Ministry of Health and Child Care
Zimbabwe

National Tuberculosis Control Programme

Making Sense of TB data

Guide for collection, analysis and use of TB data for health workers in Zimbabwe

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FOREWORD

Data collection, analysis and its use is essential in implementing an effective and efficient Tuberculosis (TB) control. It is vital for the districts, cities and provinces to be able to report timely, accurate and complete data to all levels of reporting and to use these data locally to strengthen management of both TB patients and TB control activities. This guide aims to ensure that health workers at all levels of the health care services are able to report accurately data, measure programme performance and use good quality data for decision making and planning.. It is important for national programme implementers and managers to have access to adequate information based on quality data to make policy decisions.

The guide explains the National Tuberculosis Control Programme recording and reporting system and how to accurately and completely fill the TB data collection tools, analyse the data for decision making and planning. It is not a replacement of any National Tuberculosis Control Programme guidelines, instead reinforces what is mentioned in other guidelines. The target users of this guide are all health workers including health managers in all government, municipal, mission and private health facilities.

It is my sincere hope that health workers will find this guide a useful tool to strengthen recording and reporting of TB data to enhance TB control in Zimbabwe.

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Brigadier-General (Dr) Gerald Gwinji
Permanent Secretary
Ministry of Health and Child Care

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LIST OF ABBREVIATIONS

AIDS	–	Acquired Immunodeficiency Syndrome
ACSM	–	Advocacy, Communication and Social Mobilisation
ART	–	Anti-Retroviral Therapy
CPT	–	Cotrimoxazole Preventive Therapy
DHE	–	District Health Executive
DHMT	–	District Health Management Team
DMO	–	District Medical Officer
DOT	–	Directly Observed Therapy
DOTS	–	Directly Observed Treatment Short Course
DR-TB	–	Drug Resistant tuberculosis
DSM	–	Direct Smear Microscopy
DTLC	–	District TB and Leprosy Coordinator
EPTB	–	Extra Pulmonary Tuberculosis
EQA	–	External Quality Assurance
HIV	–	Human Immunodeficiency Virus
M&E	–	Monitoring and Evaluation
MDGs	–	Millennium Development Goals
MDR-TB	–	Multi-Drug Resistant Tuberculosis
MOHCC	–	Ministry of Health and Child Care
NTP	–	National Tuberculosis Control Programme
PEDCO	–	Provincial Epidemiology and Disease Control Officer
PHC	–	Primary Health Care
PHE	–	Provincial Health Executive
PMD	–	Provincial Medical Director
PPM	–	Public-Public and Public-Private Mix
PTB	–	Pulmonary Tuberculosis
PTBLC	–	Provincial TB and Leprosy Coordinator
RR-TB		Rifampicin Resistant Tuberculosis
SOPs	–	Standard Operating Procedures
SSM+	–	Sputum Smear Positive
SSM-	–	Sputum Smear Negative
TB	–	Tuberculosis
The Union	–	International Union Against Tuberculosis and Lung Disease
WHO	–	World Health Organization
XDR-TB	–	Extensively drug resistant tuberculosis

EXECUTIVE SUMMARY

Health workers spend much time on collecting and submitting TB data, on supportive supervision and performance review meetings, yet their own data are little used. The purpose of the guide is therefore to guide health workers especially at facility and district levels to make sense of their TB data, to increase ownership, improve data quality and to strengthen their own services. The guide should not add to the already heavy work load but make the efforts more useful for themselves.

The guide is innovative in including the facility level which has an increasing role in TB prevention and control, such as collecting and transporting sputum, starting TB treatment, doing HIV testing and starting ART. Routine quarterly district TB reports are tabulated in spread sheets while NTP is developing an electronic TB-HIV system which will facilitate tabulation and analysis further. The guide includes updated definitions and explains how to calculate rates and percentages. The principles of TB control are transformed into key questions and a list of 18 key indicators to monitor progress. On-site data verification and supportive supervision are explained, as well as the role of the different levels of health services in TB control. The tools used to collect TB data are described but the tools themselves are not included as they are revised from time to time when need arises. The facility quarterly TB report is a new tool discussed in the guide.

At facility level, TB data are tabulated and analyzed every quarter by the facility team or district supervision teams, and at district level by provincial supervision teams, DHEs, or during district performance review meetings with facilities.

The approach includes entering data from quarterly district and facility TB reports into tables covering seven questions related to: presumptive TB case finding, TB case notification, TB-HIV, DOT, treatment outcomes, drug management and presumptive MDR-TB case finding. The tables include timeframe in quarters as rows and columns with data on respective priority indicators such as number of presumptive TB cases identified. The tabulation facilitates analysis, on trends over time and differences between facilities and districts. The data from the last full year form the "baseline" to compare later quarters, particularly the last quarter. For each key indicator, expected values are defined and possible reasons suggested for values observed below or above expected. Observed values on indicators define strengths, if within expected or weaknesses if different from expected. Action points agreed upon based on observed weaknesses. Facility level data may include very small frequency counts, and caution may need to be taken in interpreting and drawing conclusions from any computed rates or percentages.

At facility level, only time trends are assessed, but at district level, aggregate district quarterly data are first compared with all the facility quarterly reports, as well as triangulated with other source documents such as the laboratory register, to assess for completeness. Data from the district quarterly report are then tabulated similar to the facility level tabulation with quarters as rows. Then data from the facility reports are tabulated for the last full year, with facilities as rows, and data on respective priority indicators as columns, to compare disaggregated performance by facility In addition similar tables are made by facility for the quarters of the current year, with special interest on the last quarter. Based on the analysis for both the whole district and by facility, observed data on indicators define strengths or weaknesses for the whole district, with additional comments on individual facilities. To help the analysis, a summary table is made of all the facilities and indicators, showing in which facilities challenges were observed. At the end the same summary table with strengths and weaknesses and agreed action points is discussed both at the facility and district..

Supportive supervision is a key activity to follow-up training, monitor and provides feedback about implementation of the TB program. The guide describes how it should be "data-driven", with the supervision team updating summary tables of the area to be supervised before each quarterly visit, analysing and identifying challenges, so that the visit can be focused on the challenges. The supervisors use a check list with the summary tables described in the guide, one for a province visiting a district and diagnosing center, another for a district visiting a facility (both found in annexes). The supervision should end with a discussion with the local team the table on strengths and weaknesses,

based on data that have been validated and corrected, and on other observations during the visit, agreeing on action points.

The approach of the guide should not only be relevant for tuberculosis but also for other health programs.

CHAPTER 1: BACKGROUND

Summary:

The purpose of the guide is to guide health workers especially at facility and district levels in collection, analysis and use of routine TB data to strengthen their own services. Much time is spent on collecting TB data and on supportive supervision and performance review meetings, but there remains a missed opportunity to systematically analyze and use routinely collected data for decision making. The guide should not add to the already heavy burden of recording and reporting but make it more useful for the users. It should also improve the quality of the data since routine use of collected data should increase the motivation for quality. The guide also includes the facility level as it has an important role in TB prevention and control. Routine quarterly district TB reports are tabulated in spread sheets. NTP is developing an electronic TB-HIV system which will facilitate more efficient tabulation and analysis.

The guide includes updated definitions and explains how to use rates and percentages. The principles of TB control are translated into key questions that the data should talk to and a list of key indicators to measure. How to ensure quality of data through on site data verification and supportive supervision are explained, as well as the role in TB control of different levels of the health system.

Rationale for the guide

This document is reinforcing the National Tuberculosis Control Programme Monitoring and Evaluation Framework and the National Tuberculosis Control Programme guidelines. A notable gap has been that, the existing programme guidelines do not describe in detail how TB data are collected, analyzed and used to improve quality of TB patient care and strengthen TB control. Through recent decentralization and integration of TB and HIV services, primary health care facilities have become more involved in the collection of TB data and programme management than before. These facilities investigate patients for presumptive TB, initiate anti-TB treatment, test and counsel patients with suspected and confirmed TB for HIV, start HIV-positive patients on cotrimoxazole preventive therapy (CPT) and anti-retroviral treatment (ART), and follow up drug-resistant TB patients on treatment.

Before this guide, data were frequently collected and compiled mainly for the purpose of submitting to the next level, as is common practice in Zimbabwe. Using data to guide decisions to improve local services is vital but not often practised. If data are not analysed and used, data quality will remain unsatisfactory. When health workers and managers appreciate the importance of analysing and using TB data that have been collected, quality of recording and reporting is likely to improve. Currently much time and resources are used to record and report TB data from facilities and districts, for supportive supervision and performance review meetings. This guide intends to link these activities, so that supervision and performance review meetings are using routine data to strengthen program performance and more focused on identified challenges based on routine data "data driven". The approach described in this guide should also be relevant to other programs and contribute to health systems strengthening.

Purpose of the guide

The purpose of this document is to guide health workers in collection, analysis and use of routine quality TB data at all levels of the health system, in order to strengthen evidence based decision making for TB control.

Collection of TB data forms part of the general health information system which aims to:

- Ensure *high-quality patient care*, a continuum of care, information-sharing with patients and transfer of information between health facilities;
- *Aid staff* in providing adequate services to patients;
- Allow managers at different levels in the NTP to *monitor programme performance* in a standardized and internationally comparable way;
- Provide the basis for programmatic and *policy development*.

Target group for the guide

The guide is designed to assist health workers at health facility level (rural health centres, urban clinics, mission, district, provincial and central hospitals, and private facilities) district level, provincial level, key stakeholders and NTP partners.

What is new in the guide?

The main news is that TB teams (health workers) in facilities and districts will use routine TB data systematically for their own management and that supportive supervision will be based on routine data. In addition the recording and reporting system, described in this guide is based on the new WHO case definitions issued in June 2013. The new issues include the following:

New definitions:

- A new definition of a "bacteriologically confirmed" case has been included for patients with positive test results on smear microscopy, Xpert MTB/RIF or culture.
- Less judgemental language replaces terms such as "defaulter" (replaced by "loss to follow-up") and "TB suspect" (replaced by "presumptive TB case").

TB patients who die before treatment start or who do not start treatment at all (often called "initial defaulters" and not routinely recorded and reported) should now be included in the facility and district TB registers and reported as TB cases.

The new approach

- The reporting of TB data and activities will now start at a health facility. Health facility will submit a quarterly facility TB report after having tabulated and analysed the data, identifying strengths, weaknesses and action points. Previously only districts submitted quarterly TB reports while facilities were recording TB information in forms and registers. Similar quarterly tabulation, analysis and use of the routine TB data should take place at district and provincial levels.
- Supportive supervision and performance review meetings will be "data driven", that is, should include use of tables with quarterly data from the units visited to guide supervision, and to identify strengths, weaknesses and action points.
- A Health facility TB register is introduced. It is identical to the district TB register and in addition includes a DOT section which is only in the facility register.
- Reporting on identified presumptive TB cases through the health facility quarterly report and the quarterly district TB reports. Previously the district quarterly report only captured the number of presumptive TB cases entered in the TB laboratory register.
- Isoniazid preventive therapy for children under 5 years of age is now included in the health facility TB register.
- TB screening and notifications among high risk groups such as health workers, miners and prisoners is included in the health facility TB register.
- ART and CPT use in HIV positive TB cases are now reported in the district quarterly case finding reports in addition to the outcome reports. In districts with more than one diagnosing center, each diagnosing center will keep a TB register with all the patients in their catchment area. The DTLC will collect quarterly TB reports from each diagnosing center and consolidate them in to one district quarterly TB report.
- Quantification of quarterly need of TB medicines (based on the number of registered cases in the previous quarter) and calculation of how many months the stock represents.
- Additional analysis of treatment outcomes will be done separately for HIV positive patients only.
- Disaggregation of Directly Observed Treatment (DOT) by type (health facility based or community based DOT) is done in the case finding or treatment outcome quarterly reports.

How to use the guide?

Facility level staff will learn in:

- Chapter 2:
  - How to use data collection tools
  - how to fill in the new quarterly facility TB report,
- Chapter 3:
  - How to tabulate and analyse the routine TB data
  - How to use TB data for management

District level staff (DTLC, DHE) will learn in;

- Chapter 4: How to tabulate and analyse routine data from the quarterly facility TB reports and from the quarterly district TB reports and how to use District Health Executive (DHE) meetings to identify strengths, weaknesses and action points. How to use the data for management
- Chapter 5: How to do supportive supervision of facilities.
- Chapter 6: How to do performance review meetings

Provincial level staff (PTLC, PHE) will use the same methodology as the District level, analyzing total provincial data and data by district.

Type of data and definitions

The TB recording and reporting forms, registers and reports contain a large number of data. This is partly due to international requirements. Ideally, only data that are used should be collected. Some data are essential because they provide immediate feedback to programme implementers and managers at all levels and facilitate timely corrective action. Some data are included in quarterly reports, while others are only assessed during supportive supervision. Registers that contain quality TB data are a gold mine for surveys and operational research that can provide answers to questions that are useful for programme performance, decision making and planning.

For TB data to be comparable within different districts cities and provinces in a country and between various countries in the world, standard definitions of key indicators in the NTP information systems are used and they should be adhered to by all health workers. The table 1 below describes definitions that are commonly used in TB control.

Table 1: Case Definitions used in TB control

Disease Category	Term	Definition
	Presumptive TB case (previously called "TB suspect")	Any person who presents with symptoms or signs suggestive of TB, in particular cough of two weeks or more and cough regardless of duration in HIV-positive persons
TB case categories		
By bacteriological confirmation	Bacteriologically confirmed TB case	A patient with a biological specimen that is positive by smear microscopy, culture or WHO-approved rapid diagnostics (such as Xpert MTB/RIF). All such cases should be notified, whether TB treatment was started or not.
	Clinically diagnosed TB case	A patient who does not fulfill the criteria for bacteriological confirmation but has been diagnosed with active TB. This definition includes cases diagnosed on the basis of X-ray abnormalities or suggestive histology and extra-pulmonary cases without laboratory confirmation. Clinically diagnosed cases subsequently found to be bacteriologically positive (before or after starting treatment) should be reclassified as

Disease Category	Term	Definition
		bacteriologically confirmed.
By site	Pulmonary TB patient	Refers to any bacteriologically confirmed or clinically diagnosed case of TB involving the lung parenchyma or the tracheobronchial tree. Tuberculous intra-thoracic lymphadenopathy (mediastinal and/or hilar) or tuberculous pleural effusion, without radiographic abnormalities in the lungs, constitutes a case of extra pulmonary TB. Note that pleura and pleural cavity are not part of the lung parenchyma or tracheobronchial tree. A patient with both pulmonary and extra-pulmonary TB should be classified as a case of PTB.
	Extra pulmonary TB patient	Refers to any bacteriologically confirmed or clinically diagnosed patient with TB involving organs other than the lungs, e.g. pleura, lymph nodes, abdomen, genitourinary tract, skin, joints, bones and meninges.
By history of previous treatment	New TB patient	A patient who has never had treatment for TB or who has taken anti-TB drugs for less than one month.
	Previously treated patient	A patient who has received 1 month or more of anti-TB drugs in the past. They are further classified by the outcome of their most recent course of treatment (described below)
	Relapse patients	A patient who has previously been treated for TB, was declared *cured* or *treatment completed* at the end of their most recent course of treatment, and who is now diagnosed with a recurrent episode of TB.
	Re-treatment after loss to follow-up	A patient who has been previously treated for TB and was declared *lost to follow-up* at the end of their most recent course of treatment. (These were previously known as *treatment after default* patients.)
	Retreatment after treatment failure	A patient who has previously been treated for TB and whose *treatment failed* at the end of their most recent course of treatment.
	Other previously treated patient	A patient who has previously been treated for TB but whose outcome after their most recent course of treatment is unknown or undocumented.
By HIV status	HIV-positive TB patient	Refers to any bacteriologically confirmed or clinically diagnosed case of TB who has a positive HIV test result from the time of TB diagnosis or other documented evidence of enrolment in HIV care, such as enrolment in pre-ART or ART register once ART has been started.
	HIV-negative TB patient	Refers to any bacteriologically confirmed or clinically diagnosed case of TB who has a negative HIV test result at the time of TB diagnosis. Any HIV-negative TB patient subsequently found to be HIV-positive should be reclassified accordingly.
	HIV status unknown TB patient	Refers to any bacteriologically confirmed or clinically diagnosed case of TB who has no result of HIV testing and no other documented evidence of enrolment in HIV care. If the patient's HIV status is subsequently determined, he or she should be reclassified accordingly.
Treatment outcome categories		
By treatment outcome categories	Cured	A pulmonary TB patient with bacteriologically confirmed TB at the beginning of treatment who was smear- or culture-negative in the last month of treatment and on at least one previous occasion.
	Completed treatment	A TB patient who completed treatment without evidence of failure BUT with no record to show that sputum smear or culture results in the last month of treatment and on at least one previous occasion were negative,

Disease Category	Term	Definition
		either because tests were not done or because results are unavailable.
	Died	A TB patient who dies for any reason before starting or during the course of TB treatment.
	Treatment failed	A TB patient whose sputum smear or culture is positive at month 5 or later during treatment.
	Lost to follow-up (previously called "defaulted")	A TB patient who did not start treatment or whose treatment was interrupted for 2 consecutive months or more.
	Not evaluated	A TB patient for whom no treatment outcome is assigned. This includes cases "transferred out" to another treatment unit as well as cases for whom the treatment outcome is unknown to the reporting unit.
	Treatment success	Equals the sum of *cured* and *treatment completed*
Drug resistant TB		
By drug resistance	Presumptive MDR-TB cases	A patient in whom resistance testing should be done at least for rifampicin. This group of patients is defined by the NTP and includes retreatment patients and household contacts of confirmed MDR-TB patients.
	Mono-resistance	Resistance to one first-line anti-TB drug only
	Poly-drug-resistance	Resistance to more than one first-line anti-TB drug, other than both isoniazid and rifampicin.
	Multidrug-resistance	Resistance to at least both isoniazid and rifampicin.
	Extensive drug resistance	Resistance to any fluoroquinolone and to at least one of three second-line injectable drugs (capreomycin, kanamycin and amikacin), in addition to multidrug resistance.
	Rifampicin-resistance	Resistance to rifampicin detected using phenotypic or genotypic methods, with or without resistance to other anti-TB drugs. It includes any resistance to rifampicin, whether mono resistance, multidrug-resistance, poly-drug resistance or extensive drug resistance.
The categories above are not all mutually exclusive. When enumerating rifampicin-resistant TB (RR-TB), for instance, multidrug-resistant TB (MDR-TB) and extensively drug-resistant TB (XDR-TB) are also included.		
	Drug susceptibility testing	Investigation to detect if the strain has resistance to TB drugs, usually Xpert test to identify rifampicin resistance, or tests by liquid or solid media to identify resistance to rifampicin and other TB drugs. Also frequently called "drug resistance testing".
Definitions of treatment outcome and programme monitoring and evaluation indicators		
Case notification Rate	The number of TB cases reported to the NTP per year per 100,000 population. Case notification rates are usually calculated for new bacteriologically confirmed pulmonary TB cases and all forms of TB cases.	
Treatment success rate	Percentage of TB cases registered in a specified period and who completed treatment, whether with bacteriologic evidence of success ("cured") or without ("treatment completed")	
Treatment failure rate	Percentage of TB cases registered in a specified period who are smear positive at 5 months or later after initiating treatment	
Lost to follow-up rate (previously called "Default" rate)	Percentage of TB cases registered in a specified period who did not start treatment or whose treatment was interrupted for two consecutive months or more.	

Disease Category	Term	Definition
	Not evaluated rate	Percentage of TB cases registered in a specified period who were not evaluated for an outcome.

Other useful definitions	
Xpert MTB/RIF	A rapid laboratory test that consists of two different tests to show: if the specimen contains TB bacillus *(Mycobacterium tuberculosis)* and if the strain is resistant to rifampicin.
Cohort	A group of patients in whom TB has been diagnosed, and who were registered during a specified time period (e.g. the cohort of new pulmonary bacteriologically-confirmed patients registered in the calendar year 2014). This group forms the denominator for calculating TB treatment outcomes.
Indicator	Measurable information obtained from routine TB recording and reporting that is monitored over time. The measure provides information on how well a certain aspect in TB control is functioning. Key indicators are listed in table 1, for example notification rate of all TB patients per 100,000 population.
Target	The value of an indicator that NTP sets as the goal to be reached by the end of a defined period. Targets are defined to focus efforts to improve TB control.

Rates and percentages

The main goals of TB control is to prevent transmission through timely detecting infectious TB cases and successfully treat them without creating drug resistance. Therefore the two key indicators (see table below on indicators) how many TB cases are being **notified** and how many are **successfully treated**. These indicators are calculated as **rates** per 100,000 (case notification) and percentages (cure rate and treatment success rate) so that they can be compared between different settings (clinics, districts and provinces) with different population sizes and over time.

Calculating notification rates: TB cases per 100,000 population

The number of notified TB cases is expressed as a notification rate per 100,000 population. The rate shows how many cases there would be in each area (clinic, district, province) if the population had been 100,000 in each of them.

The notification rate is calculated as follows: (Number of TB patients registered divided by catchment population) multiplied by 100,000.
Example 1: In Zimbabwe in 2013; 35,760 cases of all forms of TB were registered. The estimated population was 13,061,239. The notification rate was therefore: 35,760/13,061,239 x 100,000 = 273 patients per 100,000 population.

This national rate of 273 patients per 100,000 population equals to:

- 27 TB patients per 10,000 population
- 2 patients per 1,000 population,
- 1 TB patient per 500 persons in one year.

Example 2: Use of notification rates to compare districts:
In district A with 60,000 inhabitants, 120 TB patients were registered last year, while in a neighbouring district B with 150,000 inhabitants, 200 TB cases were registered. The notification rate in district A was: (120/60,000) x 100,000 = 200/100,000 population. In district B the notification rate was: (200/150,000) x 100,000 = 133/100,000 population. The average notification rate for two districts is in between (152/100,000) (See table 2 below).

Whilst District B had more TB in the sense that the absolute number of TB patients was higher than in district A (200 compared with 120), the rate per 100,000 population was higher in district A (200 compared with 133). This

means that on average among 10,000 persons in district A, there are 20 TB cases while among 10,000 persons in district B there would only be 13. The TB problem may therefore be more serious in district A than in district B.

Table 2: Example of population, TB patients and rate per 100,000 in two districts and in total

District	Population	TB patients	Rate per 100,000
A	60,000	120	200
B	150,000	200	133
Total	210,000	320	152

Calculating treatment outcome: percentages

Percentages (number per 100) are used to describe more frequent occurrences, such as treatment outcome. Monitoring how many of the notified TB patients who are successfully treated is a key indicator in TB control. All TB patients notified during one quarter should have a treatment outcome as described above.

The success rate is calculated as: ((Patients cured + completed)/Patients registered) x100.

Using numbers from the table 3 below: (93+2)/120 x100=95/120 x100 =79%

The results are usually entered in the following table format and included in the quarterly reports:

Table 3: TB treatment outcomes presented as absolute numbers and percentages for TB patients notified in quarter 3 of 2012 in district C

Quarter	Registered	Cured	Completed	Failed	Lost to follow-up	Died	Not evaluated	Total	Success (Cure+ Completed)
Number	120	93	2	3	8	14	0	120	95
%	100	77,5	1,7	2,5	6,7	11,7	0,0	100	79,2

Principles of TB control: Key questions and indicators

As mentioned the main goals of TB control is to prevent transmission through timely detecting infectious TB cases and successfully treat them without creating drug resistance. The principles of TB control therefore include the following:

1. Detect and screen all presumptive TB cases and record them in the presumptive TB register
2. Initiate all identified TB cases and record them in TB registers
3. Test all TB patients for HIV and if positive start CPT and ART. Record test result, CPT and ART in TB register.
4. All TB patients should be treated with daily treatment support and observation by a health worker or trained community volunteer, including trained family member
5. Successfully treat all TB patients. All TB patients registered should be evaluated at the end of treatment and their outcome should be determined according to outcome definitions.
6. TB drug management: There should be adequate stock of TB drugs at all times in all health facilities.
7. Drug resistant TB: All previously treated TB cases should have sputum tested for Xpert MTB RIF.

