop and display facility dashboards and line graphs to monitor progress towards targets.
	• Share facility quality improvement vision.
	• Build motivation for quality improvement. This includes communicating that improvements are possible, encouraging and promoting teamwork, giving positive feedback, etc.
	• Conduct regular Data Quality Audits (DQA), which includes reviewing data sources for completeness, correctness, and consistency with the QI team.
	• Build staff capacity for quality improvement. Provide QI training opportunities for staff.
	• Dedicate time to measure clinic performance, discuss openly successes or failures and provide feedback to facility staff.
	• Enforce implementation of QI framework, e.g., run charts displayed and updated.
	• Integrate data and QI into management decision making processes.
	• Ensure that the voice of the patient is heard and acted on, by using information obtained from surveys, exit interviews, suggestion boxes or other means.
	• Involve staff in understanding data through facility data meetings.

4.3.4. Checklist – items that should be available in health facilities

The key items that should be available and understood by all staff in the clinics include:

- Names/ pictures of members of the facility quality improvement team to highlight the honor of serving in the improvement team.
- Aim statement(s) for the TB initiative should be available.
- Process map detailing each step experienced by a patient from entry to exit

from the process targeted for improvement.
- Change idea being tested using PDSA cycle. "Plan" should include who, what, where, when how and plan for data collection.
- Line graph/ run chart tracking relevant indicators/ measures outlined in the aim and PDSA cycle.
- Documented list of change ideas that are working well for the different gaps identified in the TB cascade (Change package).
- TB Quality Improvement Guide

4.4. Action Periods

After each learning session there will be an action period of at least three months during which the facility teams implement their plans. Facility QI teams are supported between learning sessions through on-site coaching and mentorship on clinical skills, data collection, data analysis; and on their QI project(s).

During the action period, facility QI teams will:

- test the change idea and track the data.
- conduct regular reviews of test idea(s) implemented.
- hold formal QI meetings weekly at first then biweekly as progress is made.
- monitor TB data monthly:
  - interrogate data and ensure completeness.
  - monitor progress against target.
  - develop facility dashboard and line graphs.

The Quality improvement coaches will:

- provide intensive coaching and mentorship to facilities,
  - participate in the meetings.
  - monitor the process improvements, provide feedback.
- assist facility QI teams to evaluate whether each change has resulted in improvement or not
- support QI teams to conduct benchmarking visits to other facilities/ sub districts.
- identify great changes and experiences to share during the learning sessions.
- prepare the facility teams to present at the learning sessions.
- escalate barriers on issues that cannot be solved at facility level.

There will be subsequent quarterly learning sessions and action periods. During the follow up learning sessions, the focus will be on:

- sharing learnings from the previous action period
- capturing change ideas and evidence of improvement for change package
- working on performance improvement and sustainability for change ideas
- building a case for new ideas to test and related indicators.
- reviewing current performance on new indicators (if baseline available)
- agreeing on aims and measures.
- exploring known best practice (if any exist)
- exploring gaps between current performance and known best practice
- generation of change ideas
- planning for the next PDSA
- identify clinical, data and QI training needs and incorporate in the plan.

Recognition of improvements made and progress towards attainment of targets encourages teams to perform better.

4.5. Sustaining Improvements

Sustaining improvements is an ongoing activity. Once teams have improved processes and performance, and eliminated gaps, it is important to sustain these improvements to avoid reverting to old practices. This requires change in mindset, attitude and practice of staff and management to adopt the changes as part of their routine work.

The district/sub district will need to provide support to health facilities and promote continuous quality improvement. During this phase the District QI coaches will:

- continue to conduct monthly visits to facilities, prioritizing poor performing facilities.
- use established platforms for monthly data review.
- review facility specific data and provide feedback to facilities monthly.
- conduct sub-district data review meetings quarterly using existing forums.
- conduct district data review meetings quarterly using existing platforms.
- arrange learning session activities during existing quarterly meetings.

Consider the following that will determine sustainability at facility level:

- Transformation of the care pathway - the old ways of accomplishing tasks

should no longer be an option for existing or new staff members.
- Commitment to Quality Improvement as a value system reflected by senior management.
- An active facility Quality Improvement Team, with all members involved and no longer reliant on one team member.
- Run charts are understood and utilized by staff members.
- Data, through annotated run charts, is used to make key management decisions by the facility manager.

4.6. QI Meetings

Identify the existing meeting where QI is a standing agenda item to provide updates. Identify successful change ideas and plan for scale up. Identify and troubleshoot stumbling blocks in QI implementation.x

4.7. Support Visits

Support visits should be conducted monthly and more frequently for poor performing facilities or sub districts. These should be included in the district/sub-district operational plans. The aim of the visits is to ensure that:

- facility processes and QI implementation are running smoothly.
- staff are trained and supported during implementation.
- TB Guidelines and standard operating procedures are followed.
- problems and barriers to implementation are identified and resolved.
- quality of TB care improves.
- change ideas implemented have resulted in improvement.
- clinic staff remain motivated and morale high.

A standardized tool must be used and completed during these visits (refer to *Appendix 15: Facility Coaching Tool*).

5. MAKING IMPROVEMENTS

5.1. Getting Started

The aim of the quality improvement is to address the quality gaps that exist between the current state and expected results or standard. Some of the gaps in meeting quality standards are quick fixes, as the solutions are obvious. Such gaps need to be fixed without waste of time. Other gaps have clear evidence-based solutions but need some strategies to implement them.

It is important to know where you are before you start the improvement process. Baseline data helps you to track the clinic's performance, note the changes that are introduced, and understand the impact these changes have on performance. After reviewing facility baseline and identifying gaps, the facility QI team should identify a problem that needs to be addressed.

5.2. Defining The Problem

A problem statement is a clear and concise statement that describes the symptoms of a problem. This should be guided by the following questions:

- What is the problem? What is not functioning as desired? What are the boundaries? (Size)
- Why is it a problem?
- How long has it been a problem (time)?
- What are the effects (impact) of this problem? Who is affected?
- Where does the problem exist?
- How will we know the problem is resolved?

5.3. Defining The Aim – What are we trying to accomplish?

When developing an Aim Statement, it should be SMART (specific, measurable, ambitious, relevant and time- bound). Data should be used to understand quality gaps. QI initiatives should have a clearly defined aim, see appendix 3.2.

For example:

AIM STATEMENT

Date 18 June 2020 .....

I/We, __at Maphophoma clinic , aim to improve

TB screening rate _____

from ____65%_____ to _90%_____ by ___ September 2020

Project start date. 20 June 2020

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Health
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5.4. Selecting A Change Idea – What change can we make that will result in an improvement?

All improvements require making changes. Not all changes result in improvement though. It is imperative for the team to identify changes that are most likely to result in improvement. Change ideas are specific changes that focus on improving specific steps of a process. They are practical ideas that can be tested.

In order to find a change idea, we need to understand the system. Every system is designed to achieve the results it gets. Therefore, it is important to identify the gaps in the system that hinder performance:

- How are we doing?
- Where are the gaps?
- What are the underlying cause of the problem?