Health workers should be able to answer the following key questions about TB control activities and review the performance of services through a set of indicators as illustrated in table 4.

The data are collected from the presumptive TB register (indicators 1-2), health facility and district TB register (indicators 3-16, 18) and stock cards (indicator 17). This list of indicators will be modified as NTP identifies other issues that need to be monitored routinely such as DR TB case finding and treatment start and community referral of TB cases.

Table 4: Principles of TB control, key questions and indicators with their expected values

No	Question	Indicator	How to calculate indicator
	Principle 1: Detect all presumptive TB cases and record them in presumptive TB register		
1	To what extent do we detect presumptive TB cases in our community/district/city/province/country?	Rate of Presumptive TB cases per 100,000 population	Numerator = number of presumptive TB cases recorded in register x 100,000 Denominator = Catchment population
2	Out of all presumptive TB patients **bacteriologically examined**, what percentage had bacteriologically confirmed TB?	Percentage of presumptive TB cases with positive laboratory test result(s)	Numerator = Number of presumptive TB cases with either a positive sputum on microscopy, culture or Xpert x 100% Denominator = Total number of presumptive TB cases with results of either microscopy , Xpert or culture
Principle 2: Detect TB cases and record them in TB registers			
3	To what extent are we diagnosing TB? (All cases) in our community/ district/city/province/ country?	Notification rate, all TB cases, per 100,000 population	Numerator = Number of all TB cases registered x 100,000 Denominator = Catchment population
4	To what extent are we diagnosing new pulmonary bacteriologically confirmed TB cases in our community/district/city/ province/country?	Notification rate: new pulmonary bacteriologically confirmed cases per 100,000 population	Numerator = number of new pulmonary bacteriologically confirmed cases registered x 100,000 Denominator = Catchment population
5	All pulmonary TB patients have been checked for AFB, Xpert or culture in the sputum? (for patients 5 years and above)	Percentage of new pulmonary TB patients without bacteriological result in patients older than 5 years	Numerator = Number of new pulmonary TB patients above the age of 5 years without a bacteriological result x 100% Denominator = Total number of new pulmonary TB patients above the age of 5 years
Principle 3: Test all TB patients for HIV and if positive start CPT and ART. Record test result, CPT and ART in TB register.			
6	Do all TB patients have an HIV test result?	Percentage of TB patients with known HIV test results	Numerator = Number of patients with an HIV test result x 100% Denominator = Total number of TB patients registered
7	What proportion of TB patients tested for HIV are HIV positive?	Percentage of TB patients with an HIV result who are HIV-positive	Numerator = Number of patients with an HIV-positive result x 100% Denominator = Total number of TB patients with an HIV test result
8	Are all HIV- positive TB patients on cotrimoxazole prophylaxis?	Percentage of HIV-positive TB patients on CPT	Numerator = Number of TB patients with an HIV- positive result on CPT x 100% Denominator = Number of TB patients with an

No	Question	Indicator	How to calculate indicator
			HIV positive result
9	Are all HIV- positive TB patients on ART?	Percentage of HIV-positive TB patients on ART	Numerator = Number of TB patients with an HIV- positive result on ART x 100% Denominator = Number of TB patients with an HIV- positive result
<u>Principle 4:</u> All TB patients should be treated with daily treatment support and observation by a health worker or trained community volunteer ,including trained family member			
10	What percentage of TB patients on treatment are observed either by a health worker or trained community observer including trained family member?	Percentage of TB patients observed by health worker	Numerator = Number of TB patients observed by health worker during treatment x 100% Denominator = Number of TB patients registered
		Percentage of TB patients observed by trained community observer, including trained family members	Numerator = Number of TB patients observed by a trained supporter during treatment x 100% Denominator = Number of TB patients registered
<u>Principle 5:</u> Successfully treat all TB patients. All TB patients registered should be evaluated at the end of treatment and their outcome should be determined according to outcome definitions. The unfavourable outcomes are: death before or during treatment, patients lost to follow up before or during treatment, treatment failure, and Non-evaluated patients. At facility level the outcome indicators will analyse all TB cases while at District level all cases and bacteriologically confirmed cases are analysed separately.			
11	What is the percentage of all registered TB patients that were successfully treated?	Percentage of registered TB patients successfully treated at the end of the treatment period **(=Success rate)**	Numerator = Number of registered TB patients successfully treated (cured &completed treatment) x 100% Denominator = Number of registered TB patients
	What percentage of new pulmonary bacteriologically confirmed TB patients are declared cured at the end of treatment?	Percentage of all new pulmonary, bacteriologically confirmed (positive) TB patients cured at the end of treatment **(= Cure rate)**	Numerator = Number of new pulmonary bacteriologically positive TB patients declared cured at the end of treatment x 100% Denominator = Number of new bacteriologically positive pulmonary TB patients registered
12	Are there any new pulmonary bacteriologically confirmed TB patients who completed their course of treatment but who do not have the required number of negative follow up sputum results for them to be declared cured?	Percentage of all new pulmonary bacteriologically confirmed (positive) TB patients who completed treatment but who do not have negative smear results at the last month of treatment and at least one previous occasion during treatment. **(Treatment completion rate)**	Numerator = Number of new pulmonary bacteriologically confirmed patients declared as treatment completed at the end of treatment x 100% Denominator = Number of new pulmonary bacteriologically confirmed patients registered
13	Did any patients fail	Percentage of TB	Numerator = Number of TB patients declared as

No	Question	Indicator	How to calculate indicator
	treatment?	patients who failed treatment **(Treatment failure rate)**	treatment failure at the end of treatment Denominator = Number of TB patients registered
14	Did any TB patients among registered patients interrupt treatment for 2 months or more or did not start treatment at all?	Percentage of TB patients who were lost to follow-up during treatment or did not start treatment**(Lost to follow-up rate)**	Numerator = Number TB patients declared as lost to follow-up at the end of treatment x 100% Denominator = Number of TB patients
	Did any new pulmonary bacteriologically confirmed TB patients interrupt treatment for 2 months or more or did not start treatment at all?	Percentage of new pulmonary bacteriologically confirmed TB patients who were lost to follow-up during treatment or did not start treatment **(Lost to follow-up rate)**	Numerator =Number of new pulmonary bacteriologically confirmed TB patients who were lost to follow-up during treatment or did not start treatment Denominator=Number of new pulmonary bacteriologically confirmed TB patients
15	Are patients dying before or during treatment	Percentage of all registered TB patients who died before or during treatment **(Death rate)**	Numerator = Number of TB patients declared as died before or during treatment x 100% Denominator = Total number of all TB patients registered
		Percentage of new pulmonary bacteriologically confirmed TB patients who died before or during treatment **(Death rate)**	Numerator = Number of new pulmonary bacteriologically confirmed TB patients declared as died before or during treatment x 100% Denominator = Number of new pulmonary bacteriologically confirmed registered
16	Are there any patients without evaluated treatment outcome? (Including patients transferring out and having an unknown outcome at the end of treatment).	Percentage of all registered TB patients with treatment outcomes not evaluated **(Not evaluated rate)**	Numerator = Number of registered TB patients with no treatment outcome assigned x 100% Denominator = Number of registered TB patients
		Percentage of new pulmonary bacteriologically confirmed TB patients with treatment outcomes not evaluated **(Not evaluated rate)**	Numerator = Number of new pulmonary bacteriologically confirmed TB patients with no treatment outcome assigned x 100%
<u>Principle 6:</u> TB DRUG MANAGEMENT: There should be adequate stock of TB drugs at all times in all health facilities.			
17	Are TB drug stocks adequate taking into consideration	Months of stock for each drug	Current stock divided by the monthly need calculated from the number of patients registered

No	Question	Indicator	How to calculate indicator
	number of TB patients and drug expiry dates?		during the previous quarter
Principle 7: DRUG RESISTANT TB: All patients previously treated should have sputum specimen tested with Xpert MTB RIF and culture and DST.			
18	Are all previously treated TB patients tested for Xpert MTB RIF	Percentage of previously treated TB patients with sputum tested for Xpert MTB RIF	Numerator: Number of previously treated TB patients tested with Gene Xpert and/or DST. Denominator: Number of previously treated TB patients registered.

What is Data Quality?

Data quality is the degree to which data represent and measure what they were intended to represent and measure when the data collection system was designed. A systematic review of the routine monitoring systems (Routine Data quality assessments) should be carried out by the supportive supervision teams. This exercise will include reviewing and validating the facility quarterly report; checking if various registers tally (e.g. presumptive TB with health facility TB register) and systematic sampling of patients in the health facility TB register to measure the quality of care and to validate core indicators such as assessment and recording of HIV status.

Table 5: Key attributes of data quality

Accuracy	Represents the original data source
Validity	Measures what is intended
Integrity	Not manipulated
Reliability	Data are consistent and information generated is understandable
Completeness	All data are present
Timeliness	Data are recorded at the time of observation and reported at the prescribed time

How can you ensure collection of quality data?

- Understand the data to be collected. Before you record any information, make sure that you understand what is expected of you. If you are not sure, read the standard operating procedures printed on the front and/or back cover of the tool or ask a colleague or your supervisor.
- Record the data every time. Record on the appropriate forms each time you perform a procedure, e.g. Observe a TB patient take his/her daily dose of TB medicines , test a patient for HIV, supply any drug, , receive a test result, provide a referral.
- Record data consistently. Make sure you have provided all the information requested on the recording and reporting form. Doing so might even require noting when you did not provide a service.

The health staff should ensure that all TB forms and registers are updated and completely filled in. Quality checks include assessment for i) Completeness of records before compiling reports. ii) Any recording or transcription errors. Health workers at facility level should routinely compare presumptive TB register and the TB register to ensure all diagnosed patients are recorded in the TB register. Counting from registers

Before counting to fill in quarterly reports or summary tables during supervision, mark clearly when the quarter to be counted ends. It is important to make clear separation between quarters to facilitate correct counting. Usually the safest way to count is by tallying, that is ticking off each patient in the register consecutively in different boxes of the tally sheet. If information is unclear or missing, note down the patient, correct the lack of clarity in the register, and move on. If the lack of clarity cannot be solved, include it in the action points. Check that the totals add up. If not, count again.

On-site data verification

On-site data verification is one way to ensure good data quality. It is carried out in a step-wise manner: national level officers verifying provincial and district data, provincial level officers verifying district and facility level data and lastly, district level officers verifying facility data. Data verification entails the following:

- Recounting reported case numbers from available source documents for accuracy
- Comparing reported case numbers with health facility records
- Identifying reasons for any differences
- Verifying case numbers in reports and records with other data sources such as laboratory register

Data verification and supportive supervision visits are an integral part of TB Control Programme control.
Data verification: is to verify and ensure the quality of routine TB data submitted to the NTP. It is carried out quarterly at national level to selected districts, and twice a year by provinces to selected districts by teams (consisting of officers from various disciplines such as laboratory, pharmacy, nursing, M&E), who carefully compare submitted quarterly reports with on-site registers for a selected a quarter and leave a copy of the findings with the facility. Any discordance should be clarified and corrected. The data verification visits focus on the assessment of data quality and dwell little on the use of the data and programme performance.

Supportive supervision visits are done quarterly at national, provincial and district level. For details see chapter 5. The supportive supervision visits are "data-driven", using routine TB data to identify components of the program or areas (facilities, districts, provinces) that need special attention. Supportive supervision includes verifying key data for selected indicators. The data verification visits contribute to better supportive supervision because the supervision will use data of assured quality and will need less or no time to verify data. Data verification is more useful if the verified data are used through supportive supervision or by quarterly TB review meetings in the facilities and districts.

Supportive supervision and data verification are therefore complementary activities which should be coordinated as much as possible.

Roles of different levels of health services

Community level

Trained community DOT observers are responsible for following up and providing treatment support for patients in TB care at community level. They also screen contacts and refer clients with presumptive TB to health facilities for investigation. They also assist in the follow up of lost to follow up patients and refer them to clinic for continuum of care. They are also responsible for maintaining the community TB registers, updating daily observation in the patient card as well as filling in referral forms.

Rural health centre/Clinic level

The Nurse-in-Charge is responsible for the overall TB treatment and care services provided in rural health centres and clinics, including identification and management of patients with presumptive TB. In large clinics, especially in urban areas, there could be a TB focal nurse who assists the Nurse-in-charge in patient care and recording and reporting of TB services.

The Environmental Health Technician (EHT) is responsible for tracing patients who have interrupted TB treatment or are lost to follow-up and for screening household contacts of bacteriologically confirmed pulmonary TB and childhood TB cases. EHTs also transport specimens, including sputum, to microscopy and/ or diagnosing centres and ensure that results are returned to rural health centres/clinics. Rural health centre and clinic teams should create community awareness about TB and services provided in health facilities with trained community DOT observers. .

TB diagnosing centre level

This is a health facility which offers direct sputum smear microscopy and other TB diagnostic services such as x-ray and gene Xpert. TB diagnosing centres are frequently hospitals and polyclinics in certain large cities, such as Harare. This level of facilities has two functions in TB control: a) as other facilities: following up TB patients on treatment, and also b) coordinating TB activities in the catchment area, covering a number of other facilities that are using its diagnostic services.

1. The person in charge of the health facility is responsible for the overall management of health services at a diagnosing centre, including TB patient and programme management.
2. The TB Focal Person (Focal Nurse/Environmental Health Technician) for the diagnosing centre is responsible for coordination of TB control programme activities in the catchment area of the health facility. He/she ensures that all TB registers are updated weekly. It is also his/her duty to update the TB register using health facility TB registers from rural health centres/clinics and other treatment centres in the district, that Quarterly facility reports have been submitted and validated.
3. TB Focal Nurse should be appointed to oversee implementation of TB services in the hospital and to work closely with the OI/ART focal person to ensure integration of TB and HIV services.

District level

The District Medical Officer (DMO) is in charge of health services in the district. The District TB and Leprosy Coordinator (DTLC) works with the DMO to facilitate planning, implementation, monitoring and evaluation of all TB programme activities. DTLC validates quarterly facility TB reports with the district TB register(s), validates the quarterly reports for each diagnosing center and compiles quarterly district TB reports. He/she clarifies issues with health facility staff when necessary and submits consolidated reports to the District Health Executive (DHE) through the DMO. **The DHE analyses these reports for accuracy and uses the data to assess the performance of the programme and formulate strategies to address identified gaps and compile quarterly and annual TB reports for the district.** After the reports have been analysed and discussed, the DTLC submits them via the DMO to the province. It is important that the recommended submission dates are adhered to. The DTLC also ensures that facility and district reports are filed and stored in an orderly manner for ease of retrieval.

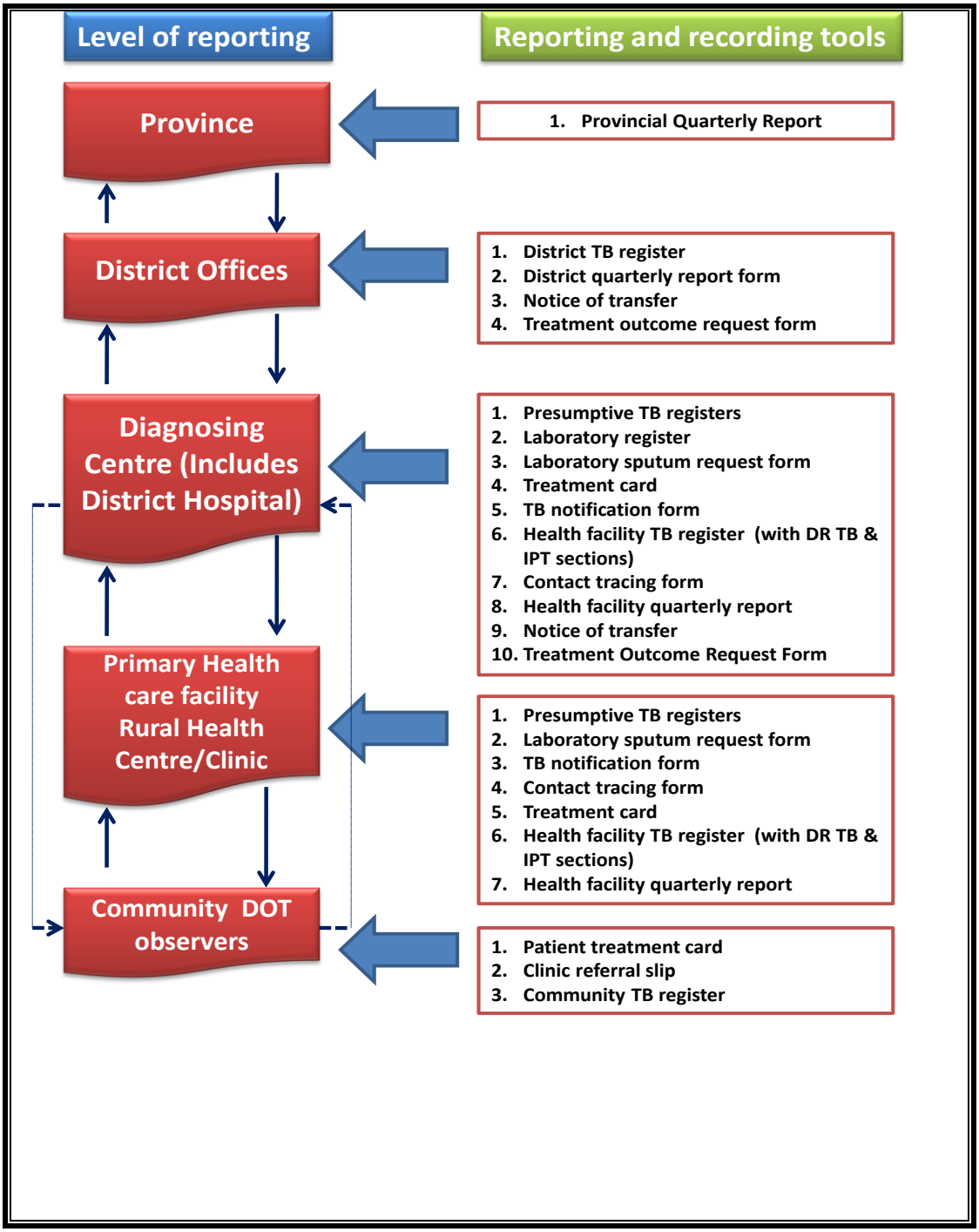
The assistant to the DTLC in each diagnosing centre ensures that the TB register is regularly, that is, weekly updated and compared with the laboratory register to ensure that all patients with positive sputum smear microscopy or Xpert MTB/RIF result are included. It is also the DTLC's duty to update the TB register using health facility TB registers from rural health centres/clinics and other treatment centres in the district, that Quarterly facility reports have been submitted and validated and that data from the Quarterly facility reports tally with the Quarterly district TB report.

Provincial level

The Provincial TB and Leprosy Coordinator (PTLC) works with the Provincial Epidemiology and Disease Control Officer (PEDCO) to facilitate planning, implementation, monitoring and evaluation of all TB programme activities, including coordination and collaboration with the Provincial STI/HIV/AIDS Coordinator for efficient management of joint TB-HIV services. PTLC validates quarterly and other district TB reports and clarifies issues with the DTLCs and district health managers when necessary. He/she submits consolidated reports to the Provincial Health Executive (PHE) through the PEDCO. After the reports have been analysed by PHE and discussed, the PTLC submits the reports via the PMD to the National TB Program. The PTLC also ensures that facility and district reports are filed and stored in an orderly manner for ease of retrieval. (NB It is important that the recommended submission dates are adhered to.)

The Provincial Medical Director (PMD) is in charge of health services in the province. Coordination of disease control activities including TB control is carried out by the PEDCO. The PHE analyses the reports for accuracy and uses the data to assess the performance of the programme and formulate strategies to address identified gaps and compile quarterly and annual TB reports for the province.

Figure 1 TB recording and reporting tools at different levels of health services



CHAPTER 2: DATA COLLECTION TOOLS

Summary:

The tools used to collect TB data are described, who should use them and how they should be used. The tools are not included in the guide since they are revised when needed. The facility quarterly TB report is a new tool described, that contains key information from the facility TB register and is sent to the district. It facilitates analysis of data at facility level.

Presumptive TB register

This register is used to record information of all identified patients who present – at any service point in a health facility - with symptoms and signs suggestive of TB. Its main purpose is to assess if:

i) the number of identified patients with suspected TB is adequate (indicator #1),
ii) these patients are timely investigated, and
iii) the patient groups investigated for TB are well targeted (looking at positivity rates, indicator #2).

Nurses who attend to these clients, screen them for TB, and are responsible for maintaining the register. Entry points for TB screening could be several, depending on the type and size of the health facility. They include out-patient departments, medical and children's wards, antenatal clinics, maternity wards, well baby and immunisation clinics, OI/ART clinics etc. It means that large facilities should have several presumptive TB registers so that filling them in does not cause additional delays. This register records information on type of patient, contact details, dates when diagnostic specimens were collected, sent and result received and their results. If there is more than one Presumptive TB register in a health facility, the Health facility quarterly report should include the data from all the registers.

Laboratory Sputum Request Form

This is a critical form in TB diagnosis and treatment monitoring, and serves two main functions namely:

i. It is used by clinicians to officially request the laboratory to perform sputum examination (smear, culture, Xpert) for purposes of:
   - Confirming whether presumptive TB cases are actual TB patients
   - Patient follow up to monitor TB treatment response
ii. The same form (tear-off slip) is used by the lab to report the result of the sputum examination to the requesting clinician.

All spaces provided in the form should be completed by the requesting clinician, except for the laboratory section which will be completed by the laboratory staff. It is important to indicate clearly the type of examination required (i.e. for diagnosis or follow up sputum examination). After the examination, the laboratory staff fills in the results into the form and TB Laboratory Register, and send the form back to the requesting clinicians (often TB Focal Nurse). In many parts of the country, positive results for diagnostic tests are conveyed to clinicians using telephone. Results on the laboratory request form follow later depending on frequency of transport system.

After receiving the results by telephone or result slip, the clinician, frequently Focal TB nurse should:

i) contact the patient if specimens were for diagnosis,
ii) file results in the patient's file for future reference if the result is for follow up,
iii) fill in results into the appropriate spaces of the presumptive TB register or health facility TB Register.

Laboratory Register

It is a record of all patients whose sputum has been examined in the laboratory. It is used for the following:

- To verify that sputum specimens of all patients with symptoms suggestive of TB (i.e. presumptive TB cases) have been examined to confirm the diagnosis. It is used in conjunction with the presumptive TB register.
- To keep track of tests from presumptive TB cases tested with smear microscopy, Xpert or culture, and follow-up tests using smear microscopy or culture. It can be used to track down lost or incorrectly reported results
- To determine TB laboratory workload.

Laboratory staff maintains this register. Information is entered from the sputum request form and the results of each specimen recorded. Details for each specimen should be entered in a new row with a serial number assigned to it.

TB Notification Form

This form is used to report all patients diagnosed with TB. It is filled in by clinicians and/or TB focal nurses as soon as possible and ideally, within five working days after the diagnosis is made. It is important that it is completely filled in triplicate; i) 1st copy is filed at the health facility, ii) 2nd and 3rd copies are sent to the diagnosing centre where one copy is filed and the other one is sent to DTLC. When DTLC receives a copy of the notification form, she/he should without delay enter the case into the district TB register.

Health Facility TB register (with DR TB & IPT sections)

The purpose of this register is to keep track of all TB cases diagnosed in the catchment area, including daily administration of drugs (in the DOT section) and treatment follow-up. It is also used to fill in the Health facility quarterly report. During data-driven supervision, this register is one of the important documents to be reviewed. TB focal nurses are responsible for maintaining health facility TB register up to date and sister/nurse in-charge has the overall responsibility of supervising maintenance of the register. A health worker should sign the register in the space provided each time they observe a TB patient swallowing his/her daily dose of TB drugs. Trained community observers should regularly visit the health facility to sign the register for the days when they observed patients swallowing the medicines. TB patients who die or who are lost to follow-up before starting treatment should also be entered into the health facility TB register – this is a new requirement as explained in chapter 1.