5.4.1. Tools to Understand the System

Process Map or Flow Chart

- It is a pictorial presentation of a process.
- A series of connected steps/ actions taken to achieve an output, with a defined start and end point.

- Often used to represent a patient's care pathway.

Steps in developing a process flow map:	Symbols used in a flow chart:
1. Decide on the beginning and end points of the process. 2. Identify the steps of the process. 3. Link the steps with arrows showing direction. 4. Ensure that the steps are in a logical order.	Represents the beginning or end of a process Represents a step/activity in the process Represents a decision taken during the process Indicates areas where delays occur Indicates areas where documentation occurs Shows the direction of the process flow

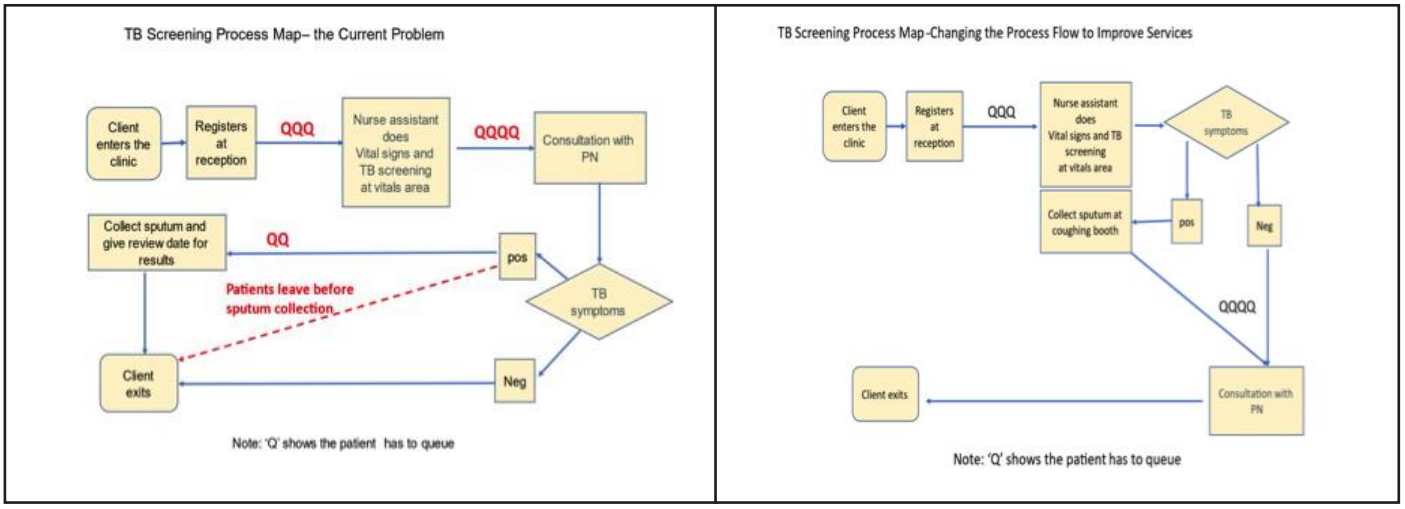

Figure 4: Example of a facility process map

Brainstorming

- A group activity to increase creativity and generate new understanding about a defined problem.
- A free-thinking process – everyone must feel safe.
- All ideas are allowed – even silly ideas because they may spark an idea in someone else that leads to the solution.
  - Each healthcare team member understands the system from a unique point of view, so everyone has some- thing valuable to offer.
  - Include the patient's point of view during a brainstorm so patients are also 'represented'.
- Design the discussion to make sure everyone is included e.g.:

- discuss in pairs first and then share with the group.
- each person can write all their ideas on sticky note – one idea per note, and then compare and discuss.

Fishbone (Root Cause Analysis)

It is a more sophisticated and structured way of doing brainstorming (see appendix 3.4). The headings in the boxes force more thinking across a broader range of topics.

As a facilitator, you control the topics that go in the boxes. You can guide people's thinking to help them come up with the most likely causes of poor performance.

Used in this way, the fishbone diagram helps you to analyze the problem, but it does not automatically generate change ideas. You can use the fishbone to organize ideas around themes/topics rather than suggest these up- front.

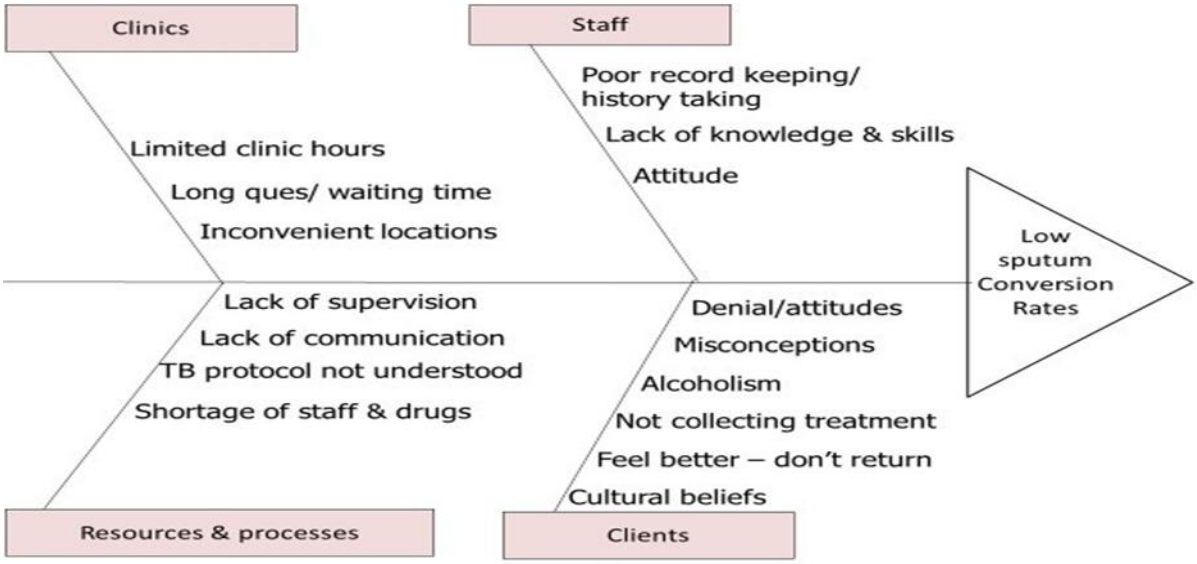

Figure 5: Example of a Fish bone cause and effect diagram

Five Whys? (Root Cause Analysis)

Use the five whys by prioritizing one problem to address, improving it will make a big difference.

It is under your control to make the changes; you can get started right away. It may be a 'low hanging fruit'

- Why is this problem occurring? Answer 1
- Why does Answer 1 occur? Answer 2
- Why does Answer 2 occur? Answer 3

- Why does Answer 3 occur? Answer 4
- Why does Answer 4 occur? Answer 5

You continue asking "Why?" until you get to what you believe to be the root cause of the problem.