District TB Register

The purpose of this register is to record all TB cases in the district. This is the master register, ultimate reference document for all patients in the district. The register captures all TB patients diagnosed in the diagnosing centres within the district, transferred-in patients and patients who died or were lost to follow-up before starting TB treatment. Laboratory serial numbers should be recorded for all smear microscopy and Xpert results; this will facilitate the verification of laboratory result records between the TB and the laboratory registers. Data in the register must be routinely checked for completeness and accuracy. The DTLC is responsible for maintaining the district TB register and compiling the quarterly report for the district.

Diagnosing centre TB Register

In districts with more than one diagnosing centre, each centre keeps a TB register which covers patients diagnosed within its catchment area. The TB focal person is responsible for maintaining the diagnosing centre TB register and submitting quarterly reports for the diagnosing centre to the DTLC. The TB focal person is responsible for updating the register on a weekly basis using the laboratory register and double-checking that all bacteriologically confirmed cases are recorded in the TB register. Laboratory serial numbers should be recorded for all smear microscopy and Xpert results; this will facilitate the verification of laboratory result records between the TB and the laboratory registers.

In the diagnosing centres there will be two TB registers:

i. facility TB register (hospital) including only patients whom the diagnosing centre is following up during TB treatment , and
ii. diagnosing centre TB register with a record of all patients in the catchment area of the diagnosing centre, including both those followed up by the diagnosing centre itself and other facilities. Most diagnosing centres will follow up only a few patients. Majority of patients are managed at their local referring facility.

TB Treatment Card

The purpose of the card is to monitor the patient's treatment adherence and following his/her clinical progress. Nurses are responsible for issuing and completing the patient's TB treatment card. This card incorporates key information from the notification form; DOT register (including daily medication record) and district TB register in addition to clinical information. All sections of the treatment card should be completed and updated when a patient is reviewed. The card is kept by patients during and after completion of TB treatment. Relevant section on the the card is signed by the treatment observer each time the patient is observed swallowing his/her daily dose of TB medicine. The TB treatment card should not be issued to a patient before registration, to avoid having patients getting treatment without being registered.

Contact tracing form

The purpose of this form is to alert health workers to the need to screen contacts and keep a record of the results. TB focal nurses are responsible for filling in the form. The form contains contact details of the contacts. Ensuring that contact details are accurate is critical if the form is to serve its purpose. Household contacts of bacteriologically confirmed and child TB cases should be listed in the contact tracing form. If the index patient (with any type of TB) has a contact that is unwell or having symptoms suggestive of TB, this contact should be advised to visit the clinic without delay.

EHTs carry out home visits to screen the listed contacts. They will use the TB screening tool to identify the presumptive TB cases and encourage them to come to a health facility. Where distance is not a barrier, as in urban areas, household contacts can also be invited to the clinic for screening. Screening for TB and HIV diagnostic services for household contacts should be free-of-charge. All contacts with presumptive TB should be registered in the presumptive TB register and investigated promptly for TB.

Notice of transfer out

This form aims to ensure that transfers are effectively managed and are evaluated at the end of treatment, by facilitating the movement of TB patients from one facility to another within or outside the district. The TB focal nurse or the EHT fills in the notice of transfer for all patients who are transferring to other facilities for continued TB treatment and management. The form is filled in triplicate:

ii. 1st copy to be filed in patient's notes,
iii. 2nd copy is given to the patient to take with him/her to the receiving facility and
iv. 3rd copy is posted to the receiving facility. TB focal nurse at the receiving health facility/district completes the tear off slip and sends it back to the transferring facility/district to confirm that the patient has arrived and TB treatment is continued.

Patient records are entered into facility and district TB register and his/her type is marked as 'transfer in'. S/he is excluded from quarterly reporting at the receiving centre. In practice health staff often contacts the receiving health facility by telephone before the patient is transferred to ensure that h/she will be received. If the patient does not arrive at the intended health facility, the patient should be immediately followed up by both transferring and receiving health facilities through phoning and visiting his/her physical address.

Treatment Outcome Request Form

This form serves to retrieve treatment outcome results for patients who transferred out to another health facility within or outside the district from their original diagnosing centres, in order to ensure that all TB treatment outcomes have been evaluated. The DTLC/Nurse in charge fills in the form immediately at completion of treatment and sends it to the DTLC/Nurse in charge of the district/facility where the transferring centre is situated. In practice health staff often informs the sending health facility the treatment outcome by telephone. In case those transferring health facility/district do not receive the outcome results on time from the health facility receiving and managing their patients, they should take an initiative to request for the outcome.

TB medicines stock card

This card serves to record stock levels, expiry dates and movement of TB drugs in and out of the store room, thereby contributing to good drug management and preventing stock outs and drug loss due to expiry of overstocked medicines. The information in the card include for each drug the dates when drugs were received or sent out, the quantity, current stock level and expiry date of the drugs. The stock level and expiry date is included in the drug table in the health facility quarterly report. The stock card is kept at the drug store room and it should be updated when drugs are received or issued from the store room. The sister/nurse in charge is responsible for drug management and assigning responsibilities as appropriate..

Health facility quarterly report

The purpose of this report is to summarize key TB information from the previous quarter including indicators that are tabulated and analysed by the facility staff, agreeing on strengths, weaknesses and action points. The report is the key communication from the facility to the district and the basis for the tabulation and analysis done by the district level. The presumptive TB register and health facility TB registers should be updated before the report is filled in. Health facilities with microscopy/Xpert MTBRIF services (diagnosing centres) will also fill in data from TB laboratory registers.

District quarterly report

The report is the main communication from the district to the province of key TB data from the previous quarter. The report contains information on presumptive TB cases, TB cases, TB-HIV, DOT, treatment result, DR-TB, IPT, drug management. The District TB register(s) should be updated before the report is filled in. The DHE should also use the quarterly data for tabulation and analysis, agreeing on strengths, weaknesses and action points, summarizing such in the district quarterly report.

Provincial quarterly report

The report contains the same information as the District quarterly report, with aggregated data from all the districts. The PTLC checks data quality and submits the report through the PMD to the NTP in the MOHCC. PHEs use these reports to tabulate and analyse TB data in the province.

Electronic systems

Data contained in district quarterly TB reports are entered into an excel-based document at the provincial and central levels. This facilitates TB data analysis and helps preparation of annual TB statistics. NTP provides each year an excel spread sheet for each province for entering aggregate presumptive TB cases TB, TB cases, TB HIV data and treatment outcome data. In the file there is a separate sheet for each district where the data are entered in one table for each quarter. An additional table below with formulas rearranges the data into a summary table with the 4 quarters as rows or columns. In this table the district summary tables found in the annexes can be generated. Also excel sheets have been made to tabulate the quarterly data from more than one year. Reports can be kept as soft copies and also paper copies. There must be a backup system for electronic data storage.

NTP has started developing an integrated electronic TB-HIV recording and reporting system to facilitate a patient based electronic patient monitoring system which will be accessible on line and generate aggregate data linked to the district health information system (DHIS2). When it is fully in place, it will facilitate the tabulation and analysis of district and provincial TB data as described in chapter 3 and also generate quarterly district reports. However it will still be necessary to keep the paper-based facility and district TB registers, and other paper-based recording and reporting tools until the system has been fully developed. The electronic patient monitoring system is expected to improve data quality through minimizing transcription errors with a built-in mechanism for identifying and correcting mistakes. It will also improve among other things; data access at various levels and timeliness of reporting.

CHAPTER 3: INTRODUCTION TO DATA TABULATION AND ANALYSIS

Summary:

Data are entered in tables to facilitate analysis, especially of trends over time and assess differences between facilities and districts. The data from the last full year forms the "baseline" that later quarters and especially the last quarter, is compared with. Some facilities have few TB patients, which means that analysis must be made with caution when interpreting computed rates and drawing conclusions. The key indicators (in total 18) are listed, with expected values and possible reasons for values below or above the expected. Inferences from data on the different indicators are classified as strengths, when values are within expected or weaknesses, when different from the expected, and action points agreed upon based on observed weaknesses.

What is data tabulation and analysis?

Data tabulation means transcribing selected numbers from quarterly reports into tables to make it easier to analyse the data. In addition to tables, data can also be presented as graphs. In this guide tables show as rows either quarters (to show time trends) or facilities (to show difference between them).

Data analysis is a process of splitting up the data (the Greek word analysis means "breaking up") to gain a better understanding of its meaning and implications. For instance if the total number of TB cases in a district is declining from one quarter to another, it would be useful to assess in which category of patients the decline is taking place. It would equally be important to note if the decline is more pronounced in certain facilities or catchment populations.

TB data analysis includes the following:

- Assessment of selected indicators in one specified quarter or year compared to the expected (as defined in table 5). Such data analysis gives a snap-shot of the TB situation.
- Assessment of trends; that is changes over time. **The last quarter is most important, while the last full year is used as a "baseline".** For the full year, rates can be calculated to assess for instance if presumptive cases or TB cases are below the expected comparing with district and provincial rates. Rates in the following quarters can then be compared with the baseline year. Did the low level of case finding continue in the following quarters? Rapid changes from one quarter to another may be caused by challenges in data quality rather than true changes in performance, hence it is important to ensure that the data are of good quality before analysis.
- Assessment of differences between areas: facilities, diagnosing centre catchment areas and districts in one specific quarter or year. Similarly, provinces and cities can been compared. Internationally, countries and continents can be compared, thus the need for NTPs around the world to adhere to a standardised recording and reporting systems.

When analysing data, it is advisable first to look at the totals (such as total number of cases), and then break the data into smaller parts, such as categories of patients, clinics or quarters of a year.

Treatment outcome can be assessed preliminarily directly from registers (before quarterly reports are due) also for quarters less than 12 months after notification, since duration is usually 6 months, to get more fresh data. Also current quarters can quickly be assessed, for instance to see if deaths or loss to follow-up are already higher than expected.

When assessing the registers (district TB register, facility TB register, presumptive TB register), also the_current unfinished quarter can be looked at – for instance to get an impression if negative trends from a previous quarter continues.

Numbers to analyse: Estimated TB cases at different levels of the health services in Zimbabwe 2012

Table 6 shows total population, TB cases and presumptive TB cases in 2012, as well as estimated average numbers of presumptive and confirmed TB cases at different levels of health services. It underscores the fact that on average facilities in Zimbabwe may have only nine TB cases in a year while the number of presumptive TB cases is ten times higher. The average of nine TB cases per year includes urban clinics with much higher numbers and rural facilities with much lower numbers. The challenge of analysing small numbers is discussed in the following paragraph.

Table 6: Zimbabwe population, TB cases and presumptive TB cases at different levels of the health services 2012. Country reported numbers, for other levels estimated averages.
Note: Presumptive TB cases estimated to TB cases*10 (positivity rate 10%)

	Number of units	Population per unit	Number of TB patients per unit and year	Number of TB patients per quarter	Number of presumptive TB patients per unit and year	Number of presumptive TB patients per quarter
Country: reported	1	12,974,000	35,760	8,940	357,600	89,400
Provinces and cities	10	1,297,400	3,576	894	35,760	8,940
Districts	65	219,898	606	152	6,060	1,520
Diagnosing center	210	6,4870	179	45	1,790	450
Health facilities	1560	3500	9	2	90	20

The challenge of small numbers when calculating rates and percentages

It is problematic to use rates to show differences over time or between areas when case numbers are small. It is necessary to calculate the so-called "confidence interval" of the rate to assess how certain it is that there is a real difference ("significant" difference in research terminology), but this is outside the scope of this guide. However, it is important for health workers to be aware of this limitation. Even if findings are not statistically significant, they may be meaningful and useful from a programme perspective. One should be careful to calculate rates and percentages when the numerator is less than ten, since differences between facilities may be by chance and not real, and interpretation may be misleading. It is then better just to show numbers.

One example of small numbers when percentages should be used with caution is a centre where one TB patient is lost to follow up in a quarter when only three patients were notified. The percentage of patients lost to follow up is therefore 33%. This seems to be a high percentage which implies a problem even though only one patient could not be brought back to treatment.

How to make sense of data

As explained n chapter 1, the performance of the NTP is measured by following a set of key indicators over time, comparing with expected values (or targets) in table 5.
Expected values are defined according to international standards, or comparing with district, provincial or national averages. Being outside the expected values means that the indicator is marked as a weakness/challenge which needs to be looked closer into, and action points agreed upon, if the analysis is done during supervision or quarterly assessment in the facility. Table 6 lists the expected values for selected indicators and possible explanations for different values.

It is important to remember that poor quality data could be one of the main reasons for values that differ from the expected ones. Data should therefore be checked on beforehand so that the tabulation and analysis is done on the best available data.

Not being within the expected values and targets may be caused by weak implementation of the work, but it could also be outside the control of the clinic or district and should therefore not demotivate the staff. Here are two examples:

TB notification rate per 100,000 population: When services are strengthened in an area, more presumptive TB cases and TB cases will frequently be registered. TB notification rate increases. This may be misinterpreted to mean that TB situation is becoming worse. An increasing TB notification is a reflection of improved TB detection

Rate of presumptive and notified TB cases per100,000 population: A low rate in a facility or district could be explained by the fact that many inhabitants in the catchment area work in a nearby district or city and therefore, seek health services nearer to their place of work.

Indicators: Expected values and explanations for differing values

The following table 7 lists the key indicators, their expected values and present possible explanations for values below or above he expected.

Table 7: Key indicators, expected values and possible explanations for differing values

1. *Case Finding Indicators*

#	*Indicator*	*Expected value/target*	**Possible explanations for deviations**	
			Below expected (unfavorable)	***Above expected (favorable)***
1	*Number of presumptive TB cases per 100,000 population*	*There is no global standard. Facilities compare with district average , districts with provincial average and provinces with national average*	• Health staff do not suspect TB and do not screen patients for TB • Health staff have not been trained in TB screening • Health staff do not have symptomatic TB screening questionnaires • Health staff follow too strict definition of presumptive TB case • Symptomatic patients are not coming to facilities because services are not accessible (long distances, expensive transport, staff attitude etc)	• Health staff do not know symptoms suggestive of TB • Health staff use too wide definition of presumptive TB
2	*Percentage of presumptive TB cases screened by smear microscopy or Xpert who had positive result*	Out of 5-15% screened presumptive clients to be positive TB patients (for 2013 it was 10% National.)	• Health staff use too wide definition of presumptive TB cases and do not adhere to symptomatic TB screening questionnaire, leading to large numbers wrongly registered as presumptive TB • Poor quality sputum specimens are sent to laboratory • Laboratory staff are unable to	• Health staff have too strict definition of presumptive TB case and therefore likely to miss many TB cases • Symptomatic patients attend

#	*Indicator*	*Expected value/target*	**Possible explanations for deviations**	
			Below expected (unfavorable)	***Above expected (favorable)***
			detect positive specimens (false negative) • Laboratory does not participate in external quality assurance	health services late • Low quality microscopy (false positive) • Laboratory does not participate in external quality assurance
3	Notification rate all TB cases per 100,000 population	Compare with next level	• Presumptive TB cases not attending health services because of access problems • TB cases registered outside the area Catchment population too high • Patients who die before notification • Patients who are not notified (even though they are started on treatment) • Clinically confirmed patients who are not notified or started treatment	• TB cases coming from outside catchment area • Catchment population too low • Criteria for TB diagnosis too wide (including pneumoconiosis)
4	Notification rate of new bacteriologically confirmed TB cases per 100,000 population	*Facility compare with district average , district with provincial average and province with national average*	• Presumptive TB cases attending health services because of access problems • Health staff not asking presumptive TB cases to produce sputum • Presumptive TB cases refusing to produce sputum specimens • Laboratory not detecting smear positive cases: false negative results • TB cases registered outside the catchment area • Catchment population too high • Patients who die before starting treatment are not registered • Bacteriologically confirmed patients with positive diagnostic test results in TB laboratory register are not notified or started on TB treatment • Poor recording and reporting – diagnosed patients not recorded or reported	• TB cases are coming from outside catchment area • Too low estimate of catchment area population • Laboratory reads negative slides as positive (false positive)

#	*Indicator*	*Expected value/target*	**Possible explanations for deviations**	
			Below expected (unfavorable)	***Above expected (favorable)***
5	Percentage of new pulmonary patients 5 years of age and above without smear result	Sputum not done cases should be 0% as target.	• Health staff do not investigate symptomatic TB patients and collect diagnostic sputum specimens • Laboratory test results are lost and not recorded in appropriate register • Health services do not provide specimen transport and expect patients to travel to diagnosing centers – patients may not afford or defer sending their samples • Shortage of sputum specimen jars • Non-functioning laboratory(no staff, no reagents, no cartridges etc)	• Not applicable

2. TB& HIV Indicators

#	**Indicator**	**Expected Output**	**Possible Explanations for deviations**	
			Below expected	**Above Expected**
6	% of TB cases with recorded HIV test results (this refers to TB patients who were screened for HIV and have their results recorded in the TB register.	100% Compare with national average	• Health staff do not provide professional counseling and testing services for HIV • Health staff do not repeat offer of HIV testing if patients are not ready to accept testing immediately • TB patients refuse to be tested • HIV test kits are out of stock • Patients registered during a quarter are offered HIV test with a delay, so that by the time the quarterly report is submitted, not all have been offered a test	• Inaccurate recording and reporting and poor data quality
7	% of TB cases with a recorded HIV result who are HIV-positive (this refers to TB patients who were for HIV and have positive results recorded in the TB register)	100% Compare with national average	• If there are only few patients with recorded results, value may not be representative, for instance including more patients with lower risk of HIV)	• If not all tested, can be a selection of TB cases with higher risk?

#	Indicator	Expected Output	Possible Explanations for deviations	
			Below expected	Above Expected
8	% of HIV- positive TB cases on CPT	100% unless there patients who are allergic to sulphonamides.	• Health staff do not recommend CPT to patients • TB patients have to collect CPT doses from another room (and join another line) than TB room • Cotrimoxazole out of stock • Data on CPT use not entered in the register	• Inaccurate recording and reporting and poor data quality
9	% of HIV- positive TB cases on ART	Target 100% Compare with national average	• Health staff are not trained and mentored to initiate patients on ART • Health staff do not record ART in register • Patients prefer to defer ART initiation • Center is not accredited to initiate patients on ART	• Inaccurate recording and reporting

3. DOT Indicators

#	*Indicator*	#	*Indicator*	*Expected*	Possible explanations for deviations	
					Below expected	*Above Expected*
10	% of all cases with facility based or community based DOT, including trained family member	10A	% of all cases with facility based DOT	100% should be directly observed either by health workers or trained community volunteers including trained family members	• Health staff does not appreciate the importance of daily observed treatment support. • Health staff are unable to negotiate the best DOT option with patients • Patients live too far to come to facility	• Urban settings • Patients well educated on DOT • Poor data quality
		10B	% of all cases with community based DOT, including trained family member		• Health staff have not engaged community-based organizations and structures	• Problems of definition between an community member and a family member • Poor data quality

4. Treatment Outcome Indicators

#	*Indicator*	*Expected*	Possible Explanations for deviations	
			Below expected	*Above Expected*

#	***Indicator***	***Expected***	Possible Explanations for deviations	
			Below expected	*Above Expected*
11	Treatment success rate: (1) all unconfirmed cases who complete their treatment, and (2) new sputum positive patients who are cured or completed treatment	90%	• High lost to follow-up rate • High death rate • High % patients transferring out • High % patients without outcomes	• Good programme performance • Caution o 100% or almost 100% may suggest that case definitions are not followed , for example, patients dying before treatment are not included o Same as above for cure
11B	Cure rate (cohort of new sputum positive patients only)	90%	• Patients who do not have required number of negative follow up sputum microscopy results • High treatment failure rate • High lost to follow-up rate • High death rate	• Good TB case holding practices • Misunderstanding or non-adherence to definition of cure • Low denominator – excluding patients with unsuccessful outcomes
12	Treatment completed: (1) all bacteriologically unconfirmed cases who completed treatment or (2) new bacteriologically confirmed cases who completed treatment but do not have the required number of negative follow-up sputum results to be declared cured)	90%	• High lost to follow-up rate • High death rate • High % patients transferring out • High % patients without outcomes	• Good programme performance • Caution o 100% or almost 100% may suggest that case definitions are not followed , for example, patients dying before treatment are not included o Same as above for cure
13	Failure rate	0%	• Follow up sputum microscopy is not done • Follow up sputum microscopy is of poor quality (and has low sensitivity) • Strong program	• Not applicable
14	Lost to follow-up rate	0%	• Health staff do not monitor TB patient attendances and do not react in time with attempts to bring patients back to treatment (by telephoning, following up by home visits etc)	• Not applicable

#	***Indicator***	***Expected***	Possible Explanations for deviations	
			Below expected	*Above Expected*
			• Health staff do not explain to patients and their family members importance of taking treatment as prescribed • TB services, especially DOT, are not implemented in patient- friendly way • Patients residing outside catchment area (long distances)	
15	Death rate	0%	• HIV-positive patients are not diagnosed early • HIV-positive patients are not started on CPT and ART • Health staff do not have high degree of clinical suspicion of TB, do not screen patients and delay investigating symptomatic patients • Health system does not ensure prompt start of TB treatment when diagnosis has been made • Patients are not taking medications regularly /as prescribed • Patients are unaware of TB symptoms or underestimate importance of symptoms • Patients have previous experiences of unprofessional and/or impolite health staff • attending to traditional healers causing late presentation • Not having money for clinic fees, transport etc causing late presentation	• Not applicable
16	Not evaluated	0%	• Lack of coordination between DTLCs	• Not applicable

#	*Indicator*	*Expected*	Possible Explanations for deviations	
			Below expected	*Above Expected*
			representing transferring and receiving districts • Poor quality data: treatment outcomes are not recorded in registers	

5. TB Drug Management Indicators

#	*Indicator*	*Expected*	**Possible explanations for deviations**	
			Below expected	***Above expected***
17	Levels of stock (assess for each drug)	If quarterly distribution: 3-6 months stock	• Drug requests are not made in time • Requests are made for incorrect number of patients: too few patients , all patients are not registered • Expired drug are stocked • Received less drugs than requested • Requested drugs were received with delay • Number of patients has increased • Drugs were lost or used for other purposes than TB	• Requested too many drugs (compared with registered patients) • Received more drugs than requested • Fewer patients than expected were registered

6. DRUG RESISTANT TB: All previously treated TB cases should have sputum tested for Rifampicin resistance (with Xpert MTB RIF or culture and DST).

#	**Indicator**	**Expected**	**Possible explanations for deviations**	
			Below expected	**Above expected**
18	Percentage of previously treated TB cases with sputum tested for Xpert MTB RIF	100%	• Facility did not send sputum specimen to laboratory • Laboratory did not process sputum, for example due to cartridge stock out • Laboratory tested but	Poor data quality

			result was not sent back to clinicians • Staff are not familiar with indications for Xpert test • No access to Xpert test	

BASIC ANALYTICAL AND EPIDEMIOLOGICAL TECHNIQUES USEFUL IN UNDERSTANDING DATA

The main objective of this section is to provide key basic analytical and epidemiological techniques useful in understanding data.

What is Data?

Data is set of values of qualitative or quantitative nature. The word data is a plural of the word datum. Quantitative data is numerical and qualitative data is not numerical.

Presenting Data

- Data Tables: most commonly used for entering and tabulating data, Data may be in the form of counts, summations, percentages and rates.
- *Graphs are visual aids to rapid understanding of data.* The commonly used types of graphs are pie charts, bar diagrams, histograms and scatter grams.

Counts

Data presented as a set of counts in a table may be difficult to make sense of them quickly. A summary of such data can make things much easier. Below are different ways to do this:

- Frequencies: good summary: it measures the number of times that something occurs. In this case how many times does each count occur? A table of frequencies makes it even easier to visualise this data.
- Percentages: an excellent way of presenting a frequency distribution: A proportion is multiplied by a hundred to give a percentage. Percentages are good for comparing data.

For example: 15 sputum smear positive patients out of 30 TB presumptive cases screened will give us a proportion of 0.50 (15 divided by 30 equals 0,50). The percentage will be 0,50 x 100 which gives us 50%

Proportions and percentages are more useful than frequencies when we want to compare numbers of events in two or more groups of unequal size.

- Rates: excellent way to present proportions per given population. When we use proportions to describe number of events per given population, we usually give this as per 100 000 population (good for comparisons)

At this stage it is important for us to define a population and a sample. A population is a complete set of people or other subjects in a defined area to be studied. A sample is a smaller part of that population.

Types of Data found in TB registers

- Categorical Data:

Categorical data is also known as qualitative data. It has two possibilities (Male/Female, Yes/No) hence it is dichotomous.

- Numerical Data:

Numerical data is also known as quantitative data. This data is discrete: clearly separate values e.g. number of patients registered in June, Age at last birth day.

Mean, Median, Mode

These are all measures of central tendency of a group of values.

- Mean: (Arithmetic Mean)

A mean is used in summarising a group of numerical data. It is another term for average. The mean gives a rough idea of the size of the values one is working with without the need to look at every one of them. Add up all the values (x) and divide by the number of values observed (n).

- Median

The median is the middle value of an ordered sample of numerical values. It is used instead of the mean if the numbers in a group has an extreme value as the mean may be misleading in this case. To calculate the median, arrange all recorded values in order of size, find the middle value. This will give you the median and you will see that it is not affected by extreme values

- Mode

The mode is the value that occurs most often in a group. If they are two modes then we have bimodal data

Common Applications

1. Measuring Disease Frequency

The tuberculosis control programme refers to people with the disease as cases and those without, non-cases. Terms such as morbidity and mortality are also commonly used. Morbidity refers to living with a disease and mortality refers to deaths. People living with a disease such as TB in a given population are often measured in terms of prevalence and incidence. These are defined below:

- Prevalence: The proportion of current cases (both old and new cases) in a population at a given point in time. Often expressed as a rate per 100 000 population.
- Incidence: The number of new cases in a particular time period. For example the incidence of tuberculosis during the year 2014 theoretically means the number of newly diagnosed cases of tuberculosis during that year. In practise we often use the midyear population as the denominator.
- Person years at risk: This is the most favourable denominator for computing the incidence rate. It is defined as the total amount of time in years that each member of the population is at risk. However in TB control we do not know this number hence we use the midyear population.

2. Confidence Intervals

We normally calculate or determine a sample mean in a given population but we never know where the true population mean is. The confidence intervals are used to estimate how far away the population mean is likely to be with a given degree of certainty.

Zimbabwe has just completed a prevalence survey from a prevalence study sample. The prevalence was found to be about 330 cases per 100 000 population and the confidence intervals bracketed as (95 CI: 300 to 450). This means that this interval is the one which will include the true population prevalence in 95% of cases. When the intervals are wide, the more uncertain we are about the true population value and when the confidence intervals are narrow the more certain we are.

CHAPTER 4: DATA TABULATION, ANALYSIS & USE (AT HEALTH FACILITY, DISTRICT AND PROVINCIAL LEVEL)

Summary:

Data from facility quarterly reports are entered in tables with the quarters as rows from the start of the last full year until the most recent quarter. The columns include for example number of presumptive cases identified, numbers sent to the laboratory etc. These tables cover each of the seven principles/areas/questions related to: presumptive TB cases, TB cases, TB-HIV, DOT, treatment outcome, drug management and presumptive MDR-TB cases. Data are also presented in wall charts. For each table the data are analysed, classifying observed data on indicators as strengths or weaknesses. At the end a summary table includes strengths, weaknesses and action points.

HEALTH FACILITY LEVEL DATA TABULATION & ANALYSIS

The nurse responsible for TB should examine the presumptive TB and TB registers to check for data completeness and ensure that facility quarterly report forms are filled in correctly before counting and entering data into summary tables. Each summary table contains a selection of key data on presumptive TB, TB, TB-HIV, DOT and treatment outcome from the previous quarters, and every quarter a new row is added. To illustrate trends and facilitate on-site analysis and discussion of TB data, the tabulated data should also be transcribed to wall charts (see figures in this chapter). The data can also be entered in a table on a page at the beginning or end of the TB registers.

Data are analysed every quarter in two situations: 1) the health facility team analyse their own data, an 2) by district supervision teams. At a rural health centre and clinic level, the team analysing should include the nurse in-charge, other nurses and the EHT. In hospitals, the team should include the Medical Officer, Matron, Pharmacist, Laboratory Scientist, TB Focal Person/nurse, OI/ART Nurse and other Heads of departments. When the team analyses the data, it should first assess the indicators (from tables 2&5) and enter those that are within the expected values as strengths and those outside as challenges in the last page of the quarterly report. At the end of the visit the table with strengths and weaknesses is discussed and action points to each of the challenges agreed upon.

For each facility, be it a health centre, clinic or hospital, TB trends are analysed by quarter and year. To compare TB case finding with other facilities, it is necessary to look at tables provided by the district for all facilities (see next chapter). This is particularly informative when done for annual data that permit calculation of rates for presumptive TB cases and TB cases per 100,000 populations.

The tables below contain data as an example, with numbers kindly provided by Nswazi clinic in Matabeleland South province. The estimated population of Umzingwane District where data in the tables are taken from was 64,164 in 2012. Umzingwane district has only one TB diagnosing centre (the district hospital) and 14 rural health centres. The 14 health facilities were renamed A, B, C, D etc.

The new quarterly facility reports (in use from 2nd quarter 2015 is identical to the new district quarterly report, and include all data used for the indicators. The district quarterly TB reports in use until 2nd quarter 2015 contained also data on presumptive TB cases from TB laboratory register, but in the new quarterly reports presumptive TB cases are only taken from the facility and district TB registers, not from the laboratory register. The laboratory register will still be used to compare with number (and names) of bacteriologically confirmed patients in the district or diagnosing center TB register as part of quality control routine. The catchment population in 2012 was 14 000. Certain changes have been made to make data more illustrative.

Presumptive TB cases

The following summary table contains information on presumptive TB cases. In health facilities there may be one or more presumptive TB registers depending on the number of entry points. In facilities with more than one register a consolidated table should be made covering one quarter similar to table 8 but replacing quarters with entry points. This table facilitates comparison of performance between the different entry points where presumptive TB cases are identified.

Table 8: Presumptive TB cases by quarter 2012-2013 in facility

Period	Number identified	Number with sputum sent to laboratory	Number with smear, Xpert or culture result	Number with positive smear, Xpert or culture result	Number with HIV test results	Number with HIV-positive result
1.quarter 2012	20	14	12	2	18	8
2.quarter 2012	10	10	8	1	8	0
3.quarter 2012	28	26	26	0	22	16
4.quarter 2012	28	28	28	2	26	22
All 2012	**86**	**78**	**74**	**5**	**74**	**46**
1.quarter 2013	24	22	20	4	22	12
2.quarter 2013	28	28	26	6	26	10

In view of key principles in TB control, we should be able to answer the following key questions using the data in the table above:

1. **Are we detecting the expected number of presumptive TB cases in our community?**
   - In the last quarter (2nd quarter 2013), 28 presumptive TB cases were identified, and 24 in the 1st quarter 2013, totaling 52 for the first two quarters. In the first two quarters of 2012, only 30 presumptive TB cases were identified. N*umber of presumptive TB cases increased.*
   - To assess if the clinic is identifying the expected number of presumptive cases compared to other clinics, we need to calculate presumptive case notification rate per 100,000 population (indicator #1, table 1). In our example, in 2012 the clinic catchment population was 14,000, and the number of presumptive TB cases registered was 86. It follows that the rate was 86/14000x100,000 = 614/100,000 population. Average for the district was more than 2 times higher: 1,700/100,000 population (see next chapter), indicating that the number of presumptive TB cases identified in the clinic was still low compared to other clinics in the district. In the first two quarters of 2013 there was some increase in TB cases but the level is still very low. The indicator number 1 is therefore indicating a challenge in TB case finding.

2. **Did all presumptive TB cases have their sputum samples s*ent to laboratory*?**
   - In 2012, 91% (78/86x100) of cases had sputum samples sent to laboratory.
   - In the second quarter of 2013, all 28(100%) had sputum samples sent, and 22(92%) out of 24 in the first quarter, so almost all had sputum sent.

3. **Did all presumptive TB cases with sputum samples sent receive results?**
   - In 2012, 95% received results, 74 out of 78, while in the second quarter 2013, 26/28 (93%) got results back, and 20 out of 22(91%) in the first quarter.
   - This shows that a fairly reasonable percentage (46/48=96%) received the investigation results.

4. **How many of the presumptive TB cases tested had a positive result?**

- Among 74 presumptive TB patients with sputum results in 2012, 5(7%) had positive sputum smear results.
  In the second quarter in 2013, 6 out of 26 TB patients had positive sputum smear results. In the first quarter of 2013, 4 out of 20 TB patients had a positive result. In the two quarters 10 out of 46 (22%) had positive results.

In conclusion indicator number 2 (positivity rate) was very high (above expected) in 2013 making it a challenge.

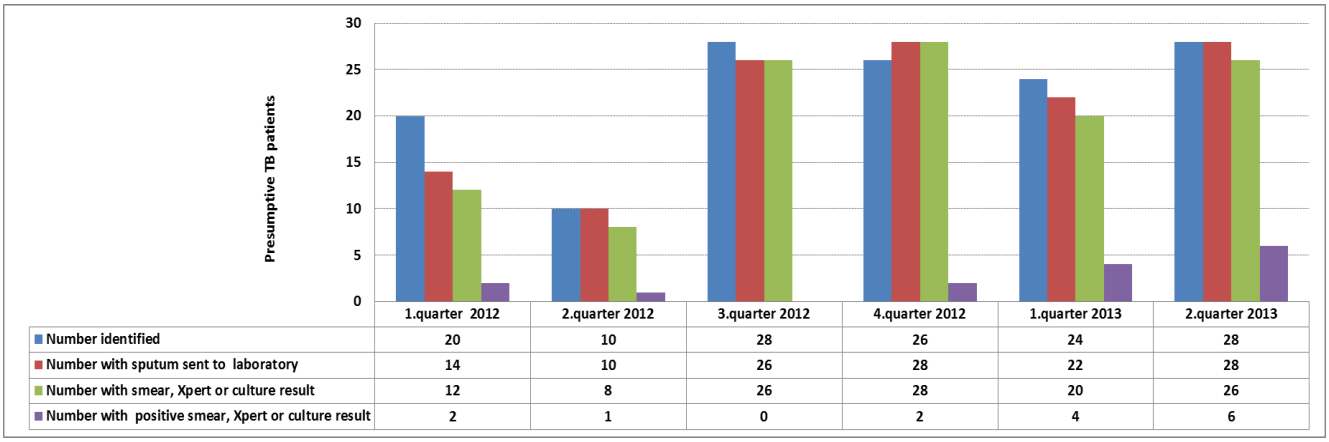
5. **Did all presumptive TB cases have known HIV status?**
   - In 2012, 74 out of 86 (86%) had a known HIV test result.
   - In the second quarter 2013, 26 out of 28(93%) had a known HIV result, 22 out of 24(93%) in the first quarter, so almost all had known HIV status.

In conclusion, in the clinic, the presumptive TB cases identified are well managed, as almost all have sputum samples sent to laboratory, receive results and have an HIV test. However, the two key indicators 1&2 show challenges in too few presumptive cases identified and too high of percentage with positive results.

Wall chart

A wall chart is used to display quarterly and annual TB data and trends. The indicator values are entered from the quarterly TB report, the values are entered in the boxes provided and also plotted in the charts. Below is an example of a wall chart.

Figure 2 Wall chart: Presumptive TB cases



	1.quarter 2012	2.quarter 2012	3.quarter 2012	4.quarter 2012	1.quarter 2013	2.quarter 2013
Number identified	20	10	28	26	24	28
Number with sputum sent to laboratory	14	10	26	28	22	28
Number with smear, Xpert or culture result	12	8	26	28	20	26
Number with positive smear, Xpert or culture result	2	1	0	2	4	6

Presumptive MDR-TB cases

Table 9 includes the number of previously treated patients registered from the quarterly facility report. For each previously treated TB patient result of Xpert MTB/ Rif are checked in the facility TB register and the presumptive TB register.

Table 9: Presumptive MDR –TB cases 2012-2013 by quarter in facility

Period	Number of previously treated TB cases registered	Number of previously treated TB cases with Xpert MTB/RIF results	% of previously treated TB cases with Xpert MTB/RIF results
1.quarter 2012	2	0	0

2.quarter 2012	1	0	0
3.quarter 2012	0	0	0
4.quarter 2012	2	0	0
All 2012	5	**0**	**0**
1.quarter 2013	4	1	25
2.quarter 2013	6	6	100

The table shows that only one out of four previously treated patient registered in Quarter 1 of 2013 and all 6 registered in the 2nd quarter had Xpert MTB/RIF result. Indicator number 18 (coverage of Xpert) therefore shows a strength.

TB cases

The data in table 10 below are taken from the facility register.

Table 10 : TB cases registered by quarter and category of patient and new pulmonary patients 5 years of age and above: total and without smear results, 2012-2013 by quarter.

	New pulmonary bacteriologically confirmed	New pulmonary clinically diagnosed	New extra-pulmonary	All previously treated	Other	Total	*Among total cases:*	
							New pulmonary patients 5 years of age and above	*New pulmonary patients 5 years of age and above without smear results*
1.quarter 2012	2	4	1	2	0	9	*6*	*0*
2.quarter 2012	1	3	1	1	0	6	*4*	*0*
3.quarter 2012	3	4	2	0	0	9	*7*	*0*
4.quarter 2012	2	4	1	2	0	9	*6*	*0*
All 2012	**8**	**15**	**5**	**5**	**0**	**33**	***23***	***0***
1.quarter 2013	4	8	2	4	0	18	*12*	*1*
2.quarter 2013	6	12	3	6	0	27	*20*	*0*

The key questions to answer (from indicators in table 1) are:

1. **To what extent are we detecting TB cases in our community?**
   - In the last quarter, 27 cases were registered, the highest number in any quarter since the beginning of trends analysis in 2012. The first two quarters of 2013 had 45 cases, more than the entire 2012. *This increasing trend is positive and it indicates better case finding.*
   - To compare number of TB cases with district average and other clinics, we need to calculate TB notification rate per 100,000 population (indicator #3, table 1). A total 33 TB cases were registered in 2012 and the rate was: 33/14,000 x 100,000 = 236. The average for the district was 310/100,000 population. In conclusion *TB case detection remained* low in the catchment area of the clinic which makes it a challenge.

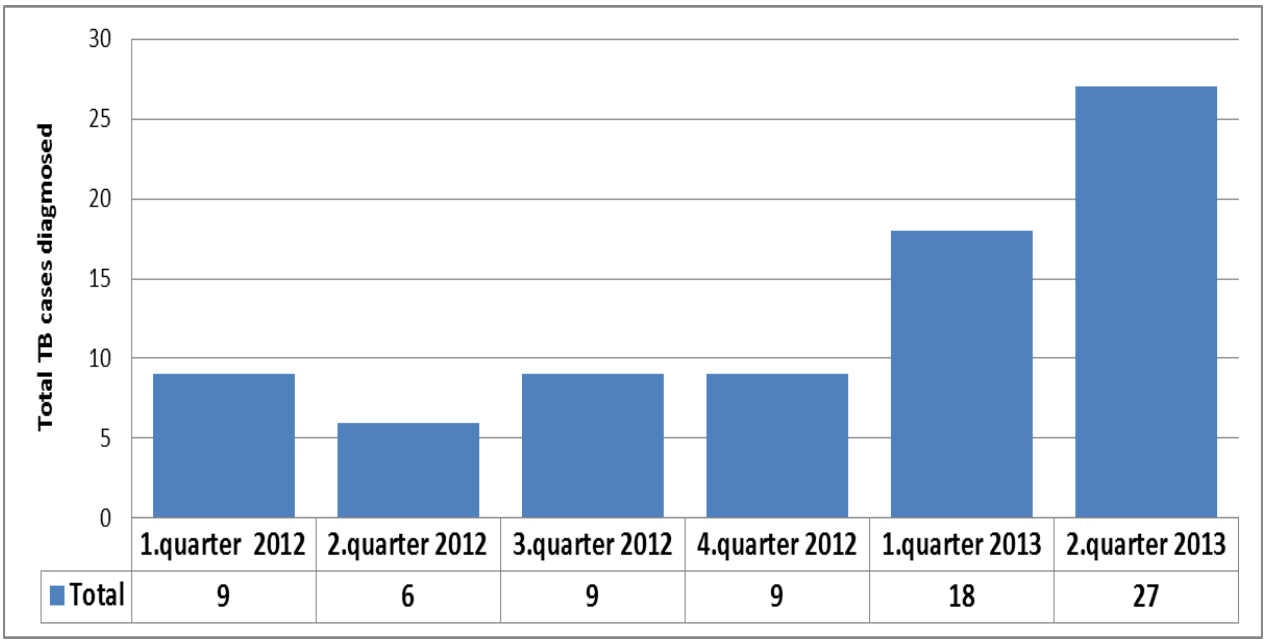
2. **To what extent are we detecting new infectious TB cases in the community?**

- In the last quarter, 6 cases were new bacteriologically positive, compared to 4 in the first quarter and 8 in all 2012, *so the number seems to be increasing.*
- For new bacteriologically confirmed TB cases, the rate was 8/14,000 x 100,000=57, while for the district, the rate was 165(Indicator #4). This *suggests that detection of new bacteriologically confirmed cases in this clinic catchment area is very low compared to other clinics in the district which makes it a challenge.*

3. **Have all new pulmonary TB cases 5 years *of age and above been* investigated using sputum microscopy, X pert or culture?**
    - In the last quarter, all new pulmonary cases 5 years and above had results of sputum examination, 11 (88%) out of 12 in the first quarter of 2013 and all 20 patients registered in in the second quarter. *Almost all new pulmonary TB cases had sputum examined.*

In conclusion, in this clinic, the number of all TB and new bacteriologically confirmed pulmonary TB cases is still low and a challenge while almost all new pulmonary patients had sputum investigated making it a strength.

Figure 3 Wall chart: TB cases



TB-HIV

The following table contains data on TB-HIV by quarter for the facility.

Table 11: HIV testing, HIV results, CPT and ART in TB cases by quarter 2012-2013 in facility

Period	No of TB patients registered	No of TB patients with HIV results	No ofTB patients with HIV + results	No of TB patients with HIV + results on CPT	No of TB patients with HIV + results on ART
1.quarter 2012	19	17	15	13	12
2.quarter 2012	6	5	4	3	3
3.quarter 2012	9	6	3	2	2
4.quarter 2012	9	4	2	2	2
All 2012	43	32	24	20	19
1.quarter 2013	18	17	8	7	7
2.quarter 2013	27	25	18	17	16

The key questions to answer (from table) should be:

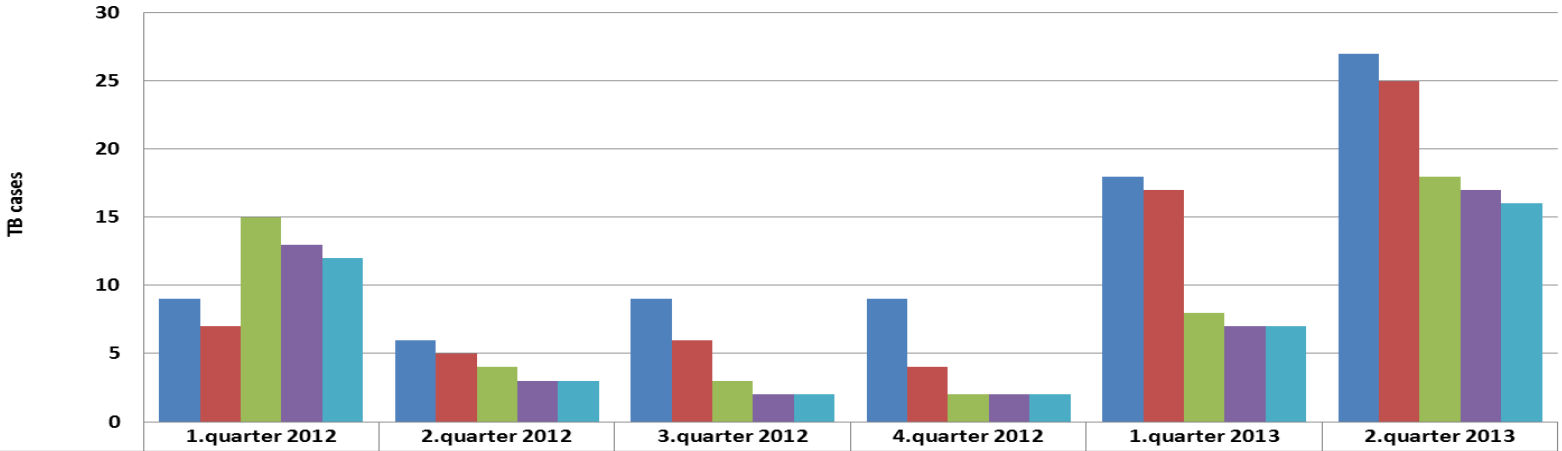
1. **Did all TB patients have HIV test result?**
    - In 2012 only 32 (74%) out of 43 had HIV results. In the second quarter 2013, 25 out of 27 (96%) had an HIV result, and 17 out of 18 (94%) in the first quarter 2013. There has been *a clear improvement in 2013 compared with 2012.*

2. **Are all HIV- positive TB patients receiving CPT?**
    - In the last quarter, 17 out of 18 were on CPT, *with high numbers also reported in the first quarter.*

3. **Are all HIV-positive TB patients receiving ART?**
    - In the last quarter, 16 out of 18 were on ART, and 7 out of 8 in the first quarter, *a very high percentage.*

In conclusion, Coverage of HIV testing (Indicator #6), CPT (Indicator#8) and ART provision (Indicator #9) are very high and a strength at this clinic.

Figure 4 Wall chart: TB-HIV



	1.quarter 2012	2.quarter 2012	3.quarter 2012	4.quarter 2012	1.quarter 2013	2.quarter 2013
No of TB patients registered	9	6	9	9	18	27
No of TB patients with HIV results	7	5	6	4	17	25
No ofTB patients with HIV + results	15	4	3	2	8	18
No of TB patients with HIV + results on CPT	13	3	2	2	7	17
No of TB patients with HIV + results on ART	12	3	2	2	7	16

DOT

Table 12: Type of DOT in TB cases registered 2012-2013 by quarter in facility (absolute numbers)

PERIOD	TB patients registered	On Health Facility Based DOT	On Community Based DOT(Community Health Workers/ trained family member)	Not on DOT
1.quarter 2012	9	1	7	1
2.quarter 2012	6	1	5	0
3.quarter 2012	9	1	8	0
4.quarter 2012	9	2	7	0
All 2012	**33**	**5**	**27**	**1**
1.quarter 2013	18	2	16	0
2.quarter 2013	27	3	23	1

The key question to answer (from indicators in table 4) is:

1. **What percentage of TB patients are observed either by health workers or trained community observers including trained family members?**
    - In 2012, 32 out of 33 (97%) of TB patients were observed by health worker or community member or trained family member. In first quarter2013, all 18 (100%), in second quarter 2013, 26 out of 27 (96%) were observed.
    - In 2012, 27 out 33 (82%) were observed by a community member or trained family member and in the first and second quarter 2013, 39 out of 45 patients (87%) were observed by a community member or trained family member. Since 2012, almost all patients have benefited from treatment observation. *The majority are observed by community or trained family members.*

In conclusion, the majority of cases are followed up by trained personnel (indicator number 10), which is a strength.

Treatment outcome

Table 13: Treatment outcome results of all TB cases notified 2011-2012 in facility

	No Registered	Treatment cured + completed (Treatment success)	Died	Lost to follow-up	Failed	Not evaluated
All 2011	**29**	13	9	7	0	0
1.quarter 2012	9	7	1	1	0	0
2.quarter 2012	6	5	1	0	0	0

Since the total number of TB cases is low in each clinic, treatment outcome is only assessed for all TB cases.