5.4.2. Change Concepts and Change Ideas

- Once a priority problem is selected and the possible cause to the problem is identified, the next step is to develop the change concept and/or idea that fits the problem.
- Change concepts: Broader principles or notions that provide general direction for planning improvements. It is useful in development of more specific ideas for changes.
- Change ideas: specific changes that focus on improving specific steps of a process. They are practical ideas that can be readily tested.

Example of change concept vs. change ideas:

Change concept	Change ideas related to change concept
Actively identify all patients with signs and symptoms of TB.	• TB screening of all patients to be done in each consulting room and record in the daily PHC tick register. • Screen all household contacts of patients with TB using patient contact slips.

A decision should be made on the change ideas that are high priority and should be implemented first.

5.5. Establishing Measures – How will we know if a change is an improvement?

Measurement is at the core of improvement and tells a team whether changes they are making actual leads to improvement.

Teams use quantitative measures (data) to determine if a specific change leads to an improvement (and reaches the target). Measures serve as evidence to support case for change. Use of a balanced set of measures is recommended for improvement efforts.

5.5.1. Outcome Measures

Outcome measures tell us about impact, e.g., what happened to patients, the end result. They are related to an AIM statement. Unlike an AIM, outcome measure has no direction (increase, decrease).

Example

If this is our overall Aim

% TB patients started on TB treatment

What is our overall outcome measure?

5.5.2. Process Measures

They tell about a process. Are the parts/steps in the system performing as planned? "Are we on track in our efforts to improve the system?" Process measures are developed to show the activity has taken place. They are steps to getting to your outcome and reflect the workings of the system. Process measures often speaks to the change idea.

Example

If our Change Idea is "To screen all household contacts of patients with TB using patient contact slips", our process measures are:

Number of contact slips given to TB patients.

Number of contacts screened for TB, identified through contact slips.

5.5.3. Balancing Measures

Balancing measures tells us about the effect of changes on other parts of the system. "Are the changes designed to improve one part of the system causing new problems in other parts of the system? Unintended consequences may be positive or negative.

- If our **Aim** is "To *increase the number of all TB patients started on treatment from 150 to 200, by 31 March 2020*".
- Our **Balancing measures** could be:
  - *Stock-out of TB treatment (Negative consequence)*
  - *Reduced TB transmission (Positive consequence)*

5.6. The Plan – Do – Study – Act Cycle

The Plan-Do-Study-Act (PDSA) cycle is shorthand for testing a change in the real work setting, by planning to test change (Plan), then implement the change (Do), analyse if change has achieved the intended results (Study) and acting on what is learned (Act). This is the scientific method used for action-oriented learning. Change should initially be carried out on a small scale to test whether the intervention results in an improvement, before implementing across the system.

The fundamental idea is that without testing, one does not know if the improvement will make the situation better. The team must document all the change ideas and changes tested, including details of who did what, when it was implemented, how it was measured, what was expected to happen and what happened.

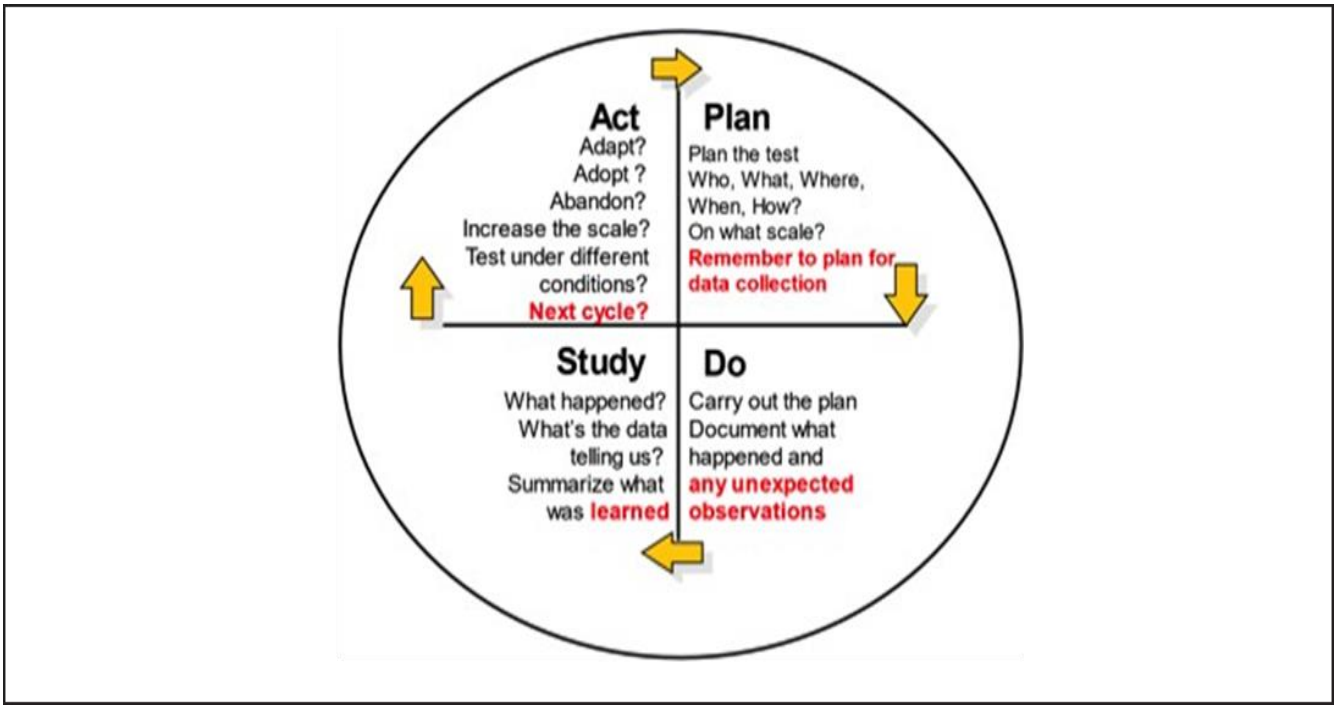

Figure 6: Adapted from IHI Improvement Guide

Before you start developing your PDSA cycles:

- organize your change ideas into groups, each of which represents a similar notion or approach to change.
- decide which are most important, easy to implement with minimal or no additional resources and would have maximum impact that can be addressed first.
- identify different ways each change idea could be implemented.

Use the PDSA worksheet as a guide to:

- identify the process that is targeted for improvement. As a rule, this should be clear enough for anyone who reads it to know what the problem is and the change you are testing.
- outline the goal for improvement, specifying by how much improved is expected and by when. Indicate what, who, where, when, how, and describe the data collection plan.

PLAN	DO	STUDY	ACT
List your action steps along with person(s) responsible and timelines	Describe what actually happens when the test is run	Describe the measured results and how they compared to the predictions	Describe what modifications to the plan will be made for the next cycle from what you learned
• What is the objective of the test? • What do you predict will happen and why? • What change will you make? • Who will it involve (e.g. one unit, one floor, one department)? • How long will the change take to implement? • What resources will they need? • What data need to be collected?	• Implement the change. Try out the test on a small scale. • Carry out the test. • Document problems and unexpected observations.	• Begin analysis of data. Set aside time to analyze the data and study the results and determine if the change resulted in the expected outcome. • Complete the analysis of data. • Compare the data to your predictions. • Summarize and reflect on what was learned. Look for unintended. consequences, surprises, successes, failures.	If the results were not what you wanted, you try something else. Refine the change based on what was learned from the test. • Adapt – modify the changes and repeat PDSA cycle. • Adopt – consider expanding the changes in your organization to additional residents, staff, units. • Abandon – change your approach and repeat PDSA cycle

After testing a change on a small scale, learning from each test and refining the change through several PDSA cycles (Figure 6), the team should implement the successful change on a broader scale – for example, for an entire patient group. This links to sustainability and scale-up.

Why test the change on a small scale?

- Produces some data which shows the performance which increases our confidence that the idea is leading to an improvement.
- Minimizes disruption within the entire system.
- Find out where the barriers are, see if there are unexpected consequences.
- Minimizes resistance to implementation.

The team need to plan for multiple cycles for a test of change.

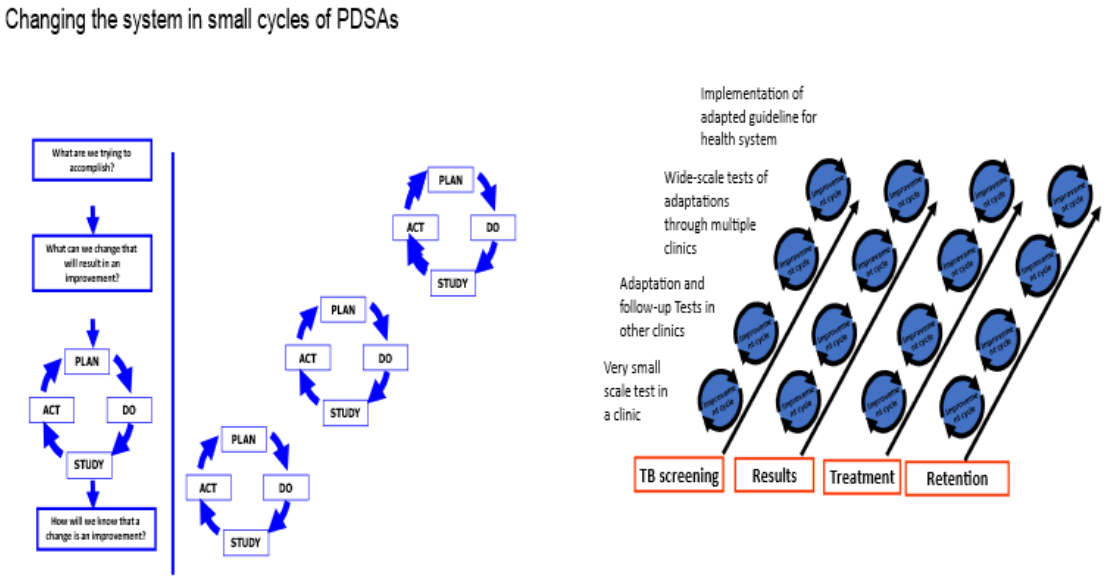

Figure 8- Multiple PDSAs to test the change ideas

6. USING DATA FOR QUALITY IMPROVEMENT

Presenting data in a visual way assists in tracking progress and in determining whether the change idea has resulted in improvement. Data can be presented as a line graph or a run chart.

A line graph is a simple graph that uses lines to connect individual data points. It displays numbers over a specified period.

A run chart is a powerful tool for understanding and analysing data. It is also the most effective way to show changes over time and to determine whether the change idea implemented has led to an improvement.

The three most important questions the data set should answer are:

1) Where are the gaps in care?
2) Is the change an improvement?
3) Are we sustaining the gains?

6.1. What Does The Data Tell Us?

The management of TB patients has three main steps which are outlined in the TB Care Cascade - finding People with TB (TB detection), starting everyone with TB on treatment (Linkage to treatment), and keeping patients in care until they have completed TB treatment (retention in care).

Figure 9: TB care cascade

6.1.1. Identifying the Gaps in the Care Cascade

Quantifying each step of the TB care cascade assists with the identification, quantification, and prioritization the gaps.

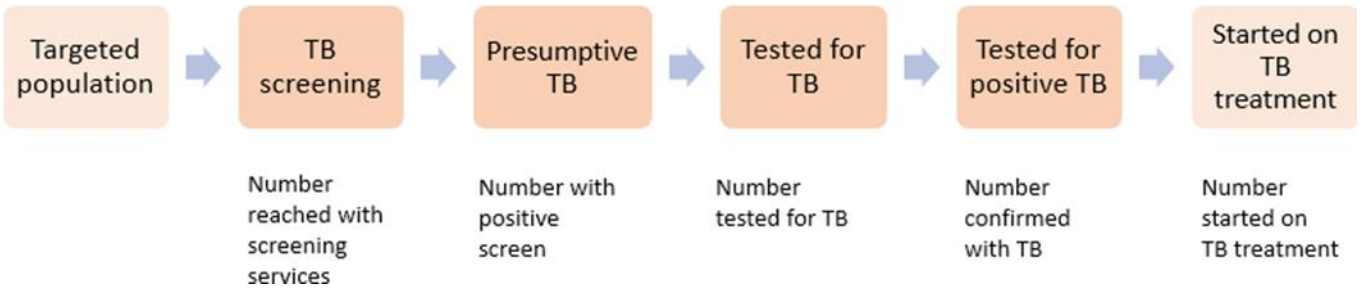

Figure 10: TB care pathway gaps by numbers

6.1.2. Making the Gaps Visible

Firstly, we put data into a table that is updated each month. Always ensure that there is six months of data prior and after the month in which the change idea was implemented.

Table 11: Table showing the testing gap

Monthly data for the number of TB presumptive patients who need and receive a test															
Year	2017							2018							
Month	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Number eligible for Xpert testing	12	8	6	8	14	15	11	9	13	8	14	11			
Number tested using Xpert	6	5	4	6	7	10	10	9	13	8	12	11			

From the data table alone, it is difficult to see the gap and to monitor progress. However, if the two related data elements are plotted on the same graph, it clearly shows the gap between the number of patients who needed sputum test each month and the number who were tested.