The key questions to answer (adapted from table 4) are:

1. **What percentages of the patients have been successfully treated? (Indicator #11).**

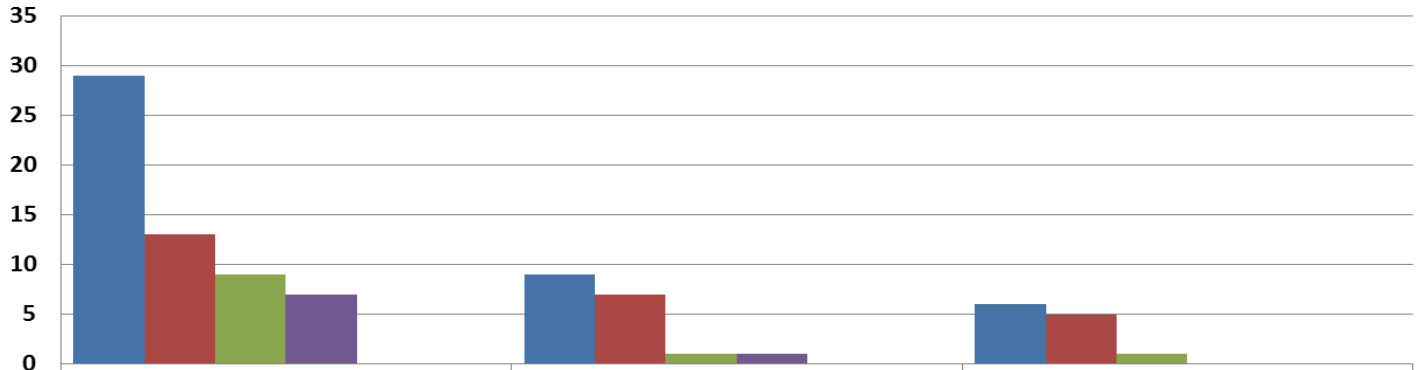
- In 2011, only 13 (45%) of 29 were successfully treated. Nine (31%) patients died and 7 (24%) were lost to follow up. In the first two quarters 2012, (5+7/6+9=80%) were successfully treated.
- The number of patients who died and were lost to follow up were greatly reduced from 2011 to 2012

2. Are there any patients without treatment outcome? (indicator #16)

- Information on outcome was available for all patients registered in 2011 and the first half of 2012. *This is commendable*.

Programme Performance: In conclusion, the (indicator number 11) treatment success has improved from 45% in 2011 to 80% in the first two quarters of 2012, however, this still remains a challenge as it is below expected values.

Figure 5 Wall chart: Treatment outcome



	All 2011	1.quarter 2012	2.quarter 2012
No Registered	29	9	6
Treatment cured + completed (Treatment success)	13	7	5
Died	9	1	1
Lost to follow-up	7	1	0
Failed	0	0	0
Not evaluated	0	0	0

TB drugs

The Zimbabwe National Pharmaceutical Company (Natpharm) regional stores uses Zimbabwe Informed Pull (ZIP) system to supply drugs quarterly directly to health facilities based on stock levels on site and previous consumption. In the event of stock out of commodity, the commodity can be supplied by the district hospital while the affected health facility prepares an emergency order to Natpharm regional stores.

In facilities there are stock cards containing information on movement and date of expiry for each TB drug. The stock card and physical count is the source for the information entered in the facility quarterly report of the current stock level and expiry date but should be checked by on-site physical counting during supervision.

For **facilities with many TB cases**, the quarterly drug form (table 13 below) should be used to calculate the amount of medicines that is expected to be consumed, based on the number of TB cases registered in the previous quarter by treatment category; category I (new cases), category II (previously treated) and pediatric cases. The assumption is that a similar number of TB cases will be registered in the current quarter. The amount of drugs that this number of patients will need for a quarter is calculated. The amount is then divided by 3, which gives the monthly need. The current drug stock can then be divided by the monthly need to indicate the number of months that drug stock will last. This information allows the facility to assess if the stock is within the minimum and maximum and if the period between current and expiry dates is sufficient to prevent expiry. If the stock is too high, DTLC could redistribute the drugs to another facility. If stocks are critically low, there is need for an emergency delivery from district hospital pharmacy, another facility with too high stock or provincial pharmacy. Even in facilities with many patients, there will be few previously treated cases and children with tuberculosis, so the calculation must be done with care, and DTLC should keep a close look at stocks and expiry dates of drugs.

The example in **Fout! Verwijzingsbron niet gevonden.**Table 14 below shows that the stock level of TB drugs is etween 3 and 7 months, except paediatric drugs with lower levels since there have not been any paediatric cases. Expiry for RHZE is close (4 months) while the stock should last for 5 months. DTLC should assess if some of the drugs should be moved to another facility to prevent expiry. If more cases are registered, it may not be necessary.

In **facilities with very few patients**, no TB drugs should be stocked so that expiry is prevented. At the same time, DTLC must ensure that TB drugs are provided timely for the individual patient each time she/he is starting treatment.

It is important that DTLC closely monitors drug stocks in the facilities and the supplies to the facilities, preventing stock outs and expiry. Normally the district hospital has a stock to cover emergencies.

Recommended buffer stock levels were provided in table 14; three months for rural health centres and districts and six months for province. The buffer amount should be the minimum stock while the maximum should be the double.

Tabell 14: TB drugs in the facility at the end of the quarter (Sept 2013): Stock level and expiry date (what about the table in the quarterly report form.

	Stock at the end of the quarter (tablets or vials)	*Expiry dates*	*Months of stock**
RHZE	2016	Jan 2014	5
RH Adult	3024	July 2014	7
S	114	2016	3
RHE	1344	July 2014	5
RHZ Paediatric	0		0
RH paediatric	84	July 2014	

Tabell 15: Calculation of drug needs expected according to the number of patients registered in the previous quarter, stock level, expiry date and months of stock

	Adult Category 1 (2RHZE/4RH)			Category 2 (retreatment)			Cat 1Pediatric regimen (2RHZE/4RH)+INH/Ethambutol			Total Quarterly need	Monthly need	Stock levels	Months of stock M = L/K
	Number of patient	Factor	Total Need	Number of patients	Factor	Total Need	Number of patients	Factor	Total Need				
	A	B	C=AxB	D	E	F=DxE	G	H	I=GxH	J=C+F+I	K=J/3	L	
RHZE	4	168	672	2	252	504				924	308	2016	6.5
RH adult	4	336	1344							1344	448	3024	6.8
S				2	56	112				112	37	114	3.1
RHE				2	420	840				840	280	1344	4.8
RHZ paediatric					168		0	112	0	0	0	0	0
RH paediatric					280		0	224	0	0	0	84	0
INH 100mg							0	84	0	0	0	0	0
Ethambutol 100mg							0	112	0	0	0	0	0

*The previous quarter the following patients were registered: 4 category 1 (new adults), 2 category 2 (previously treated) and no children. Using the table in the quarterly facility and district TB report to calculate the number of tablets/vials needed, this number of patients need quarterly: RHZE 1176 tablets, RH adult 1344, S 112 vials, RHE 840 tablets. The stock level divided by the monthly need (that is quarterly need divided by three), gives for how many months the stock will last.

Summary: Strengths, weaknesses and action points

When completing data analysis, clinic team should review all summary tables and make conclusions if key performance indicators show strengths or weaknesses. The team will fill in the strengths and weaknesses in the performance summary table as indicated in the example below (table 16). Team should feel proud for the achieved strengths and aim to sustain them. It is also important to list weaknesses as honestly as possible with action points directed to dealing with identified shortcomings. This should in the long term, strengthen TB control activities in the clinic. The summary includes indication of responsible persons for each action point and agreed time line.

Table 16: Summary of strengths, weaknesses and action points at health facility

Strengths	**Weaknesses**

• DR-TB tested • Almost all TB cases have an HIV test, and almost all HIV- positive patients are started on CPT and ART • For identified presumptive TB cases, almost all have sputum samples sent and results were received. • DOT is practiced widely. • Drug stocks are as within expected levels (except RHZE)	• Low rate of presumptive TB cases • High positivity rate • Number of TB cases and new bacteriologically confirmed pulmonary cases are low, compared to district average, although the number has been increasing. • Treatment success rate is increasing but still below the expected.

Action points to address weaknesses that were identified

Action point	**Responsible person**	**Time line**
Clinic staff should ensure that TB screening is practiced in OPD and OI clinic	Nurse in charge	Start immediately and on-going
Community workers should create awareness about TB in community, look actively for presumptive TB cases and refer them to clinic for further investigations	Nurse in charge and Environmental Health Technician	Start from 3rd Q of 2013

DISTRICT LEVEL DATA TABULATION & ANALYSIS

Summary

Data from district quarterly reports are managed similar to the facility level. However, district quarterly data are first compared with the sum of data from all the facility quarterly reports, as well as patients detected with positive results in the laboratory register. These comparisons allow assessing how complete and correct the data are. Then data from the district quarterly report are tabulated similar to the facility level with quarters as rows and columns with number of presumptive cases identified, etc. Then data from the facility reports are tabulated for the last full year, with facilities as rows, and number of presumptive TB cases etc. as columns. This table allows comparing the facilities. In addition similar tables are made by facility for the quarters of the current year, with special focus on the last quarter. Based on the analysis of data from both the whole district and by facility, indicators are classified as strengths or weaknesses for the whole district, but with comments regarding individual facilities. To help the analysis, a table lists all the facilities and all the indicators, showing in which facilities challenges were found. At the end the same summary table includes strengths, weaknesses and action points.

Data tabulation and analysis

District data tabulation and analysis are done every quarter in three situations: 1) supervision visits from the province to the district, 2) DHEs doing its own analysis, and 3) district performance review meetings with facilities.

NTP provides a spread sheet to assist the DHE to fill in the summary tables and to calculate key indicators, similar to the summary tables in annexes.

The summary tables in this chapter describe for simplicity a district with only one diagnosing centre including the health facilities in its catchment area. However, in most districts in Zimbabwe there is more than one diagnosing centre. In such districts DHE and DTLC should in addition fill in summary tables from

the quarterly reports of each diagnosing center, with diagnosing centres as rows, and with health facilities under each diagnosing centre. An example of such tabulation is found at the end of this chapter.

Each of the six topics described with their indicators in tables 1 and 5 are assessed and classified as strengths (as expected) or weaknesses and entered in the summary table at the end of the chapter. For each challenge the district team (with supervisors) will agree on action points.

Completeness of facility quarterly reports

Before analysis, the completeness of submitted quarterly facility reports should be assessed. Table 16 below includes for how many facilities quarterly reports had been received. Reports were available from all 15 facilities for the 1.quarter 2012 onwards except the last quarter, 2.quarter 2013, when reports had only been received from 13 facilities. This means that comparison of data in 2.quarter 2013 must be made with care, since case numbers probably are somewhat larger.

Presumptive TB cases

The following section describes how to tabulate and analyse data on presumptive TB cases from facility quarterly reports, first for the whole district, summing up all the facility quarterly reports, later by comparing facilities. Table 17 shows the number of presumptive TB cases registered by quarter and their investigations.

Table 17: Number of presumptive TB cases in district by quarter 2012 and quarters 1 and 2 2013 from facility quarterly reports.

Period	Number facility reports received	Number identified Presumptive TB cases	Number with sputum sent to laboratory	Number with smear, Xpert or culture result	Number with positive smear, Xpert or culture result	Number with HIV test results	Number with HIV-positive result
1.quarter 2012	15	266	226	200	22	210	143
2.quarter 2012	15	235	226	210	16	200	116
3.quarter 2012	15	373	347	328	19	332	194
4.quarter 2012	15	261	243	219	25	227	145
All 2012	**60**	**1,135**	**1,042**	**957**	**82**	**969**	**598**
1.quarter 2013	15	199	187	172	13	175	93
2.quarter 2013	13	162	150	129	5	141	89

The absolute numbers in table 17 are shown as percentages in table 18 below to make analysis easier.

Table 18: Presumptive TB cases in district by quarter 2012 and 1. and 2. quarter 2013: percentage with sputum sent, result received, with positive result, HIV test result and HIV positive

Periode	Number of presumptive TB cases	% presumptive TB cases with sputum sent to laboratory	% presumptive TB cases with sputum sent that have result of microscopy, Xpert or culture	% presumptive TB cases with result who have positive microscopy, Xpert or culture result	% presumptive TB cases with HIV test result	% presumptive TB cases with HIV result who have a positive result
1.quarter 2012	266	85 %	88 %	11 %	79 %	68 %
2.quarter 2012	235	96 %	93 %	8 %	85 %	58 %

3.quarter 2012	373	93 %	95 %	6 %	89 %	58 %
4.quarter 2012	261	93 %	90 %	11 %	87 %	64 %
All 2012	**1,135**	**92 %**	**92 %**	**9 %**	**85 %**	**62 %**
1.quarter 2013	199	94 %	92 %	8 %	88 %	53 %
2.quarter 2013	162	93 %	86 %	4 %	87 %	63 %

Key questions to be answered from the tables are:

1. **Are the district and its health facilities identifying the expected number of presumptive TB cases?**

   - In 2q/2013, 162 cases were identified which is lower than in previous quarter (199) and lower than in 2012 (average per quarter 1135/4=284).
   - In 2012, the rate of presumptive TB cases in this district was 1,769/100,000 population (calculated as follows: 1,135 presumptive TB cases divided by 64,164 population and multiplied with 100 000). The average for the province was 1,662/100,000 population. The rate for the district was therefore slightly higher than the provincial average **(indicator #1)**, but there was a decline in the 1st and 2.quarter 2013, making the findings a challenge.

2. **Did all identified presumptive TB cases have sputum samples sent to laboratory**? In 1st and 2. quarter 2013, a high percentage (94 and 93%) had samples sent, with a similar high percentage (92%) in 2012.

3. **Did all cases receive sputum results from laboratory?** In 1st and 2. quarter 2013, a high percentage (92 and 86%) of presumptive TB patients received their results. This was a bit lower than in 2012 when (92% of presumptive TB patients received the results.

4. **Was sputum positivity rate (percentage of presumptive TB cases with positive test result) as expected (indicator # 2)?** The positivity rate was 4% in 2. Quarter 2013 which was lower than in 1. quarter 2013 (8%) or in 2012 (9%). Numbers are small and it is important to assess percentages with caution. However this indicator shows a challenge.

5. **Did all presumptive TB cases have known HIV status?** In 1st and 2. quarter 2013, 88% and 87% of presumptive TB cases had known HIV status. A high percentage of patients knew their status also in 2012 (85%).

We next show in table 19 data by facility to see if any of them have numbers different from the expected. Since numbers per facility per quarter are low, we only tabulate the data from the last full year (2012).

Table 19: Presumptive TB cases 2012 by clinic: Number identified, sputum sent, result received, positivity rate, HIV testing and HIV results

Facility	Number identified	Number with sputum sent to laboratory	Number with smear, Xpert or culture result	Number with positive smear, Xpert or culture result	Number with HIV test results	Number with HIV- positive result
A	48	47	42	0	38	17
B	73	63	59	3	50	32
C	84	65	59	3	68	44
D	47	46	43	1	48	34
E	59	53	53	5	56	25

F	52	48	48	6	49	36
G	44	44	43	5	43	33
H	52	47	37	5	33	21
I	83	82	81	9	80	42
J	77	68	64	4	67	38
K	83	81	71	4	77	63
L	76	68	66	3	65	44
M	115	112	102	7	109	61
N	59	56	55	2	53	29
Hospital	183	162	134	25	133	79
Total	1,135	1,042	957	82	969	598

To facilitate data analysis, the absolute numbers shown in Table 19, have been calculated and shown as rates and percentages in Table 20 below.

Table 20: Presumptive TB cases 2012 by clinic: Number identified, rate per 100,000 population, percentage sputum sent, result received, positivity rate, HIV testing and HIV results

Facility	Catchment population in 2012	RATE: Presumptive TB case microscopy screening/100,000 population	% presumptive TB cases with sputum sent to laboratory	% presumptive TB cases with sputum sent that have result of microscopy, Xpert or culture	HIV	
					% of Presumptive TB cases with HIV test results	% of presumptive TB cases with HIV result who have a positive HIV result
A	3,140	1,529	96 %	96 %	81%	68 %
B	2,361	3,092	86%	94%	68%	64%
C	5,505	1,526	100 %	91 %	100 %	64 %
D	6,049	777	100 %	100 %	100 %	50 %
E	8,774	672	83 %	100 %	100 %	50 %
F	2,717	1,914	94 %	100 %	100 %	76 %
G	5,420	812	100 %	100 %	100 %	86 %
H	7,765	670	91 %	67 %	57 %	85 %
I	2,223	3,734	100 %	100 %	91 %	55 %
J	2,874	2,679	86 %	100 %	76 %	63 %
K	6,483	1,280	90 %	100 %	100 %	70 %
L	3,140	2,420	96 %	100 %	96 %	68 %
M	4,513	2,548	96 %	75 %	96 %	54 %
N	3,200	1,844	93 %	100 %	100 %	36 %
Hospital			87 %	65 %	67 %	65 %
Total	64,164	1,769	92 %	92 %	85 %	62 %

Key questions to be answered are:

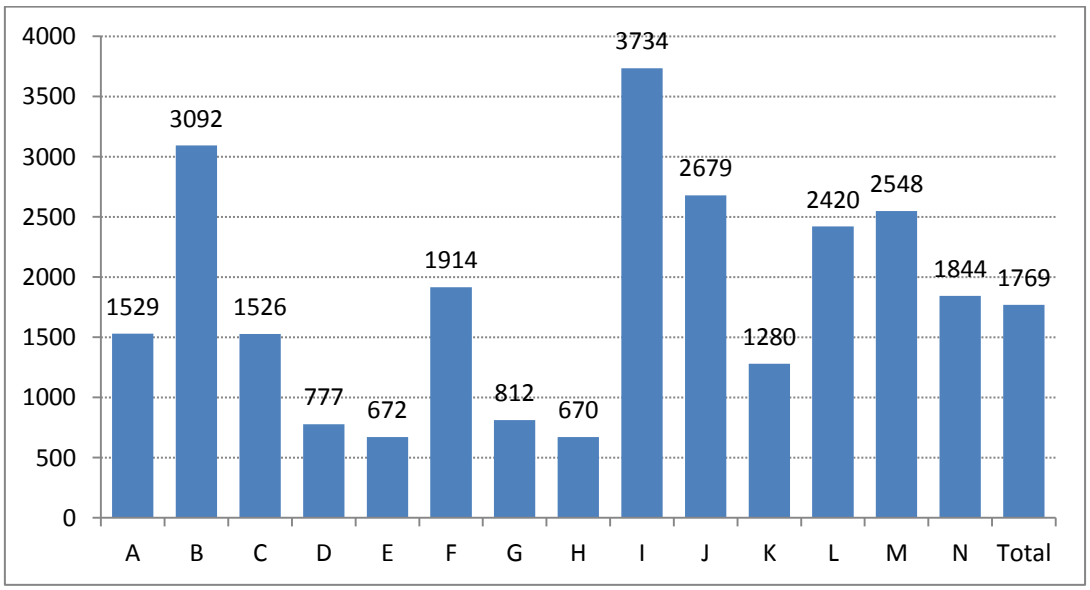
Are we detecting the expected number of presumptive TB cases in our community?

- Table 20 shows that all clinics reported presumptive TB cases. Their number ranged from 44 (Clinic G) to 115 (Clinic M). Excluding the hospital (because as referral centre, its catchment population is

that of entire district), average number of presumptive TB cases per clinic (apart from the district hospital) was 1,135-183)/14=68 in 2012 (one year), or 68/4=17 per quarter.

- Presumptive TB case identification rate ranges between facilities from 670/100,000 (in Clinic H) (or 1 per 149 persons) to 3,734/100,000 (in Clinic I) which is 1 per 27 persons. Presumptive TB case identification rates per 100,000 population are also presented in Figure 6 below. Four clinics have much lower rates than the average (D,E,G,H) and two clinics much higher rates (I and B).
- Clinic I with an exceptionally high presumptive TB case identification rate is a mine clinic and its catchment population includes persons from all around the country.
- Clinic H with one of the lowest rates in the district is situated close to Bulawayo and many clients may prefer to seek services there.
- The number in hospital has declined dramatically but this could be a positive trend, if more patients are registered in the clinics and sputum collected there, instead of patients going directly to the hospital. But this did not seem to be the case, since the overall number of presumptive TB cases with lab result in the district declined. This occurred in spite of an active courier system for sputum transport in place.
- Percentage of presumptive TB cases who had sputum samples sent to laboratory was below 90% in Clinics E, B, J and hospital.
- Percentage of patients who had received test results was below 90% in the hospital and facilities H and M.
- All facilities except one (A) found at least one presumptive case with positive sputum smear. The average number (excluding hospital) was (82-25)/14= 4, that is, four smear-positive TB cases per year per clinic, or one per quarter.
- Percentage of patients with HIV test below 90% were found in hospital and facilities H, B, J and A.

Figure 6: Presumptive TB case identification rate per 100, 000 population by clinic 2012



Note: District average 1769 and province average 1662 per 100,000 population

Now that we know the level of presumptive case investigation at baseline, in 2012, data for the more interesting 1st and 2. Quarter 2013 are assessed. First, absolute numbers are shown in table 20 followed by calculation of percentages in Table 21.

Table 21: Presumptive TB cases by clinic and quarter 2012-2013: Number identified

		2012				2013	
Facility	**All 2012**	1q	2q	3q	4q	1q	2q 2013
A	**48**	5	11	5	27	18	20
B	**73**	17	17	38	1	5	19
C	**84**	22	16	35	11	15	12
D	**47**	10	12	17	8	7	4
E	**59**	12	15	20	12	10	Missing
F	**52**	6	10	19	17	3	10
G	**44**	6	5	19	14	13	Missing
H	**52**	10	5	14	23	10	8
I	**83**	12	19	30	22	28	8
J	**77**	16	10	30	21	9	13
K	**83**	44	12	17	10	3	15
L	**76**	12	13	25	26	9	12
M	**115**	16	30	44	25	14	9
N	**59**	17	13	15	14	6	12
Hospital	**183**	61	47	45	30	49	20
Total	**1,135**	266	235	373	261	199	162

Key questions to be answered are: Did the levels from 2012 change in 2013?

The clinics with the lowest rates in 2012 did not show an increase in number of identified presumptive TB cases in quarters 1 and 2 of 2013, while two of the clinics (E and G) failed to submit quarterly facility reports. The largest decline seems to have taken place in hospital.

To assess performance of TB diagnostic services by facility in 2013, we analyse percentage of i) identified presumptive TB cases with sputum samples sent to laboratory and ii) cases whose results are received from laboratory. These data are shown by quarter and clinic in table 22 below.

Numbers

Table 22: Presumptive TB cases with sputum sent and with results received by facility 1st and 2nd quarter 2013: Numbers

	1.quarter 2014			2.quarter 2014		
Facility	Registered	Sputum sent	Results received	Registered	Sputum sent	Results received
Mbalabala	12	12	7	17	16	9
Irisvale				4	4	3
Ntshamathe	20	16	16			
Mhlahlandlela				32	31	28

Esibomvu	20	19	19	12	8	8
Habane	25	21	20	11	7	7
Nhlangano	20	20	20	21	20	20
Nswazi	18	17	17	15	15	15
How Mine	20	20	20	17	17	17
Mbizingwe	36	36	36	48	37	34
Kumbudzi	9	8	8	8	6	5
Mpisini	32	19	18	12	11	11
Mawabeni	19	19	18	31	28	27
Mzingwane	23	23	23	12	12	12
Total	254	230	222	43	39	18

Key questions to be answered are:

What percentage of identified presumptive TB cases had direct sputum microscopy (DSM) results?