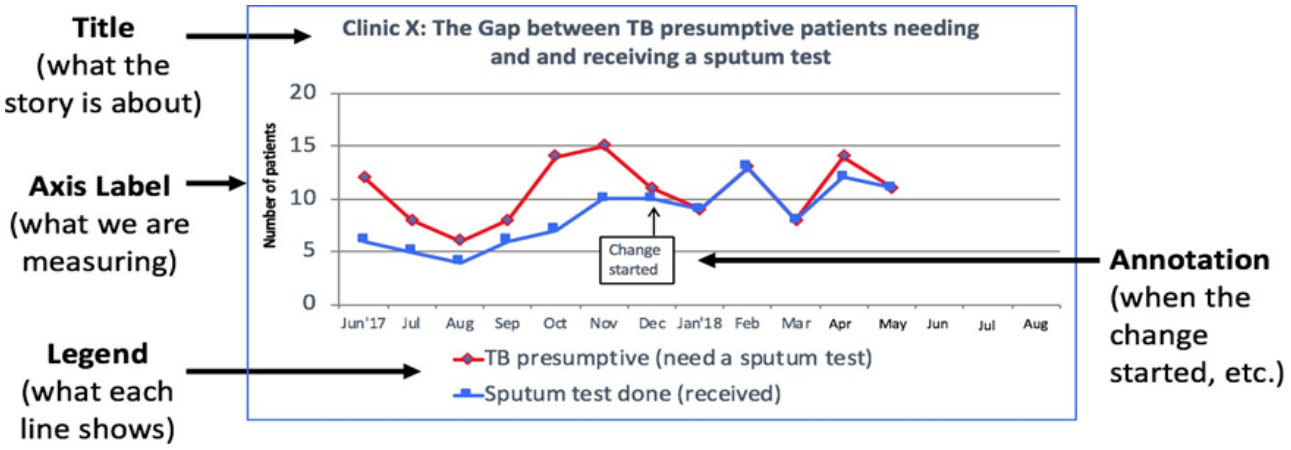

Figure 11: Line graph showing the testing gap

A run chart is used to monitor data over time to detect trends and to compare a measure before and after the implementation of a change idea to determine whether it has resulted in improvement.

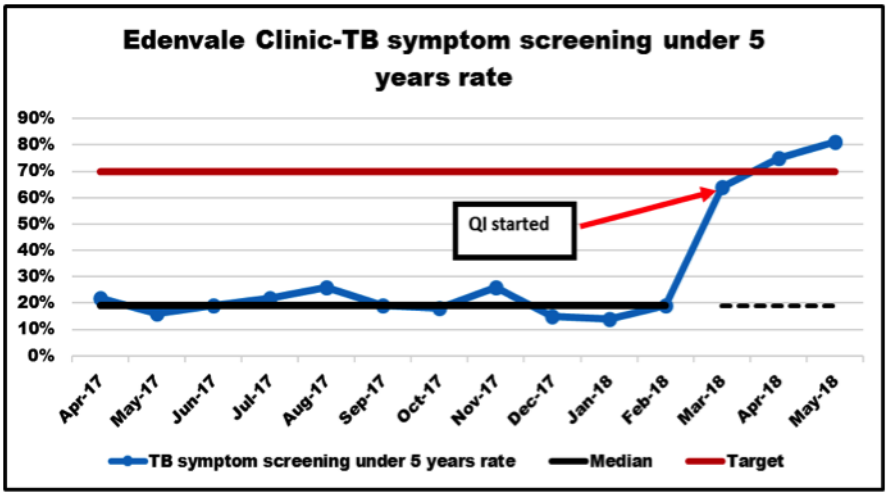

Figure 12: Run Chart of TB symptom screening rate for children under 5 years in Edenvale Clinic

6.2. QI Meetings

The Facility QI team needs to meet often at the start of the QI project. The meetings could be weekly or every second week. The team can also do quick meetings ('Huddles') to follow up on the current PDSA cycle or create the next PDSA during the week. Check data for completeness and accuracy daily and plot on the line graph weekly or monthly. Make the run charts to track improvement and update the run chart data monthly.

The QI team needs to record their meetings. Figure 13 is a guide on key points to be covered during the QI meeting.

Date **Tim**

1. Duration of meeting

Establish how much time you have.

2. Reminder of aims

3. Update on change ideas

Recap on the change idea(s) they have been testing.

4. Update on PDSA(s)

Recap on the PDSA(s) the team was working on or planning. This information should have been recorded.

5. Review your data

- You are looking for evidence of improvement.
- If they have completed a PDSA cycle, review data collected during the test.
- If the test covers a whole month, some of the data may have been routinely collected and collated.
- Check whether any decision has been made under the "Act" section of the PDSA, and if data supports this decision. If no decision was made, encourage the team to make one. Check if there are plans to modify thechange before it is tested again based on the learning from the previous PDSA

6. Plan the next test of change

If the previous idea was abandoned, identify a new change idea using appropriate improvement tools. Otherwise, plan the next test based on the decision made under "Act."

7. Review the run charts

Help them plot new data points if necessary. Check if successful changes are still being implemented in old topics where performance improvements have not been sustained.

8. Action plan

Be sure that you and the team members have recorded important decisions and actions from the meeting.

Figure 13: Example of QI meeting Agenda

7. ENSURING SUSTAINABILITY THROUGH CONTINUOUS QUALITY IMPROVEMENT

The key aspects of sustainability are:

- A transformed TB care pathway.
- Change ideas integrated into daily practice.
- Data used to continually monitor and maintain performance.

7.1. How to Engage in Continuous Quality Improvement

- As a team, work sequentially through the care pathway you have targeted for improvement.
- Start at the beginning, establish baseline performance and barriers to care.
- Using your Change Package, or ideas generated internally, test change ideas for improvement using multiple PDSA cycles.
- As clinical performance improves, reflected by data shown on your run charts, move from step to step in the TB care pathway.
- When the team has worked through the entire TB care pathway, evaluate how far the team has come, and how much clinical performance has improved. Re-evaluate the aims set at the beginning of the improvement process.
- If needed, go back to the beginning and set more ambitious aims. Consider starting at the beginning of the TB care pathway again, looking for new challenges and innovative solutions.
- If the care pathway targeted requires no further improvement, evaluate the value of applying these lessons to a new care pathway in your facility.
- Use visual management boards as appropriate – allow the teams to engage in continuous improvement where multiple, complex improvements projects are running. The visual boards can be displayed in many ways, to engage others, sharing the projects and improvements. The visual boards is the way of displaying data and QI tools, share progress at the routine meetings e.g., weekly meetings at the facility.

Figure 14: Example of visual management board

7.2. How to Institutionalise Change

- The QI team should review the success of change idea tested and decided to implement in its facility.
- Review all relevant data to ensure that the improvement has been due to the change implemented.
- Attain consensus on the value of change implemented.
- Develop a standard operating procedure (SOPs) that defines the TB care pathway within the facility.
- All new staff in the facility should be orientated on the processes and SOPs implemented at the facility.