- Percentage of presumptive TB cases with direct sputum microscopy results has been over 80% since 2q/2012 in district. An overall decline can be seen in 2q/2013 when 80% of all cases in the district had these results. A substantial decline took place in hospital where only 35% of these cases had DSM results.
- In this type of a situation, we should again use TB data to assess where the problem is. Are sputum samples of presumptive TB cases sent to laboratory? Are test results received by clinics? For example, in the hospital in 2q/2013, 80% of identified cases had their sputum samples sent to laboratory but only 44% received their results. With this information, the DHE can focus its investigations to reasons why test results do not reach clinicians and make decisions on appropriate corrective measures.

In conclusion, to avoid bacteriologic ally positive TB patients not being diagnosed or diagnosed with 'sputum not done', DHE needs to follow up and ensure that all presumptive TB cases receive sputum sample results back and that the hospital and clinics C, H, B and J will perform better in this regard in 2nd 2014 .

Number of presumptive TB cases with a positive DSM result is shown in table 23 below:

Table 23: Number of presumptive TB cases with a positive DSM result by clinic and quarter 2012-2013

		2012				2013	
Facility	**All 2012**	1q	2q	3q	4q	1q	2q
A	**0**	0	0	0	0	0	0
B	**3**	0	0	3	0	0	0
C	**3**	0	0	1	2	2	0
D	**1**	0	0	0	1	1	0
E	**5**	2	0	1	2	0	
F	**6**	1	0	3	2	1	1
G	**5**	0	1	2	2	1	
H	**5**	2	0	1	2	3	1
I	**9**	1	2	2	4	2	0

Facility	All 2012	2012				2013	
		1q	2q	3q	4q	1q	2q
J	**4**	2	0	1	1	0	0
K	**4**	0	1	2	1	0	0
L	**3**	0	0	1	2	1	1
M	**7**	1	3	0	3	0	0
N	**2**	0	1	1	0	0	1
Hospital	**25**	13	8	1	3	2	1
Total with pos DSM result	**82**	22	16	19	25	13	5
Total with DSM result	**957**	200	210	328	219	172	129
% with positive result	9 %	11 %	8 %	6 %	11 %	8 %	4 %

Key questions to be answered are:

- **The number of smear-positive cases among the presumptive TB cases declined in 1q and 2q/2013. In which facilities did this decline take place?**
- The number in hospital has declined dramatically from 3.quarter 2012 while the overall number of presumptive TB cases with lab result in the district declined clearly from 1. Quarter 2013.
- Five clinics did not have any smear positive patients during the first two quarters of 2013: A, B, E, J, K, M.

Summary of challenges regarding presumptive TB cases:

- Data in 2. Quarter 2013 were incomplete because two facilities did not submit quarterly reports, making it difficult to assess trends.
- The rate of presumptive TB cases in the district was near the provincial average in 2012, but the number declined in the last two quarters, making **Indicator 1 a challenge.** Some RHCs reported very low rates.
- Almost all had sputum samples sent to laboratory and had results received. Also a high percentage of presumptive TB patients had a known HIV status.
- The positivity rate was low in 2. Quarter 2013, **making indicator # 2 a challenge.**

Presumptive MDR-TB cases

District and facility TB registers and district and facility quarterly reports include information on previously treated cases and result of Xpert MTB RIF test. This information is tabulated by facility in table 24.

Table 24: Presumptive MDR-TB cases 1.quarter 2013 by facility: previously treated patients, with Xpert result, with Rifampicin resistance and number started on MDR-TB treatment

Facility	Previously treated patients notified	Previously treated TB cases with specimen sent for Xpert MTB/RIF	Previously treated TB cases with result of Xpert for RIF
A			
B			

C			
D			
E			
F			
G			
H			
I			
J			
K			
L			
M			
N			
HOSPITAL			
TOTAL			

The question to be answered is: Did all previously treated TB cases have Xpert test with result?

In conclusion, **Indicator #18 is a challenge**.

TB cases

The table shows that five previously treated patient was registered in Quarter 1 of 2013. There was no information if sputum sample was sent for Xpert MTB/RIF.

Before tabulating and analysing case finding data for the whole district, completeness of data is assessed by comparing quarterly reports and laboratory register.

Completeness of TB case data comparing quarterly reports and laboratory register

DTLC compares at least every quarter the number of all TB cases in the district TB quarterly reports with the sum of all the quarterly facility reports and then compares new bacteriologically confirmed cases in district quarterly reports with quarterly facility reports and TB laboratory register (table 25). The comparison is made to ensure that all TB cases are notified and to assess completeness of data.

Table 25: Comparing all TB cases in quarterly district and facility reports, and bacteriologically confirmed cases in quarterly facility, district and laboratory reports 2012-2013

Quarter	All TB cases		New bacteriologically confirmed TB cases		
	In quarterly district report	In quarterly facility reports	In quarterly district report	In quarterly facility reports	In TB laboratory register
1.quarter 2012	57	57	27	30	25
2.quarter 2012	40	37	21	20	20
3.quarter 2012	47	43	22	25	25
4.quarter 2012	64	62	30	31	25
All 2012	208	199	100	106	95
1.quarter 2013	57	49	27	19	18
2.quarter 2013	24	24	8	12	9

Key question to answer is:

How many TB cases and new bacteriologically confirmed TB cases diagnosed are not notified?

- For all TB cases data are fairly similar, but the sum of facility reports is consistently lower than district reports.
- Numbers of new bacteriologically confirmed cases are fairly similar in 2012 but the number in the district TB quarterly report is much higher than in the quarterly facility reports and the laboratory register in the 1-quarter 2013

TB case finding

Data on TB cases are first assessed for the whole district from district quarterly reports in table 26.

Table 26: TB case notifications by quarter and type of patient 2012-2013

Quarter	Indicator #5				
	Total TB cases notified	New pulmonary bacteriologically confirmed cases	Previously treated patients (bact confirmed +clinically diagnosed)	All new pulmonary TB cases 5 years and above	Pulmonary TB cases 5 years of age and above without bacteriological confirmation
1.quarter 2012	57	27	5	41	0
2.quarter 2012	40	21	3	28	0
3.quarter 2012	47	22	6	30	0
4.quarter 2012	64	30	8	44	0
All 2012	**208**	**100**	**22**	**143**	**0**
1.quarter 2013	54	15	10	31	2
2.quarter 2013	24	8	4	20	1

Key questions to be answered are:

To what extent are we detecting the TB cases in our community?

- During 1st and 2.quarter 2012 in total, 94 TB cases were notified, but only 73 in 2013, a decline of (94-73)/94*100= 22%. The number was especially low in the 2.quarter 2013, perhaps affected by two clinics not reporting. The rate of all TB cases was 295 per 100,000 for all TB in 2012 (199 cases/67,510 population). This rate was much lower than the average for the province which was 521 per 100 000. Since the number of cases declined further in 1st and 2.quarter 2013, **this indicator (#3) is clearly a challenge.**

- The number of new bacteriologically confirmed cases decreased even more than all TB cases, from 50 cases in 1. And 2. Quarter 2012 to 31 in 1. And 2.quarter 2013, a decline of (50-31)/50*100 = 58%. The rate of new bacteriological confirmed pulmonary TB cases in 2012 was 157 per 100,000 (106 cases), much lower than the average rate for the province which was 333. Since the number of cases was even lower in 1st and 2. quarter 2013, **this indicator (#4) is also a challenge**.

- Number of pulmonary TB cases 5 years of age and more who did not have sputum smear results was 9 out of 115 in the last 3 quarters 2012, 4 out of 30 in the 1.quarter 2013 and 0 out of 22 in the 2.quarter. Data suggest a clear improvement and that **this indicator (#5) is a strength**.

In conclusion, the notification rates of all TB cases as well as new bacteriologically confirmed TB cases per 100,000 in 2012 were below provincial average and declined further in 1. And 2.quarter 2013, representing challenges, while almost all pulmonary cases over 5 years of age had sputum smear results, making it a strength.

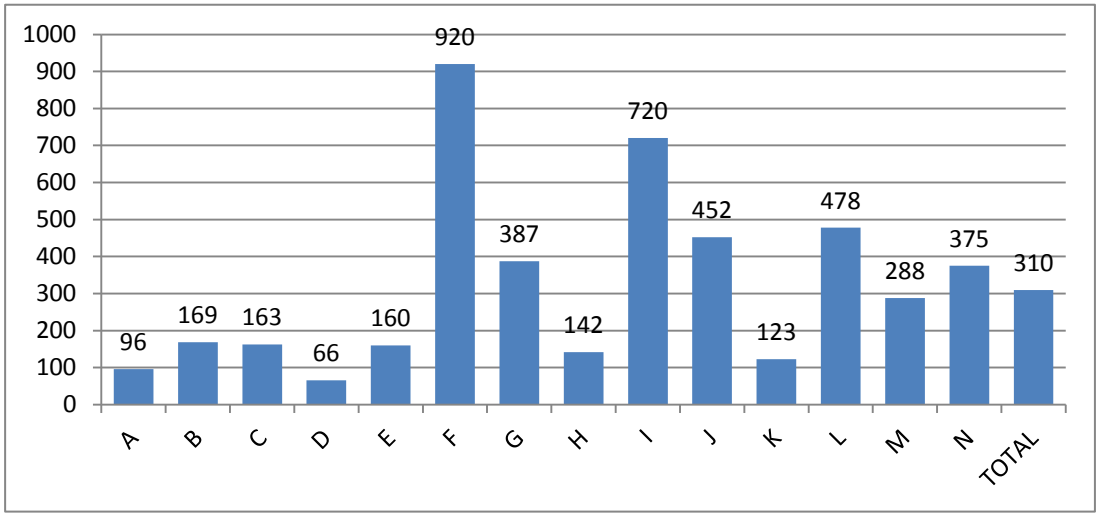
TB cases by facility

Now we move to look at data by facility from quarterly facility reports: first table 27 with number of TB cases by quarter, and then figure 7 with TB rates per 100 000 in 2012 by facility.

Table 27: Number of all TB cases by clinic and quarter 2012-2013 from quarterly facility reports

			2012				2013	
Facility	Number in all 2012	**Rate per 100,000 in 2012**	q	2q	3q	14q	1q	2q
A	3	**96**	3	0	0	0	2	1
B	4	**169**	1	1	2	0	0	1
C	9	**163**	4	1	1	3	5	2
D	4	**66**	0	0	0	4	1	0
E	14	**160**	5	2	3	4	1	
F	25	**920**	12	0	9	4	3	2
G	21	**387**	5	2	4	10	4	
H	11	**142**	2	3	4	2	9	0
I	16	**720**	3	5	4	4	5	0
J	13	**452**	5	0	5	3	2	1
K	8	**123**	2	2	1	3	2	1
L	15	**478**	2	3	4	6	3	2
M	13	**288**	2	4	1	6	4	1
N	12	**375**	2	4	2	4	4	2
Hospital	31		9	10	3	9	4	11
Total	199	**310**	57	37	43	62	49	24

Figure 7: TB notification rate per 100 000 population by facility 2012



Main findings from table 27 and figure 7

- The, number of notified TB cases per clinic in 2012 was on average (excluding the hospital) (199-31)/14=12 per year or 3 per quarter, ranging from 3 to 25. Number of TB cases by clinic is low and calculation of rates should therefore be interpreted with caution
- In 2012, the notification rate ranged widely between facilities from 66 to 920/100,000 population, while the district average was 295. The lowest TB notification rates (below 200) were reported by seven clinics: A,B,C,D,E,H,K, so the low level was rather general. Two clinics had strikingly high rates: F and I.
- From the "baseline" rates of 2012, the clinics with low rates generally continued with few cases also in 1. and 2. quarter 2013 \
- In 2q/2013, number of notified TB cases was lower than in the 1q/2013 suggesting a general challenge. Excluding the two clinics without data in the 2.quarter 2013, the number of cases in the district declined from 44 to 24.
- Percentage of TB patients notified by the hospital (and followed up from the hospital) was 16% in all 2012 (31/199*100). In 2q/2013, it doubled to 46% (11/24*100).

In conclusion, low case finding is observed in a large number of facilities, so it is a general challenge in the district.

Table 28 below presents number of new bacteriologically confirmed PTB cases notified by clinics and by quarter in 2012 and 2013

Table 28: New bacteriologically confirmed pulmonary TB cases by clinic and quarter in 2012-2013

Facility	All 2012	2012				2013	
		1q	2q	3q	4q	1q	2q
A	2	2	0	0	0	1	0
B	4	1	1	2	0	0	0
C	3	1	0	0	2	2	0
D	2	0	0	0	2	0	0
E	8	4	1	1	2	0	
F	17	7	0	7	3	3	1
G	5	1	1	1	2	1	
H	7	2	3	2	0	4	2
I	9	1	2	2	4	3	0
J	5	2	0	1	2	0	0
K	6	1	2	1	2	0	0
L	10	1	2	4	3	2	1
M	11	2	3	1	5	1	1
N	7	1	2	1	3	2	2
Hospital	10	4	3	2	1	0	5
Total	106	30	20	25	31	19	12

In conclusion, the decline in case numbers in 2.quarter 2013 is seen in many (six) clinics so it seems to be a general trend.

Pulmonary TB cases with sputum "not done"

New pulmonary cases over 5 years without bacteriological result are shown in table 29 for two periods: 2nd, 3rd and 4. quarter 2012 and for 1st and 2. quarter 2013the numbers are small.

Table 29: Pulmonary TB cases 5 years of age and above: Total and number without DSM result 2.+3.+4.quarter 2012 and 1.+2.quarter 2013 by facility from quarterly facility

	2+3+4.quarters 2012		**1+2quarter 2013**	
Facility	All new pulmonary TB cases ≥ 5 years	Pulmonary TB cases ≥ 5 years without bacteriological test result	All new pulmonary TB cases ≥ 5 years	Pulmonary TB cases ≥ 5 years without bacteriological test result
A	0	0	1	0
B	3	0	0	0
C	3	0	2	0
D	4	0	0	0
E	6	0	1	0
F	13	1	4	0
G	15	4	3	0
H	7	4	10	1
I	11	0	4	1
J	4	0	1	2
K	5	0	1	0
L	12	0	4	0
M	10	0	3	0
N	6	0	5	0
Hospital	16	0	13	0
TOTAL	115	9	52	4

The key question to be answered is

Do all pulmonary TB cases, 5 years of age and above, have result of a bacteriological laboratory test (indicator #5).

- In 2012, 9 out of 115 (8%) patients did not have smear results, mainly in two clinics (G and H), while in 1. And 2. Quarter 2013 4 out of 52 (10%) did not have smear results, seen in 3 different clinics.

In conclusion: around 90% of new pulmonary TB patients (≥ 5 years) in the district have results of a bacteriological test. And there are no clinics with especially high levels in 2013. This indicator (# 5) is therefore a strength.

TB-HIV

Data on TB-HV in the district are shown as numbers in table 30 and as percentages in table 31.

Table 30: All TB cases in district by quarter 2012-2013: Number with HIV test result, positive HIV test result, use of CPT and ART from district quarterly reports

Period	Total TB cases registered	TB-HIV Activities			
		TB patients with HIV test results	TB patients with HIV + results	TB patients with HIV + results on CPT	TB patients with HIV + results on ART
1.quarter 2012	56	45	32	31	23
2.quarter 2012	37	34	25	16	16
3.quarter 2012	43	42	35	31	27
4.quarter 2012	64	64	49	42	40

All 2012	**200**	**185**	**141**	**120**	**106**
1.quarter 2013	49	49	35	26	25
2.quarter 2013	28	28	24	0	0

Table 31: All TB cases in district by quarter in 2012-2013 with HIV test result, positive HIV test result, use of CPT and ART: percentages

Period	TB-HIV Activities			
	TB patients with HIV test results	TB patients with HIV + results	TB patients with HIV + results on CPT	TB patients with HIV + results on ART
1.quarter 2012	80 %	71 %	97 %	72 %
2.quarter 2012	92 %	74 %	64 %	64 %
3.quarter 2012	98 %	83 %	89 %	77 %
4.quarter 2012	100 %	77 %	86 %	82 %
All 2012	93%	76%	85%	75%
1.quarter 2013	100%	71 %	74 %	71 %
2.quarter 2013	100 %	86 %	0 %	0 %

The key question to answer:

1. **Did all TB patients have HIV test result (indicator # 6)?**
- HIV testing reached high level from 2q/2012 onwards.

2. **Are all HIV-positive patients on CPT (indicator #8) and ART (indicator # 9)?**
- CPT and ART coverage were not available for 2q/2013. The highest proportion of CPT was reported in 1q/2012 and thereafter, coverage ranged from 64% to 89%. ART coverage for 2012 was 75%.

TB-HIV data are shown by facility in table 32.

Table 32: Number of all TB cases with HIV test result, positive HIV result and use of CPT and ART in 2012 from quarterly facility report

Facility	Total TB cases registered	TB patients with HIV test results	TB patients with HIV + results	TB patients with HIV + results on CPT	TB patients with HIV + results on ART
A	3	3	1	1	0
B	4	4	4	3	2
C	9	9	6	6	6
D	4	4	4	4	4
E	14	13	9	9	7
F	25	24	19	18	18
G	21	21	19	18	12
H	11	11	7	7	6
I	16	16	11	11	11
J	13	11	7	7	6
K	8	8	4	4	4
L	15	15	14	14	12
M	13	13	12	12	12
N	12	11	6	6	6
Hospital	31	22	18	0	0

Facility	Total TB cases registered	TB patients with HIV test results	TB patients with HIV + results	TB patients with HIV + results on CPT	TB patients with HIV + results on ART
TOTAL	199	185	141	120	106

In the hospital many cases did not have HIV result and there were no data on CPT and ART. Otherwise no clinics had low coverage.
Data by facility for 2013 follow in table 33.

Table 33: Number of all TB cases with positive HIV result and use of CPT and ART in 1. and 2. Quarter 2014 from quarterly facility report

	1.quarter 2014			2.quarter 2014		
Facility	TB patients with HIV + results	TB patients with HIV + results on CPT	TB patients with HIV + results on ART	TB patients with HIV + results	TB patients with HIV + results on CPT	TB patients with HIV + results on ART
A	1	1	1	0	0	0
B				0	0	0
C	0	0	0			
D				0	0	0
E	2	1	1	3	3	3
F	4	3	3	0	0	0
G	2	2	2	2	2	2
H	1	0	0	4	3	3
I	5	3	3	2	1	1
J	0	0	0	1	0	0
K	0	0	0	0	0	0
L	2	2	2	1	1	1
M	5	3	3	1	1	1
N	1	0	0	0	0	0
HOSPITAL				4	4	4
Total	23	15	15	18	15	15

Coverage of CPT and ART was a weakness with most of the clinics with lower coverage than expected

In conclusion, Data quality on HIV testing coverage was an issue 1.quarter 2013. Coverage of HIV testing was generally high in the district and in all facilities but low in the district hospital, **making indicator # 6 a challenge**.

CPT and ART coverage was fairly high in the district and facilities in 2012, but facility G had low ART coverage, and there were no data on CPT and ART from the hospital, **making also indicators 8 and 9 challenges**.

Directly Observed Therapy (DOT)

DOT is an important way to ensure that TB patients take all their TB medicines as prescribed and to prevent development of resistance. Type of DOT is presented for the district as numbers in table 34 and percentages in table 35.

Table 34: Type of DOT provided to all TB cases by quarter in 2012-2013 from quarterly facility reports

Period	Total TB cases registered	Number observed by health workers	Number observed by trained community members or trained family members	Number not observed	Number notified by hospital*
1q 2012	57	18	25	5	9
2q 2012	37	11	10	4	12
3q 2012	43	17	20	2	4

4q 2012	62	26	26	2	8
All 2012	**199**	**72**	**81**	**13**	**33**
1q 2013	49	15	23	4	7
2q 2013	24	10	12	0	2

*Indicates that there was no information about the type of DOT after discharge

Table 35: Type of DOT provided to all TB cases by quarter in 2012-2013: Percentages

Period	Total TB cases registered	Number observed by health workers	Number observed by trained community members or trained family members	Number not observed	Number notified by hospital
1q 2012	57	32%	44%	9%	16%
2q 2012	37	30%	27%	11%	32%
3q 2012	43	40%	47%	5%	9%
4q 2012	62	42%	42%	3%	13%
All 2012	199	36%	41%	7%	17%
1q 2013	49	31%	47%	8%	14%
2q 2013	24	42%	50%	0%	8%

Key question to be answered is:

What percentage of TB patients are observed either by health workers or trained community observers, including trained family members?

- Almost all patients received DOT.
- Around half the patients receive DOT from trained community supporter, around 40% facility based, while less than 10% of patients were not observed.
- Around 10% are notified from the hospital, and there was no information about DOT after discharge.

Data by facility are presented in table 36.

Table 36: Type of DOT provided to all TB cases by clinic in 2012

Facility	Total cases registered	No observed by health workers	No observed by trained community members or trained family members	No not observed
A	3	0	3	0
B	4	2	1	1
C	9	5	3	1
D	4	0	4	0
E	14	3	9	2
F	25	25	0	0
G	21	9	9	3
H	11	0	11	0
I	16	14	0	2
J	13	1	11	1
K	8	6	2	0
L	15	1	12	2
M	13	5	8	0
N	12	1	10	1

Hospital	31	0	0	0
TOTAL	199	72	83	13

Main findings:

- During 2012, there was a large variation between clinics regarding type of DOT that was provided. A few clinics (F, I and K) reported a high percentage of health worker-observed treatment whereas in other clinics patients were observed by trained community workers or family members.
- For the 31 patients reported from the hospital there was no data on DOT after discharge.

Data for 2013 by facility are presented in table 37.

Table 37: Type of DOT provided to all TB cases by facility in 1st and 2nd quarter 2013

Facility	1.quarter 2013				2.quarter 2013			
	Total cases registered	Health workers	Trained community members or trained family members	Not observed	Total cases registered	Health workers	Trained community members or trained family members	Not observed
A	1	0	1	0	0	0	0	0
B					0	0	0	0
C	0	0	0	0				
D					0	0	0	0
E	2	0	2	0	3	1	2	0
F	4	4	0	0	0	0	0	0
G	2	0	1	1	2	1	1	0
H	1	0	1	0	4	1	3	0
I	5	3	1	1	2	1	1	0
J	0	0	0	0	1	1	0	0
K	0	0	0	0	0	0	0	0
L	1	1	0	0	1	0	1	0
M	5	4	1	0	1	0	0	1
N	1	1	0	0	0	0	0	0
Hospital								
TOTAL	22	13	7	2	14	5	8	1

Main findings in 2014 most of the patients were observed by at trained health worker (either a health worker or trained community volunteers) – 91% in the first quarter and 93% in the second quarter

In conclusion, Almost all TB patients benefited from treatment observation either in clinics or in community. There was no information from the hospital, **making this indicator (#10) a challenge.**

Treatment outcome

Completeness of data

Before assessing treatment outcomes, completeness of data should be assessed by seeing if all notified TB cases had an outcome. Quarterly case finding reports should be compared with quarterly summary outcome reports, both for the district and for the sum of all facility reports, as shown in table 38.

Table 38: Comparing TB cases in quarterly district and facility case finding reports, with cases registered in quarterly summary outcome reports 2011 and 2012

Quarter	All TB cases in quarterly summary case finding report		All TB cases registered in quarterly summary outcome report	
	District report	Sum of facility reports	District report	Sum of facility reports
1.quarter 2011				
2.quarter 2011				
3.quarter 2011				
4.quarter 2011				
All 2011			206	165
1.quarter 2012	57	49		53
2.quarter 2012	40			33

- The data suggest that: Quarterly facility reports are incomplete, when comparing with district reports. In 2011 the district outcome report included 206 cases but the sum of facility reports only 165.
- Quarterly summary outcome reports for the district are incomplete when comparing with quarterly summary district case finding report.
- If many patients are not registered or "not evaluated" (from table 38 later), a table should be made to clarify which facilities have such cases.

Treatment outcome according to district summary outcome reports

Treatment outcomes for all TB patients in 2011-2012 in line with the indicators are shown in table 39.