8. REFERENCES

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APPENDIX 1 – Problem Statement

FACILITY NAME:

Problem Statement:

_____

_____

_____

_____

APPENDIX 2 – Aim Statement

health
Department:
Health
REPUBLIC OF SOUTH AFRICA

QUALITY IMPROVEMENT AIM STATEMENT

FACILITY NAME:_____

We aim to improve the_____

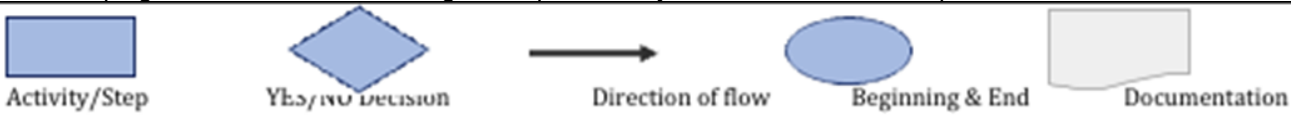
FROM _____ To _____

By _____

APPENDIX 3 – **Process Map**

Process mapping creates a visual tool to analyse a series of activities within the facility with the aim of:

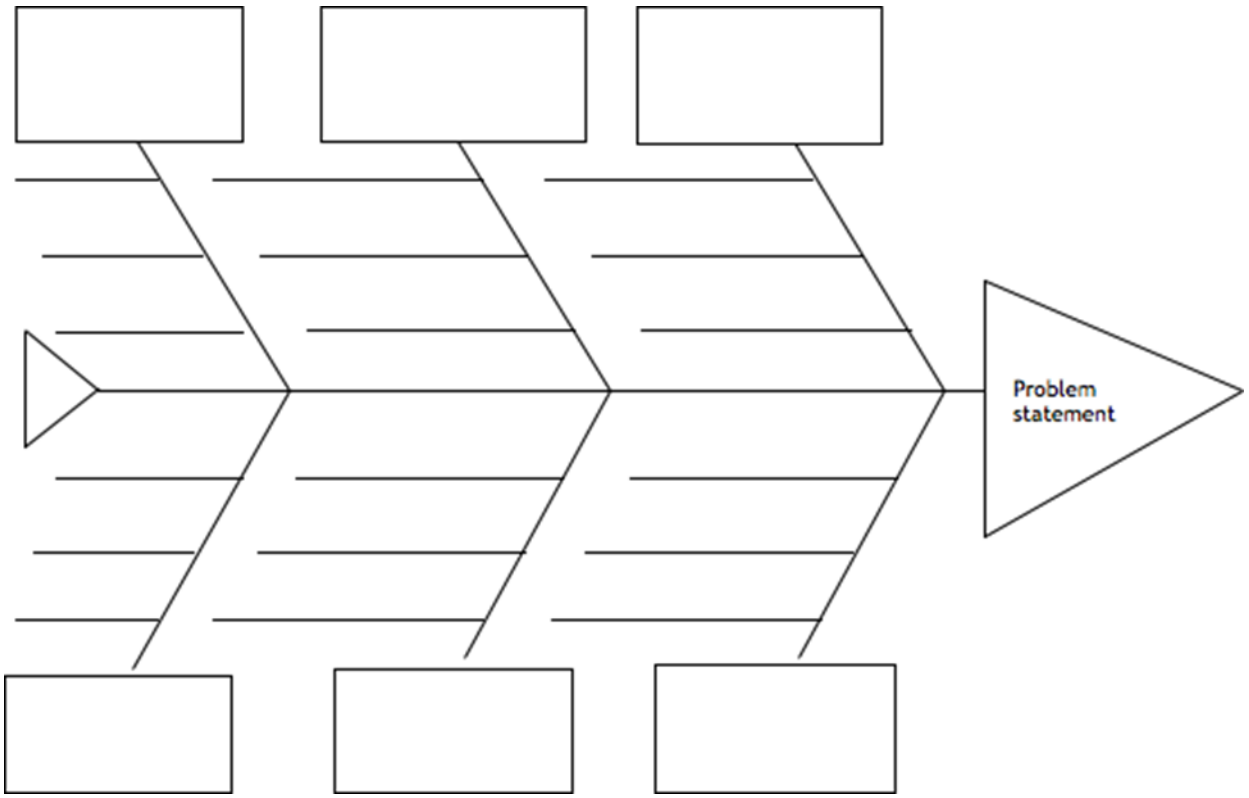
- creating collaborative awareness of current state related to a process
- reflecting on current state, identify specific opportunities for improvement
- developing an improved future state process
- reducing bottlenecks/delays identified
- removing duplication of processes and/or unnecessary steps
- developing a common understanding of the process, cycle times, roles and responsibilities



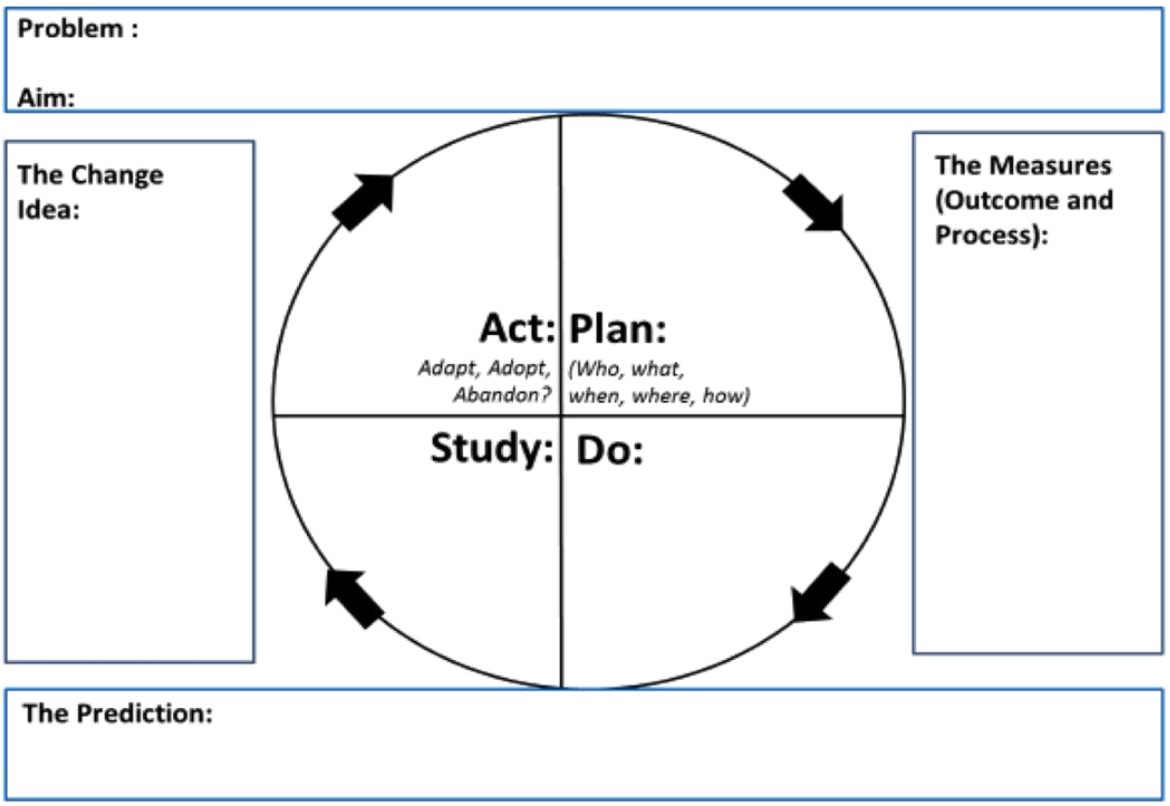
Map of the CURRENT process:

Summary of analysis findings (at what points of care can the process be optimised):

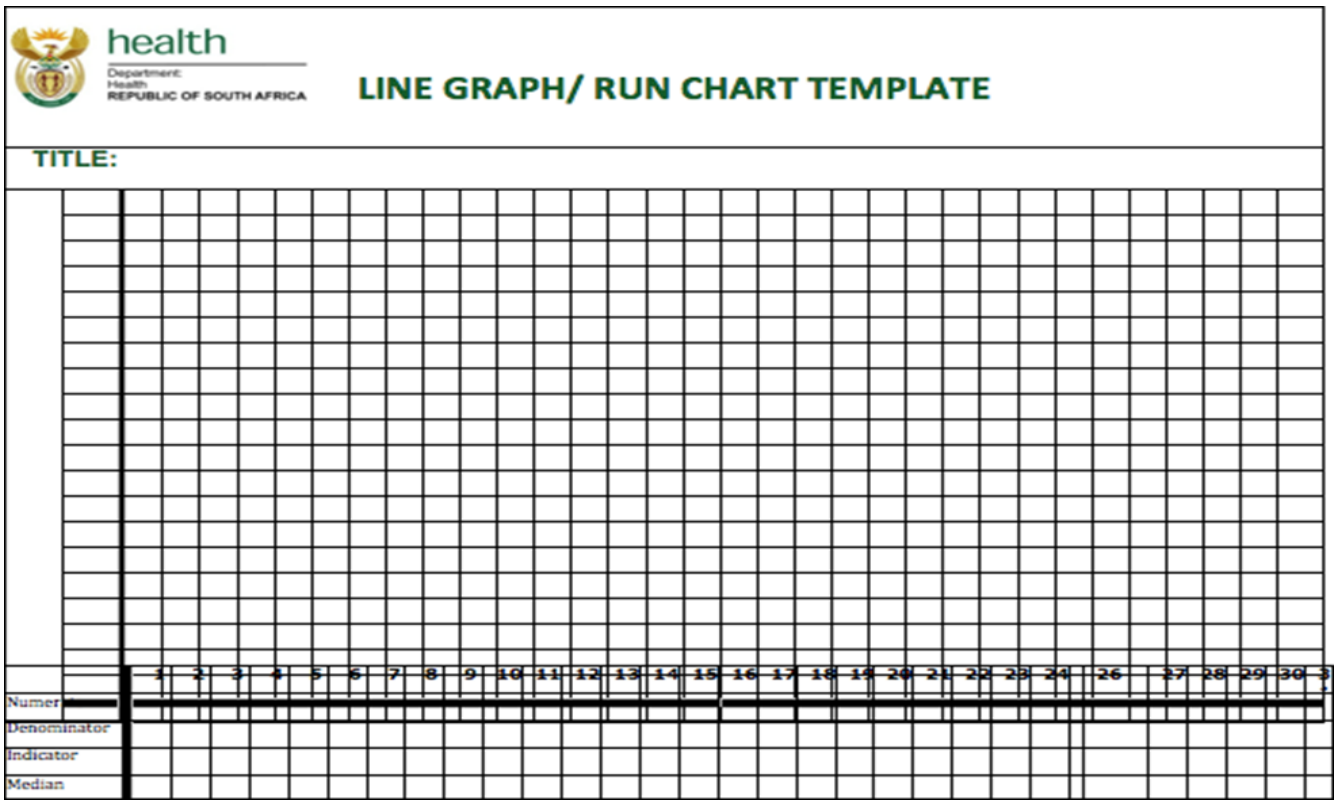
APPENDIX 4 – Fishbone/Cause and Effect Diagram



APPENDIX 5 – PDSA Cycle



APPENDIX 6 – Run Chart/Line Graph Template



APPENDIX 7 – Examples of Run Charts Used for Tracking Gaps in TB

EXAMPLES OF GRAPHS		CARE STEP (GAP) BEING TRACKED OVER TIME	# POPULATION Who need care in this pillar (DENOMINATOR)	# POPULATION WHO RECEIVED CARE IN THIS PILLAR (NUMERATOR)	CALCULATION (IF REQUIRED)
Simple/ Single line graph *(% against the target)*	% Headcount < 5 years screened for TB in facility	# PHC Headcount < 5 years	# Screened for TB in facility < 5 years	Screened for TB <5 years / PHC Headcount <5 years x 100	
	% Headcount 5 years and older screened for TB in facility	# PHC headcount 5 years and older	# Screened for TB 5 years and older	Screened for TB ≥ 5yrs/ PHC headcount ≥5 years x 100	
Two line/ Double line Graph	Contacts 5 years and older started on TPT vs All contacts ≥ 5 years identified	# TB contact 5 years and older	# TB contact 5 years and older started on TPT	NA	
	Contacts <5 years started on TPT vs all contacts <5yrs identified	# TB Contact under 5 years	# TB contact under 5 years started on TPT	NA	
	Children <5 years tested vs those who were eligible	# Child under 5 years eligible for TB test	# Child under 5 years tested using Xpert	NA	
	Client 5 years and older tested vs those who were eligible	# Client 5 years and older eligible for TB test	# Client 5 years and older tested using Xpert	NA	
	Child under 5 years started on treatment vs those who were bacteriologically confirmed	# DS-TB bacteriologically confirmed under 5 years	# DS-TB treatment start under 5 years	NA	
	Client 5 years and older started on treatment vs those who were bacteriologically confirmed	# DS-TB bacteriologically confirmed 5 years and older	# DS-TB treatment start 5 years and older	NA	
Simple/ Single line graph *(# number against target)*	Number of children < 15 years started on TB treatment	-	-	NA	
	Number of children < 5 years started on TB treatment	-	-	NA	
	Number of clients ≥ 15 years started on TB treatment	-	-	NA	

APPENDIX 8 – TB Care Cascade Indicator Calculation Tool

	PHC Head-count	Screen edfor TB	Eligible forTB test	Tested us-ing Xpert	Bacteriolo g-ically con-firmed	Started on Treatmen t	Clinicall ydiag-nosed	Total started on treatment	EXPECTE D started on treatmen t(target)	Devia -tion
QRT 1	B2	C2	D2	E2	F2	G2	H2	M2	N2	P2
		C2/ B2		E2/D2	F2/E2	G2/F2		M2/F2+H2		P2/N2
QRT 2	B4	C4	D4	E4	F4	G4	H4	M4	N4	P4
		C4/ B4		E4/D4	F4/E4	G4/F4		M4/F4+H4		P4/N4
QRT 3	B6	C6	D6	E6	F6	G6	H6	M6	N6	P6
		C6/ B6		E6/D6	F6/E6	G6/F6		M6/F6+H6		P6/N6
QRT 4	B8	C8	D8	E8	F8	G8	H8	M8	N8	P8
		C8/ B8		E8/D8	F8/E8	G8/F8		M8/ F8+H8		P8/N8
Targets		95%		100%	10%	100%				