Table 39: Treatment outcomes of all TB cases registered by quarter in 2011

	Numbers						Percentages of al registered				
Quarter2	No registered	No treatment completed & Cured	Died	Lost to follow up	Failed treatment	Not evaluated	% Success rate	% Death rate	% Lost to follow-up	% Failed treatment	% Not evaluated
1.quarter 2011	63	45	15	3	0	0	71%	24%	5%	0%	0%
2.quarter 2011	45	34	9	1	0	1	76%	20%	2%	0%	2%
3.quarter 2011	55	37	16	2	0	0	67%	29%	4%	0%	0%
4.quarter 2011	43	35	7	1	0	0	81%	16%	2%	0%	0%
All 2011	**206**	**151**	**47**	**7**	**0**	**1**	**73%**	**23%**	**3%**	**0%**	**0%**
1.quarter 2012	58	50	6	2	0	0	86%	10%	3%	0%	0%
2.quarter 2012	40	25	12	0	3	0	63%	30%	0%	8%	0%

Key questions to be answered are:

1. **Are there patients not evaluated (indicator #16)?**

   - In 2011, 0.5% (1/206) of registered TB patients did not have treatment outcome, in the 1.quarter 2012, and 2.quarter 2012 none

2. **What percentage of patients were successfully treated (indicator # 11)?**

   In the 1st quarter 2011, success rate was relatively low at 71%, increased to 86% in 1.quarter 2012 and declined to 63% in the 2nd quarter, so it is a challenge. It also fluctuated a lot during different quarters which could suggest poor data quality.

3. **What percentage of patients failed treatment (indicator # 13)?**

   In 2011 there were no failures, but 3 among 40 (8%) in 1st of quarter 2012, which is higher than expected and a challenge.

3. **What percentage of patients was lost to follow up? (indicator # 14)?**

   In 2011, 5% were lost, in 1st quarter while in 2012, 2 out of 58 (3%) and in 1st quarter and none out of 40 in the 2nd quarter f 2012, suggesting that this indicator is strength.

4. **What percentage of patients died (indicator # 15) or?**

   In 2011, (47 out of 206) 23% died, while in 2012, second quarter 12 out of 40 (30%) died. This indicator remains a big challenge.

Treatment outcome by facility in 2011 is presented in table 40

Table 40: Treatment outcomes for all TB cases by clinic in 2011

Facility	No Registered	No completed treatment (cred + treatment completed)	Died	Lost to follow-uped	Failed treatment	Not evaluated
A	3	2	1	0	0	0
B	7	4	1	1	0	1
C	12	8	3	1	0	0
D	5	0	0	0	0	5
E	14	10	3	1	0	0
F	17	14	2	1	0	0
G	20	17	2	1	0	0
H	15	10	3	2	0	0
I	18	10	4	0	0	4
J	8	6	1	1	0	0
K	0	0	0	0	0	0
L	8	7	0	1	0	0
M	29	22	6	1	0	0
N	5	2	2	1	0	0
Hospital	4	4	0	0	0	0
Total	165	116	28	11	0	10

Key questions to be answered are:

1. **Are there any patients without treatment outcome in 2011?**
    - Missing outcome was limited to Clinics D, I and B
2. **How many patients were unsuccessfully treated in 2011?**
    - Deaths and patents lost were fairly evenly spread over the facilities.

To assess outcome also in 2012, the main unfavourable outcomes are presented in tables 41 (deaths) and 42 (lost to follow-up).

Table 41: Deaths of all TB cases by clinic and quarter in 2011-2012

Facility	Quarter in 2011				All 2011	Quarter in 2012	
	1q	2q	3q	4q		1q	2q
A	1	0	0	0	1	0	0
B	1		0	0	1	0	0
C	0	0	1	2	3	0	0
D	0	0	0	0	0	0	0
E	1	0	1	1	3	0	
F	0	1	1	0	2	0	0
G	1	0	1	0	2	0	
H	3	0	0	0	3	0	0
I	4	0	0	0	4	0	1
J	0	1	0	0	1	0	0
K	0	0	0	0	0	0	1
L	0	0	0	0	0		2
M	1	3	2	0	6	0	1
N	1	0	1	0	2	0	2
Hospital	0	0	0	0	0	0	1
TOTAL	13	5	7	3	28	0	8

Key question:

Did any facility have unusually high number of patients who died?

- Numbers are small but seem to fluctuate a lot which may suggest reporting challenges.
- While no patients died in the 1.quarter 2012, 8 died in the 2.quarter 2012 which seems to be a very high number.
- It was surprising that so few patients died in the hospital. Could there be underreporting?

Table 42 Lost to follow-up of all TB cases by clinic and quarter in 2011-2012

Facility	Quarter in 2011				All 2011	Quarter in 2012	
	1q	2q	3q	4q		1q	2q
A	0	0	0	0	0	0	0
B	1		0	0	1	0	0
C	0	1	0	0	1	0	0
D	0	0	0	0	0	0	0

E	0	0	1	0	1	0	0
F	1	0	0	0	1	1	
G	0	0	0	1	1	0	0
H	2	0	0	0	2	0	
I	0	0	0	0	0	0	0
J	1	0	0	0	1	0	0
K	0	0	0	0	0	0	0
L	1	0	0	0	1		0
M	1	0	0	0	1	0	0
N	1	0	0	0	1	1	0
Hospital	0	0	0	0	0	0	0
TOTAL	8	1	1	1	11	2	0

Key question:

Did any facility have an unusually high number of TB patients who were lost to follow-up? There were very few patients lost to follow-up in 1st and 2. Quarter 2012.

- If many patients are "not evaluated" (from tables 39 and 40), a similar table should be made to clarify which facilities have such cases.

In conclusion, data quality seems to be a challenge. The success rate was low, making indicator # 11 a challenge. The failure and death rates were high, making indicators 13 and 15 challenges, while the lost to follow-up were few, making indicator # 14 a strength. Patients not evaluated were numerous in 2011, making indicator # 16 a challenge.

Management of drug stocks

DTLC may use the drug form (see table in the facility chapter) for the whole district, entering stock levels at the beginning and start of the year and the drugs received from Natpharm, to calculate expected drugs consumed according to the number of reported TB cases. This expected consumption can be compared with the actual consumption (according to Natpharm forms). If actual consumption is considerable higher than the expected, reasons may include underreporting of TB cases, low quality of data and loss of drugs.

DTLC should enter stock levels of each TB drug and their expiry dates for each facility in the table below using quarterly facility TB reports. DTLC should also calculate for each facility the monthly need of each drug based on the number of patients registered in the previous quarter, as shown in the quarterly facility report. This information allows the DTLC to assess the stock levels in each facility if it is within the recommended minimum and maximum stock levels and if the expiry date is sufficient to prevent expiry. If the stock is too high, DTLC could redistribute the drugs to another facility. If stocks are critically low, it is necessary to make an emergency supply.

In facilities with very few patients, there is usually no stock of TB drugs, while drugs should be provided timely for the individual patient each time she/he is starting treatment. In such facilities drug needs may be calculated from the annual number of patients rather than quarterly.

Table 43: Months of stock of TB drugs and their expiry dates by facility

	Stock at the end of the quarter	Months of stock	Expiry dates

Facility	RHZE	RH Adult	S	RHE	RHZ Paeds	RH paeds	RHZE	RH Adult	S	RHE	RHZ Paeds	RH paeds	RHZE	RH Adult	S	RHE	RHZ Paeds	RH paeds
A																		
B																		
C																		
D																		
E																		
F																		
G																		
H																		
I																		
J																		
K																		
L																		
M																		
N																		
Hospital																		
TOTAL																		

Key question:

Was there any drug stock out during the quarter under review? If yes, which drugs were out of stock? And for how long?

- What action was taken to address the stock out problem? *

Summary table of all the indicators

The district team should fill in a table summarizing all the indicators assessed in this chapter by facility (table 44). Indicators different from the expected should be marked (crossed off) as challenges, so that they are easy to see.

Table 44: Summary table for indicators by facility at the end of 2.quarter 2012, with challenges crossed off.

Facility	1	*	**	2	***	3	4	5	6	8	9	10	11	13	14	15	16	17	18
A						X													
B		X				X													
C						X													
D	X					X													
E	X	X				X													
F																			
G	X										x								
H	X		X			X													
I																			
J		X																	

K						X													
L																			
M			x																
N																			
Hospital		X	x						X	X	x	X							
Total	x	ok	ok	x	ok	x	x	ok	X	x	x	x	x	x	ok	x	x		x

- Sputum not sent ** result not received *** Coverage of HIV test in presumptive TB cases

Comments to the table:

The indicator may be strength for the district as a whole but there may be individual clinics with values different from the expected. Overall most of the indicators are challenges in this district, but some are strengths. A few clinics have more crosses than others, including the hospital.

Based on the main findings in the sections above, the district TB team fills in the following table 45, with strengths, weaknesses/challenges and for each of the challenges agrees on action points.

Table 45: Summary of strengths, weaknesses and action points for the district

Strengths	Weaknesses
• High percentage of presumptive TB cases identified has sputum samples sent and results received. • High coverage of HIV testing in presumptive TB cases • Almost all new pulmonary cases over 5 years had bacteriological result. • Low loss to follow up rate in TB patients. • Increasing percentage of presumptive TB cases reported in clinics outside the hospital	• Two facilities did not submit quarterly report for 2.quarter 2013. • Facility reports are incomplete on presumptive TB when compared with quarterly district summary reports. • Low quality of HIV data. • Low rate of presumptive TB cases • Low and falling positivity rate among presumptive cases. • Low TB case finding and new PTB+ cases. • Coverage of HIV testing in TB cases, CPT and ART low in hospital (but high in total). • DOT coverage not reported in patients from hospital (but high in total) • Success rate low (70%). • High death and failure rate among TB patients • Not all TB cases had treatment outcome • Not all previously treated patients had Xpert MTB RIF test done.

Action points to address weaknesses that were identified		
Action point	Responsible person	Time line
1. Increase HCWs' clinical suspicion of TB and reinforce use of TB screening tool. **2.** Compare number of presumptive TB patients with number of patients in OPD register: adult patients in total, how many		

had diagnosis "long term cough"/respiratory symptoms Compare also with TB laboratory register; how many presumptive TB cases were not investigated? **3.** Investigate whether data from all presumptive TB registers kept in the different hospital departments were compiled into the quarterly facility reports **4.** Review and strengthen quality of TB-HIV data **5.** Increase CPT and ART coverage **6.** Verify data on deaths among TB patients, especially in hospital **7.** Discrepancies in TB case numbers between quarterly reports and lab register and in cases with treatment outcome between case finding report and outcome reports should be investigated to establish the most correct data.	DTLC DTLC	

How to tabulate data in districts with more than one diagnosing center

The example below shows a table for a fictitious district (as if Umzingwane had three and not one diagnosing center) with three diagnosing centers: diagnosing center I with facilities A, B, C and D in its catchment area, diagnosing center II with facilities F, G, H and I in its catchment area and the district hospital with facilities J, K, L, M and N in its catchment area.

The analysis should then first compare the diagnosing centers and then the facilities within the catchment area of each diagnosing center. As an example see the following table:

Table 46: Presumptive TB cases 2012 by clinic: Number identified, sputum sent, result received, with positive result

Facility	Number identified	RATE: Presumptive TB case microscopy screening/100,000 population	Number with sputum sent to laboratory	Number with smear, Xpert or culture result	Number with positive smear, Xpert or culture result
A	48	1,529	47	42	0
B	73	3,092	63	59	3
C	84	1,526	65	59	3
D	47	777	46	43	1
Total Diagnosing center I	**252**	**1,478**	**221**	**203**	**7**
E	59	672	53	53	5
F	52	1,914	48	48	6
G	44	812	44	43	5
H	52	670	47	37	5
I	83	3,734	82	81	9
Total Diagnosing	**290**	**1,078**	**274**	**262**	**30**

center II					
J	77	2,679	68	64	4
K	83	1,280	81	71	4
L	76	2,420	68	66	3
M	115	2,548	112	102	7
N	59	1,844	56	55	2
Facilities J-N	410	2,029	385	358	20
District hospital as facility	183	Not applicable	162	134	25
Total district hospital catchment area	**593**	**2,934**	**547**	**492**	**45**
Total	**1,135**	**1,769**	**1,042**	**957**	**82**

Comment: The rate varies greatly between diagnosing centers and facilities. Diagnosing center II has half the rate of diagnosing center III (not counting patients from the district hospital), while diagnosing center I is in between.

In diagnosing center II catchment area one clinic (I) has very high rate, and in diagnosing center I area one clinic (B), but other facilities have low rates.

Data suggest that the district team should investigate why there are so few presumptive TB cases in diagnosing center II area, and to lesser extent also diagnosing center I. A map of the district could be helpful to explain.

PROVINCIAL LEVEL DATA TABULATION & ANALYSIS

The Provincial Health Executive is responsible for TB programme management and coordination. It is accountable to the Provincial Medical Director. It is the responsibility of the PHE to conduct regular supportive supervision visits including on site data verification to the districts.

The PHE ensures that quality data are collected from the districts, analysed and used. PTLC ensures that provincial reports are submitted timely to the NTP. All TB data tabulations and analysis at the provincial level are done as in the districts. Same data tables and charts can be used to assess trends over time and comparing districts. Instead of analysing district by facility, analyse province by district.

PHE may use the excel sheets (chapter 1) to tabulate and analyse their data by district. Quarterly district reports are entered in excel sheets, and rearranged by formulas to facilitate analysis. Tables can be copied from the excel sheet into summary tables listing districts as rows. Figures can be made from the excel sheet. A template has been developed for power point presentations in Provincial performance review meeting.

DATA USE (FACILITY, DISTRICT AND PROVINCIAL LEVEL)

Facility, district and provincial TB teams should prepare quarterly TB data summary tables and identify strengths, weaknesses and action points based on routine data of the previous quarter. This is frequently done in quarterly TB data review meetings and with supervisors' help during supportive supervision visits.

This approach that maximises TB data use for decision making allows facility, district and provincial TB teams to monitor quality of TB care and performance of TB control services. It also reveals weaknesses that the teams may have been unaware of. Quantification of a weakness, such as a high percentage of TB patients 5 years of age and

above without diagnostic tests or patients lost to follow up, helps the teams in monitoring progress in solving the issue.

In view of the fact that the various teams analyse and use their own data, it is expected that agreed action points and time lines are realistic and have a good chance of success. Teams also know of issues that are important in programme implementation even though they are not captured by TB indicators. Using the same TB indicators, teams are able to monitor progress and take credit when set targets have been achieved. Certain weaknesses and challenges are easier to solve than others. It is relatively simple to ensure for example, that all health facilities in a district have sufficient supplies of sputum specimen jars and quarterly facility TB reports are received by the agreed date by DTLC. Other challenges that pertain to fundamental issues in TB control may be more difficult to rectify or they may need more time than a quarter or two. Examples of these challenges include low case finding and unsatisfactory treatment success rate. These issues are associated with factors beyond TB control, such as access to health services, TB-related stigma in communities and patients' need to earn a living during TB treatment. There are also health service and provider-related factors, such as weak supply chain management and poorly motivated health workers that could hinder TB control. On the other hand, facility, district and provincial teams working to strengthen TB patient and programme management may over time attain positive impact on general health services.

The text box below summarises practical examples from Zimbabwe to illustrate benefits of TB data collection, analysis and use.

Facility level

In our example facility the main challenge was the low number of registered presumptive TB cases and patients with TB disease per 100,000 population, when data were compared with the district average. The data from the Presumptive TB case register showed that almost all identified presumptive TB cases had sputum collected, sent to the laboratory and with result coming back. Action points were therefore focused on activities to increase the identification of presumptive TB cases.

For patients coming to the facility: are all screened properly for TB, with a screening tool in the OPD, OI clinic, etc? How can this screening be monitored - using the OPD register? Who is asking the presumptive TB patient to produce sputum, who is explaining and helping to produce a good sample? Are sputum mugs available? The other approach is to get more presumptive TB cases come to the facility or to identify them during outreach activities.

Figure 8: Text box : Example of use of TB data at facility level

Weakness	Action points decided by facility team
Low number of presumptive TB clients in spite of high percentage of identified patients who had sputum samples collected and received results	• In-service training by Nurse-in-Charge on importance of TB screening in OPD, ANC, OI clinics • All nurses to intensify household contact screening of infectious TB and child TB patients • Discussion how to fill in presumptive TB register during next supportive supervision team • EHT to present on community TB awareness in next clinic health committee meeting and request village health workers and community DOT supporters to advocate clinic's free of charge TB screening services • EHT to suggest World TB Day commemoration event to take place in clinic catchment area in 2014 in next district TB review meeting

District level

In the example district DTLC with DHE held biannual performance review meetings with facilities tabulating and analysing data by facility as recommended in these guidelines. Some of the challenges are included in the Text Box below.

Figure 9 Text box: Example of use of TB data at district level

Weakness	Action points decided by district team
Only 2 out of 15 health facilities sent their quarterly report for last quarter	• DTLC to phone all facilities that did not submit to find reasons and discuss way forward • DTLC to ask DMO to include report submission as point of agenda for next district health team meeting • In-service training on how to fill in form during next round of supportive supervision visits
60% of patients with diagnostic specimens in TB laboratory register could be found in presumptive TB registers in health facilities	• DTLC to check for errors caused by laboratory SOPs (one specimen per row)
None of four retreatment TB patients were investigated for rifampicin-resistance in last quarter – district hospital laboratory does not have Xpert machine	• DMO to discuss with PEDCO how samples from district can be sent to provincial hospital laboratory for Xpert testing
Seven smear-positive patients found in TB laboratory register of diagnosing centre A were not started on TB treatment	• DTLC and TB focal nurse to follow up patients so that they can be started on treatment • DMO and DTLC to meet with centre A team to discuss why TB focal nurse is not starting patients on TB treatment
Percentage of loss to follow up patients increased from 3% in 2012 to 15% in last quarter	• DHE to review TB data summary table to see which facilities have reported an increase in LTFU • DTLC to follow up above mentioned facilities and assess absolute numbers • DTLC and TB Focal Nurse to make presentation on importance of DOT and how to bring patients who interrupt their TB treatment back to treatment
Percentage of HIV-positive patients on ART remained at 68% in last quarter in spite of district target of 75% -	• DMO to contact PMD to discuss way forward because DHE wishes to acquire ART accreditation

district has only 3 ART initiating sites (out of 15 facilities)	for 3 new sites • DMO to invite PTLC and Provincial STI/HIV/AIDS Coordinator to expedite accreditation
Very few previously treated patients had Xpert done, because no Xpert machine was available in the district and there was no system to refer samples to another district where Xpert was available.	• DMO to raise with the provincial level.

Provincial level

PHE identified from analysis of their TB data three challenges included in the Text Box below.

Figure 10: Text box: Example of use of TB data at provincial level

Weakness	**Action points decided by provincial team**
Low success rate mainly because of deaths: Treatment success new smear positive cases: 76%, with 18% deaths and 3% lost to follow-up	
Low ART coverage: ART coverage was 75% for the province: one district 60%, 4 districts in the 70s%.	
Case finding high for the province but low in some of the districts	

CHAPTER 5: SUPPORTIVE SUPERVISION

Summary

Supportive supervision is a key activity to follow-up training and monitor and provide feedback about implementation of the TB program. It should be "data-driven", with the supervision team updating summary tables of the area to be supervised before the visit, analysing and identifying challenges, so that the visit can be targeted to the challenges. The supervisors use a check list with summary tables as described in the guide, one for visit from province to district and diagnosing center, another for district visiting facility (found in annex). The supervision should end with discussing with the local team the table with strengths and weaknesses, agreeing on action points.

What is supportive supervision and why it is carried out?

Supportive supervision is a **data-driven** process of discussing, guiding, helping, training of health workers toensure and improve their competence, effectiveness and efficiency. Supervisors provide on-the-job training and training follow-up and help in guiding health personnel so that they achieve optimal results in TB control. Supportive supervision is **not** fault finding or a way of 'fixing somebody'.

Who does supportive supervision in TB control?

Supportive supervision is ideally conducted by a team rather than an individual. All levels of health services participate. National NTP officers supervise provincial, city and district TB teams, provincial TB teams supervise district and health facility TB teams and district TB teams supervise health facility TB services.

Provincial supportive supervision team usually comprises of Provincial Medical Director (PMD), PEDCO, Provincial Nursing Officer (PNO), Provincial Environmental Health Officer (PEHO), Pharmacist, Laboratory Scientist, Provincial TB and Leprosy Coordinator (PTLC) and Provincial STI/HIV/AIDS Coordinator and TB focal nurse.

District supportive supervision team usually comprises of District Medical Officer (DMO), District Nursing Officer (DNO), District Environmental Health Officer (DEHO), Pharmacist, Laboratory Scientist, District TB and Leprosy Coordinator (DTLC) and TB Focal Nurse.

Supportive supervision team members should have both technical competence and communication skills to carry out visits. Ideally, they should also have been trained in supportive supervision. The more vividly one can remember how it felt to be supervised, the better supervisor one is.

When is supportive supervision conducted in TB control?

Supportive supervision is usually carried out once a year by national NTP officers to provinces and cities, twice a year by provincial teams to districts and quarterly by district teams to health facilities. . Ideally, especially the latter supportive supervision should coincide with the period when quarterly health facility TB reports are prepared. Facilities with special challenges in TB control should be visited more frequently than quarterly.

What is meant by data-driven supportive supervision? Use of supportive supervision check list and TB data summary tables

Data-driven supportive supervision is a supervisory activity where review and analysis of TB data of facility, district or province being visited plays the major role. It is expected to encourage and ensure intensive use of TB data to strengthen TB patient care and TB control services. Through discussions and interaction during data-driven supportive supervision, health workers and supervisors make sense of TB data.

The NTP has developed a check list for supportive supervision to districts and facilities (annexes 1 and 3) and it is recommended they are used with summary tables for district and facility (annexes 2 and 4). The last quarter is

entered as the last row in the table which shows above the previous quarters for at least the previous full year. In this way trends can be assessed. Always do supervision with relevant supervisors.

The summary tables for facilities and districts resemble the tables presented in Chapter 4. It is recommended that these tables be used during TB supportive supervision by teams of all levels. The intention of the summary tables is to direct attention of teams and supervisors to routine TB data to detect issues need attention.

Practical hints for supportive supervision visit by district teams to health facilities

Objectives of visit

- to provide technical support on the following
    - completion of TB recording and reporting tools
    - tabulation of data from recording tools
    - analysis of tabulated data
    - discussion how to use these data to make decisions
    - identification of strengths, weaknesses and action points that should be based on mutual discussion between those supervised and supervisors
    - clinical patient management (also called clinical mentoring)
- to follow up recommendations from previous visits and review meetings.
- to check availability of TB medicines, stationery and other consumables.
- to check availability of laboratory consumables and stationery.

Some supportive supervision visits may include a component of data verification, as explained in Chapter 1X.

Planning for supportive supervision visit to health facility

1. Conduct a planning meeting with the team that will participate in support and supervision visit. The team should:
    - Retrieve a file containing previous supportive supervision reports and review recommendations of previous visit
    - Tabulate TB data from quarterly health facility TB report into summary tables (annex 2 and 4) and
    - Analyse summary tables to identify main challenges and note findings in checklist so that these points can be discussed with facility staff during supportive supervision. The **same** summary table should be used in each subsequent quarterly visit so that the table is updated by adding a new row each quarter. Progress in TB control services is assessed by the indicators described in Table 4.
2. Notify health facility well in advance about planned date of visit
3. Print adequate number of support and supervision checklists and summary tables
4. Prepare replenishment stocks of recording and reporting and other items that may have been requested by facility

Steps to follow when conducting supportive supervision visit to health facility

1. Team members should introduce themselves to head of the facility before engaging in any supportive supervision activity. The objectives of the visit should be explained t to him/her and members of facility team who are going be met during the visit.
2. Fill in checklist as follows:
    i. Discuss recommendations from the previous visit and enter implementation status (to be revisited in exit meeting)
    ii. Fill in data on human resources
    iii. Fill in questions about quarterly meetings for data analysis.
3. In RHCs, the team reviews presumptive TB register and TB facility register and verify the data with the submitted reports. Stock levels of TB medicines are assessed. In district hospitals, the team verifies in the submitted reports from presumptive TB register, TB facility register, TB laboratory register and stock

cards and discusses data when visiting the respective departments (OPD, OI Clinic, laboratory, TB Office, pharmacy etc).