Note: The tables below represent the Microsoft Excel version of the TB care cascade tool. By entering figures in the greyed-out cells, Microsoft Excel will auto-calculate the percentages in the yellow cells. The calculated percentages and raw numbers are then automatically transferred to graphs. Request for Microsoft Excel TB care cascade tool from the D-TB-QI-T

APPENDIX 9 – TB Screening Tool

health
Department:
Health
REPUBLIC OF SOUTH AFRICA

TB SYMPTOM SCREENING TOOL FOR ADULTS AND CHILDREN				
PATIENT DETAILS				
Surname: _____		First Name: _____		
Physical Address: _____		Age: _____		
Telephone Number: _____		Patient folder Number: _____		
MEDICAL HISTORY				
Close contact of a person with infectious TB:	Yes	No	Unknown	(Tick √)
		RR/MDR-TB		
Type of Disease for index patient:	DS-TB		XDR-TB	
Diabetic:	Yes	No	Unknown	
HIV Status:	Positive	Negative	Unknown	
Treated for TB in past 2 years	Yes	No	Unknown	
Silicosis:	Yes	No	Unknown	
TB SYMPTOM SCREEN				
1. ADULTS				
Tick (√) where applicable			**Yes**	**No**
Persistent cough				
Persistent fever of more than two weeks				
Unexplained weight loss >1.5kg in a month				
Drenching night sweats				

2. CHILDREN

Tick (√) where applicable	Yes	No
Persistent cough		
Persistent fever of more than two weeks		
Documented weight loss/ failure to thrive (*check Road to Health Card*)		
Fatigue (less playful/ always tired)		

If "Yes" to one or more of these questions, consider TB.

If coughing, collect sputum specimen and send it for Xpert testing.

If no symptoms but PLHIV, Contact or Previously treated for TB, collect specimen, and send it for Xpert testing. If no cough but other symptoms present, clinically assess the patient or refer for further investigation.

Date of last TB test: _____ Patient referred for assessment and investigation:

Facility name

Name of person

Date:

APPENDIX 10 – TIER.Net Line Lists for TB/HIV

SCHEDULE FOR PRINTING THE TIER LISTS AND REPORTS FOR TB HIV		
DAILY		
Patient appointment list	Daily	TB and HIV
Data validation list		
Transfer out list		
Workload report		
User access report		
EVERY 2-3 DAYS		
Early missed appointment		TB and HIV
WEEKLY		
TB case identification results outstanding	Weekly	TB
Waiting list for TB treatment		
DS-TB conversion sputa required		
Late missed appointment		
Waiting for ART		TB and HIV
Two consecutive unsuppressed viral load		HIV
Viral load due		
Viral load cascade		
Club attendance		
ART regimen line validation		
Early missed appointment	Every Friday	
MONTHLY		
HIV testing services annual report	First week of every month	HIV
Monthly club report		
Monthly facility club report		
Monthly facility club report		
ART enrolment graph		
ART patient total graph		
Monthly report		
Late missed appointment	Last Friday of every month	
Unconfirmed LTFU		
DS-TB smear conversion report		TB
Unconfirmed LTFU	Monthly	
DS-TB discharge sputa required		
TB outstanding outcomes		
DS-TB cases requiring action (non-conversion)		
TB identification report	7th working day. of every month	
TB GeneXpert report		
Facility management report	First week of every month	Management
(Sub)District TIER.Net management		
QUARTERLY		
TB treatment initiation report	7th working day. of Jan, Apr, Jul, Oct	TB
DS-TB outcome report		
DS-TB cases by HIV and ART status		HIV
Quarterly ART report-illustrated	Quarterly	
ANNUALLY		
One and five-year retention on ARTreport	Annually	HIV

APPENDIX 11 – Facility Coaching Tool

health Department: Health REPUBLIC OF SOUTH AFRICA	FACILITY COACHING TOOL
Date:	Facility Name:
QI Leader/ Coach/ IA:	Others present:
QI Team Members Present: Yes/No	How many members:
Scheduled QI Meetings: Yes/No	Frequency:
Date of last QI meeting:	Minutes of meeting present: Yes/No
Comment:	
Identified gap: Causes:	
AIM:	
CHANGE IDEA	

I. PLAN		SCORE **Yes** - Completely: 2 Partly: 1 **No** - not at all: 0	COMMENTS (compulsory for all answers)
1.	Did they address WHO, WHAT, WHERE, WHEN? If not, what would you suggest they do to strengthen this part of their plan?		
2.	Did they describe a plan to collect the data required to answer questions?		
3.	What did you think of the scale of this PDSA? (Too large, small, complex, simple, etc.?) What do you think would have been a more useful size/scope for this PDSA cycle?		
II. DO		**ANSWER** **Yes** - Completely: 2 Partly: 1 **No** - Not at all: 0	
4.	Did they attempt to carry out their plan?		
5.	What are your suggestions to improve in the DO phase of their PDSA cycles?		
III. STUDY		**ANSWER** **Yes** - Completely: 2 Partly: 1 **No** - Not at all: 0	COMMENTS (Compulsory for all answers)
6	Did they complete the analysis of the data?		
7	Did they collect the data they planned to collect?		
IV. ACT		**ANSWER** **Yes** - Completely: 2 Partly: 1 **No** - Not at all: 0	COMMENTS (Compulsory for all answers)
8			

RECORD REVIEWS

	STRENGTHS IDENTIFIED	GAPS
PHC summary sheets		
TB identification summary sheet		
	STRENGTHS IDENTIFIED	GAPS
TB identification register		
Patient records		
TIER TB module		
Other *(Specify)*		

GENERAL COMMENTS AND RECOMMENDATIONS

APPENDIX 12 – Monthly Data Verification

Monthly Data Verification Tool Use the review period to update results and treatment start dates in the Case ID Register and to cross check that all data is cap-tured in TIER.Net and is correctly reported on the monthly summary sheet					
Month:					
Data element	**TB ID Registers**	**TIER.Net report**	**Monthly summary**	**DHIS**	**Comment**
Screen for TB 5 years and older					
Client 5 years and older eligible for TB test					
TB test 5 years and older using Xpert					
DS-TB bacteriologically confirmed 5 years and older					
DS-TB clinically diagnosed 5 years and older					
DS-TB treatment start 5 years and older					
TB contact 5 years and older					
TB Contact 5 years and older start on TPT					

Monthly Data Verification Tool Use the review period to update results and treatment start dates in the Case ID Register and to cross check that all data is captured in TIER.Net and is correctly reported on the monthly summary sheet					
Month:					
Data element	TB ID	TIER.Net	Monthly	DHIS	Comment
Screen for TB under 5 years					
Client under 5 years eligible for TB test					
TB test under 5 years using Xpert.					
DS-TB bacteriologically confirmed under 5 years					
DS-TB clinically diagnosed under 5 years					
DS-TB treatment start under 5 years					
TB contact under 5 years					
TB Contact under 5 years start on TPT					

Compiled by: Nobesuthu Ramawela **Date**: 21 Jan 2024