4. There should be an exit meeting with health facility staff to discuss key findings of the visit, agree on strengths, weaknesses, revisit the implementation of the recommendations of the previous visit and agree on action points, responsible persons and timelines.
5. The summary tables with strengths, weaknesses and action points should be filled in duplicate: leave one copy to the site that has been visited and keep the other copy for your records.

Practical hints for supportive supervision visit by provincial team to district

The PHE is responsible for regular supportive supervision, including on site data verification in the districts. The PHE ensures that quality data are collected from the districts, analysed and used for decision making to improve TB control.

Following the steps described above for supportive supervision by district team to facility, PHE should use the supervision check-list and summary tables and analyse TB data from quarterly district reports before the planned visit so that time during visit can be devoted to most important issues in a district.

During the visit, supportive supervision team follows again same steps as described above. It is recommended to meet DTLC on arrival so that s/he can then escort visiting team to be introduced to DMO and DHE members. Data on summary tables should be updated, data verified from relevant registers and compared with submitted reports. Discussion of TB data and performance as measured by various indicators values is essential.

If the district has more than one diagnosing centre, routine data are first analysed for entire district, followed by analysis by diagnosing centre and lastly, by facility, if necessary.

Supportive supervision visit should include a visit to the district hospital, including district laboratory and pharmacy, any additional diagnosing centre and a selection of other facilities.

CHAPTER 6: PERFORMANCE REVIEW MEETINGS

Summary:

A TB performance review meeting assesses the performance of the strategies and interventions implemented to fight TB at various levels of the health care system. It should be "data-driven", with the team updating summary tables of the area to be supervised before the visit, analysing and identifying the strengths and weaknesses of interventions that have been put in place. An appropriate review must, then, describe specific recommendations on the interventions that need to be implemented to overcome the gaps identified. Moreover, the performance review meetings provide an important opportunity to advocate for TB prevention, care and control among policy makers, to strengthen the engagement of other health authorities and key stakeholders, and to enhance the mobilization of resources. These meetings also provide a good platform for feedback, on support supervision, as well as updating various levels on new policies and procedures.

What are performance review meetings and why are they carried out?

Performance review meetings like support supervision are a **data-driven** process of discussing, guiding, helping, training of health workers to ensure and improve their competence, effectiveness and efficiency. The difference is that in performance review meetings many health workers from various levels of health care and key stakeholders come together at a central venue for the meeting,

Who attends TB control performance review meetings?

Performance review meetings are ideally attended by health care workers, stakeholders and in some instances patients groups. All levels of health services participate i.e. National, province and district at their respective levels.

The National performance review meetings are usually attended by the following:

- Directors and technical officers in Ministry of Health and Child Care national level including NTP
- Members of the Provincial Health Executive from all provinces and cities
- Managers from Central and Infectious Disease Hospitals, army, police and prisons health services
- Private health services providers
- Funding ad implementing partners and donors
- Other stakeholders as the NTP manager may deem fit

The provincial performance review meetings are usually attended by the following:

- Provincial Medical Director (PMD),
- Members of the Provincial Health Executive
- Members of the National TB Control programme from the central level
- Members of the District Health Executive from all districts from the province
- Managers from Central and Infectious Disease Hospitals, army, police and prisons health services
- Private health services providers
- Funding ad implementing partners and donors
- Other government leaders and stakeholders as the Provincial Medical Director may deem fit

The district performance review meetings are usually attended by the following:

- Members of the District Health Executive
- Health worker representatives from all health facilities in the district
- Members of the Provincial Health Executive
- Members of the National TB Control programme from the central level if there are particular issues in the district

- Managers from army, police, prisons and private health services
- Funding ad implementing partners and donors
- Other government leaders and stakeholders as the District Medical Officer may deem fit

When are performance review meetings conducted in TB control?

Ideal performance review meetings ought to be done quarterly at all levels. However, because of the associated huge cost implications, these performance review meetings are usually carried out twice a at all levels.

What happens during performance review meetings? Use of standardised presentation templates in line with TB data summary tables

A performance review meeting is an activity where collective review and analysis of TB data of facility, district or province of focus being plays the major role. Like support and supervision, it is expected to encourage and ensure intensive use of TB data to strengthen TB patient care and TB control services. Through discussions and interaction during meeting, health workers and are able to assess performance of their programme and collectively identified identify barriers to smooth programme implementation to inform their recommendations for action.

It is recommended that tables used in Chapter 3 are used during the TB performance review meetings at all levels.

Other Practical hints Practical hints for performance review meetings

Planning for the meeting

- Ensure the date you choose causes minimum disruption for all concerned
- Try to schedule a year's worth of meetings if possible, then you can circulate and publish the dates, which helps greatly to ensure people keep to them and that no other priorities encroach.
- Conversely, leaving it late to agree dates for meetings will almost certainly inconvenience people, which is a major source of upset.
- Generally try to consult to get agreement of best meeting dates for everyone, but ultimately you will often need to be firm. Use the 'inertia method', i.e., suggest a date and invite alternative suggestions, rather than initially asking for suggestions, which rarely achieves a quick agreement.

Review of previous meeting resolutions

- Ensure the date you choose causes minimum disruption for all concerned
- Try to schedule a year's worth of meetings if possible, then you can circulate and publish the dates, which helps greatly to ensure people keep to them and that no other priorities encroach.
- Conversely, leaving it late to agree dates for meetings will almost certainly inconvenience people, which is a major source of upset.
- Generally try to consult to get agreement of best meeting dates for everyone, but ultimately you will often need to be firm. Use the 'inertia method', i.e., suggest a date and invite alternative suggestions, rather than initially asking for suggestions, which rarely achieves a quick agreement.

Conducting the meeting

- The workshop is a **working** meeting.
- Each representative should present his or her reports to the topics that where distributed earlier.
- Set a time limit for each person
- The key to success is keeping control. You do this by sticking to the agenda, managing the relationships and personalities, and concentrating on outcomes.
- The meeting atmosphere must encourage full participation from all attendees. Politely suppress the over-zealous, and encourage the nervous.

- If you don't know the answer says so - be honest - don't waffle - say that you'll get back to everyone with the answer, or append it to the meeting notes.
- Always look at how people are behaving in meetings - look for signs of tiredness, exasperation, and confusion, and take necessary action.

Agreeing on issues

- The final crucial element is following up the agreed actions (your own included). If you run a great meeting, issue great notes, and then fail to ensure the actions are completed, all is lost, not least your credibility. You must follow up agreed actions and hold people to them. If you don't they will very soon learn that they can ignore these agreements every time - negative conditioning - it's the death of managing teams and results.
- After the meeting, type the notes (it's usually quicker for you to do it), and circulate them straight away, copy to all attendees, including date of next meeting if applicable, and copy to anyone else who should see the notes

ANNEXES

Annex 1:Check list for NTP supportive supervision for province to districts and diagnosing centres

Name of Province:_____ Name of Health district:_____

Name of Health Facility:_____Population_____Date of visit:_____

Step 1:

Recommendations of the previous support visit, date:_____

Recommendation	Implementation status	Reasons for not implementing

Step 2:

Meet with DTLC for tabulation and analysis of data

- The team will find a quiet place to work with the DTLC on data.
- Clarify number of diagnosing centers, if there is one district TB register in each diagnosing center, and if there is a "master" register with all patients in the district.
- How are reports and data kept?
- Data on summary tables should be updated, data verified from relevant registers and compared with submitted reports.
- Fill in the form below with comparison of data: (last quarter)

Source document/indicator	**Reported in Quarterly district report**	**Observed in district TB register**
Presumptive TB register: total cases		
Presumptive TB register: bacteriologically confirmed		
TB register: cases total		
TB register: new bacteriologically confirmed		
TB register: number with HIV test result		
TB register: number with positive HIV test result		

Treatment outcomes for patients registered 12-15 months earlier (previous year)

Source document/indicator	**Reported in Quarterly district report**	**Observed in district TB register**
TB register: total cases		
TB register: number of patients with documented outcomes		
TB register: number successfully completed treatment (cured and treatment completion)		
TB register: number not evaluated		
TB register: number of deaths		
TB register: number lost to follow-up		
TB register: number with HIV test result		
TB register: number with positive HIV test result		
TB register: number on ART		

Comments

- Analyse the summary tables, first for the district as a whole, then by facility. If the district has more than one diagnosing centre, routine data are first analysed for entire district, followed by analysis by diagnosing centre and lastly, by facility.
- Fill in preliminary the table at the end of the summary tables with strengths and weaknesses, according to assessment of indicators. Later during site visits, other challenges will be observed and added.
- This analysis may identify topics and facilities with challenges that should be addressed during the visit, and should ensure that the visit is focused on the most important challenges.

Step 3:

Interview with district staff on Programme management

- Map of catchment area (photo)
- Health facilities
- Transportation routes
- Access to health services

Staff situation, training

Fill in the form below.

Health Workers trained in TB Control Programme

Designation	Authorized Establishment	Number in post	**No of Health workers trained in the following**									
			TB case Management	TB Monitoring &Evaluation	TB Infection control	TB/HIV Collaboration	MDR – TB	Private-Public Mix	Community TB CARE/ACSM	Lab External Quality Assurance	Microscopy	Other
Doctors												
Nurses												
Laboratory Staff												
Microscopists												
Environmental Health staff												
Radiographers/ X ray operators												
Pharmacy												
Others												

Other Specify:

What are other trainings gaps do think are still remaining which need to be addressed?

Partners

Partner	**Area supported**	**Coverage**

National TB Control Program Guidelines (check with district health executive members)

Item	Availability (Yes/No	Comments (verify availability)
National TB Guidelines 4th Edition		
DR-TB Guidelines		
TB/HIV Guidelines		
NTP strategic plan		
NTP M&E Plan		
Community TB CARE Guidelines		
Supportive supervision checklist		
EDLIZ		

Programme Implementation strategies

Activity	**Yes**	**No**	**Comments**
Availability of sputum collection transport system			
Do you conduct TB data analysis meetings (Who are involved?			
Do you utilize the data for planning and decision making (Give an example?)			
Do you conduct district performance review meetings?			
Existence of the TB/HIV/DR-TB coordinating committee			
Is there a record of the last TB/HIV/DR-TB committee minutes			
Do you conduct supportive supervision visits to health facilities (When was the last visit?)			
Do you receive supportive supervision from the province? – PHE (When was the last visit?)			

Records of meetings, support and supervision visits and plans

Item	**Availability (Yes/No**	**Are they filed? (Yes/No)**	**Comment**
Minutes of data analysis meetings			
Minutes for TB/HIV collaborative meetings			
Support and supervision reports *Province to districts* *District to health facility*			
Review meeting reports			
TB quarterly and annual plans			
Infection Control plans			

- Organization of case finding and treatment
- Patient flows
- Diagnosing centers

Tuberculosis Diagnosing Centres

Name of diagnosing	Type of TB Diagnostic Service Available

Centre in the district	Microscopy	Gene-xpert Services	Functional X Ray	Other

Step 4:

Visit district laboratory with district lab specialist (usually part of visit to district hospital) (use check list for laboratory)

- Network of microscopy labs
- Xpert diagnosis
- Supervision activities to diagnosing centers and facilities, challenges

Step 5:

Visit district medical store with district pharmacist (usually part of visit to district hospital)

- TB drug order, storage and distribution system in the district
- Fill in tables from guide district level
- Were there stock outs of any 1st and 2nd line TB drugs during the last quarter?
- Were there any stock outs of ARVs?
- Were there any stock outs of Cotrimoxazole?

Step 6:

Visit to the district hospital, including district laboratory and pharmacy, any additional diagnosing centre and a selection of other facilities.

- In district hospital, fill in both "check list for district and diagnosing center" (for hospital as district hospital) and "check list for facility" (for hospital as facility).

Step 7:

Final feedback meeting with district team at the end of the visit

- Present summary table with strengths and weaknesses, with input from observations made during site visits.
- Based on the challenges, discuss and agree with the team on action points.
- Summary of Strengths, Weakness and Recommendations

Summarise all key finds from above and discuss action points with the team.

Strengths	**Weaknesses**

Action points to address weaknesses / challenges that were identified		
Action point	Responsible person	Time line

ANNEX 2: Summary tables for a district based on the District Quarterly TB report on case finding and treatment

District name: _____ District population: _____

The tables are selected from chapter 3B in the guide.

For all the indicators data from the last full year should be used. When deciding to classify an indicator as strength or weakness now, the rate/percentage from last year provides the baseline, but the numbers from the last quarter (and earlier quarter this year) tells if the situation is the same as last year or has changed.

CASE FINDING ACTIVITIES

IA. Presumptive TB cases from lab register (from Quarterly district reports based on lab register)

Indicator #1: Presumptive TB cases per 100,000 population:

Indicator #2: Positivity rate among presumptive TB cases with laboratory results: _____.

Period	Presumptive TB case examined by microscopy / Xpert or culture (bacteriologically confirmed)	Number of Presumptive TB cases with positive smear, Xpert or culture result	Positivity rate (% positive)
1q 2014			
2q 2014			
3q 2014			
4q 2014			
All 2014			
1q 2015			
2q 2015			

Comments: _____
_____

IB. TB cases (from Quarterly Summary reports)

Indicator #3: Notification rate per 100 000 all TB:_____
Indicator #4: Notification rate per 100 000 new bacteriologically positive TB:_____
Indicator #5: Proportion of new pulmonary TB case without sputum lab result in patients 5 years and above:_____

	Pulmonary bacteriologically confirmed		Pulmonary Clinically diagnosed		Extra pulmonary bacteriologically confirmed or clinically diagnosed		Total	PTB cases 5 years and older	PTB cases 5 years and older without smear results
	New	All previously treated	New	All previously treated	New	All previously treated			
1q 2014									
2q 2014									
3q 2014									
4q 2014									
All 2014									
1q 2015									
2q 2015									

Comments:

_____

_____

II TB/HIV (Data from the Quarterly summary district reports on case finding)

Indicator #6: Proportion of TB patients with known HIV result:_____
Indicator #7: Proportion of TB cases with an HIV result who are HIV positive:_____
Indicator #8: Proportion of HIV positive TB cases on CPT:_____
Indicator #9: Proportion of HIV positive TB cases on ART:_____

	All TB cases	HIV result	% with HIV result	HIV positive	% HIV positive of those with HIV result	CPT	% on CPT	ART	% on ART
1q 2014									
2q 2014									
3q 2014									
4q 2014									
All 2014									
1q 2015									
2q 2015									

Comments:

_____

_____

III. Treatment outcome (from the quarterly district TB reports): All TB cases

Indicator #11 & 12: Proportion of all TB cases successfully treated: _____

Indicator #13: Proportion of all TB cases failed treatment: _____

Indicator #14: Proportion of all TB cases lost to follow-up:_____

Indicator #15: Proportion of all TB cases died: _____

Indicator #16: Proportion of all TB cases not evaluated (include transfer out and those whose treatment outcome is unknown): _____

III A. TB cases:

YEAR	ABSOLUTE NUMBERS						RATES IN PERCENTAGE				
	No. Registered	Treatment completed	Died	Lost to follow up	Failed treatment	Not evaluated	Treatment completed	Died	Lost to follow up	Failed treatment	Not evaluated
1q 2013											
2q 2013											
3q 2013											
4q 2013											
All 2013											
1q 2014											
2q 2014											

Additional tables by facility

Data are taken from quarterly facility reports.

Table numbers below refer to the tables in the Guide

Presumptive TB cases last quarter by facility: Number identified, sputum sent, result received, positivity rate, HIV testing and HIV results

Facility	Total identified	Number with sputum sent to laboratory		Number with smear, Xpert or culture result		Number with positive smear, Xpert or culture result		Number with HIV test results		Number with HIV- positive result	
		Number	%	Number	%	Number	%	Number	%	Number	%
Total											

_____

_____

_____

Presumptive TB cases by facility and quarter 2015: Number identified

Facility	2015	
	Quarter 1	Quarter 2
Total		

_____

_____

____

Number of TB cases by category and health facility last quarter

Facility	**Pulmonary bacteriologically confirmed**		**Pulmonary clinically diagnosed**		**Extra-pulmonary: bacteriologically confirmed or clinically diagnosed**		**Total**
	New	All previously treated	New	All previously treated	New	All previously treated	
Total							

_____

_____

_____

Number of all TB cases with HIV test result, positive HIV result and use of CPT and ART in last quarter

Facility	Total TB cases registered	TB patients with HIV test results	TB patients with HIV + results	TB patients with HIV + results on CPT	TB patients with HIV + results on ART
Total					

_____

_____

Type of DOT provided to all TB cases by clinic in last quarter

Facility	Total cases registered	Observed by health workers	Observed by trained community members or trained family members	Not observed/ "untrained community member"
Total				

Treatment outcomes for all TB cases by facility registered in last quarterly report

Facility	No Registered	Completed treatment (cured + treatment completed)	Died	Lost to follow-uped	Failed treatment	Not evaluated
Total						

_____

_____

_____

Annex 3: Check list for NTP Supervisory visits to health facilities

Name of Province:_____Name of Health district:_____

Name of Health Facility:_____Population: _____Date of visit:_____

Planning for support supervision visit to health facility

Step 1:

Recommendations of the previous support visit (DATE :_____

Recommendation	Implementation status	Reasons for not implementing

Step 2:

Meet with focal TB nurse for tabulation and analysis of data

- The team will find a quiet place to work with the focal nurse on data.
- How are reports and data kept?
- Data on summary tables should be updated, data verified from relevant registers and compared with submitted reports.
- Fill in the form below with comparison of data: (last quarter)

Main issues for analysis	List the names of TB sputum smear positive cases in the Presumptive TB registers in a separate sheet (Fill the number in the box below)	Track the same names in the TB register register(Fill the number in the box below)	Quantify the variances and comment
Are all TB sputum smear positive cases registered in the presumptive TB register?			

Comparing TB data (last quarter): **Fill in only where quarterly facility reports are available**.

Source document/indicator	Reported in Quarterly facility report	Observed in register
Presumptive TB register: total cases		
Presumptive TB register: bacteriologically confirmed		
TB register: cases total		
TB register: new bacteriologically confirmed		
TB register: number with HIV test result		
TB register: number with positive HIV test result		

Fill in where quarterly facility reports are available

Source document/indicator	Reported in Q facility report	Observed in register
TB register: total cases		
TB register: number of patients with documented outcomes		
TB register: number successfully completed treatment (cured and treatment completion)		
TB register: number not evaluated		
TB register: number of deaths		
TB register: number lost to follow-up		
TB register: number with HIV test result		
TB register: number with positive HIV test result		
TB register: number on ART		

Comments:

- Analyse the summary tables. Fill in preliminary the table at the end of the summary tables with strengths and weaknesses, according to assessment of indicators. During visits to different sections, other challenges will be observed and added.
- This analysis may identify topics and facilities with challenges that should be addressed during the visit, and should ensure that the visit is focused on the most important challenges.

TB logistics

Availability of recording and reporting tools

Monitoring and Evaluation Reporting tools

Item	Availability (Yes/No	Are the completed forms filed? (Yes/No)	Comment
Laboratory sputum request form			
TB wall charts			
DOT forms			
Health facility report forms			
Notification forms			
TB treatment cards			
Contact tracing forms			
Treatment outcome request form			
Notice of transfer form			
TB screening tool			

Step 3:

Interview with focal nurse on Programme management

- Map of catchment area (photo)
- Health facilities/community workers
- Transportation routes
- Access to health services

Staff situation, training

Programme Implementation strategies

Activity	Yes	No	Comments
Do you conduct quarterly TB data analysis meetings (Who are involved? Report of the meeting/Updated summary table?			
Do you utilize the data for planning and decision making (Give an example?)			
Existence of the TB/HIV/DR-TB coordinating committee			
Is there a record of the last TB/HIV/DR-TB committee minutes – date?			
Do you conduct support and supervision to community health workers and other health care givers (When was the last visit?)			
Do you receive supportive supervision from the district? – DHE (When was the last visit?)			
Do you have the copy of the supportive visit report from the district? From district to facility			
Availability of sputum transport system			

Type of diagnostic services available at this health facility

Type of TB Diagnostic Services available	Tick if available	Comments (is it functioning?
Functional Microscope		
Functional Gene Xpert Machine		
Functional X Ray Machine		

Health Workers trained in TB Control Programme

Designation	Authorized Establishment	Number in post	No of Health workers trained in the following									
			TB case Management	TB Monitoring &Evaluation	TB Infection control	TB/HIV Collaboration	MDR – TB	Private-Public Mix	Community TB CARE/ACSM	Lab External Quality Assurance	Microscopy	Other
Doctors												
Nurses												
Laboratory Staff												
Microscopists												
Environmental Health staff												
Radiographers/X ray operators												
Other health workers												

Other Specify:

What are other trainings gaps do think are still remaining which need to be addressed?

National TB Control Program Guidelines

Item	Availability (Yes/No	Comments (Ask to see)
National TB Guidelines 4th Edition		
MDR TB Guidelines		
TB/HIV Guidelines		
Community TB CARE Guidelines		
Supportive supervision checklist		
EDLIZ		
Quarterly/Annually TB/HIV plans		

Step 4:

Visit OPD:

- Workload (number of consultations per day (T5, monthly summary of patients),
- Check OPD register (T12) number of patients with symptoms of TB (%) during last full month, check if found in Presumptive TB register.
- Review the Presumptive TB register,

Who is responsible for instructing the patients to produce a sputum specimen? (Assess adequacy of explanation) _____

_____

_____

Where do patients go to produce a sputum specimen?_____

How are TB suspects requested to submit a sputum specimen?

"spot & early morning" or _____

" 2 early morning" _____

"Front loading"_____

Step 5:

Visit OI CLINIC

- Review Presumptive TB register,
- TB screening tools,

At what point are TB suspects/patients offered PITC?

_____

_____

When are TB patients started on Cotrimoxazole Preventive Therapy?

_____

_____

When are TB patients started on ART?

Step 6:

Visit TB room

Routines for DOT

Waiting area, system

Treatment outcome

See summary tables, Indicators 11, 12, 13, 14, 15, 16 Any weaknesses? – clarify, observe and discuss what to do

See also data below on DOT.

Step 7:

Visit laboratory (if any)

Supplies for diagnostic services

Item		**Availability (Yes/No**	**Quantity**	**Expiry date**	**Comments (stock out in past 3 months)**
Availability of TB diagnostic reagents &commodities	Microscopes				
	Availability of sputum mugs				
	Smear Microscopy reagents				
	Smear Microscopy slides				
	Gene Xpert reagents				
Availability of X-ray films					

Step 8:

Visit pharmacy

Indicators	Response (Yes/No	Comment
Availability of up to date stock cards		
Were there stock outs of any 1st line TB drugs during the last quarter		
Availability of 2nd line TB drugs		

Summary of drug stock status

Drug	Quantity (tablets)	Months of stock	Expiry date	Comment
RHZE				

RH Adult					
S					
RHE					
RHZ Paeds					
RH paeds					

Comments:

_____

_____

Drug management

Indicator #17: Months of stock for each drug

Drug needs according to reported cases during the previous quarter

	Adult Category 1 (2RHZE/4RH)			Category 2 (retreatment)			Cat 1Pediatric regimen (2RHZE/4RH)+INH/Ethambutol			Total Quarterly need	Monthly need	Stock levels L	Months of stock M = L/K	Expiry dates
	Number of patient	Factor	Total Need	Number of patients	Factor	Total Need	Number of patients	Factor	Total Need					
	A	B	C=AxB	D	E	F=DxE	G	H	I=GxH	J=C+F+I	K=J/3			
RHZE		168			252									
RH adult		336												
S					56									
RHE					420									
RHZ paediatric					168			112						
RH paediatric					280			224						
INH 100mg								84						
Ethambutol 100mg								112						

Step 9:

Discuss with focal nurse on Infection control

- Describe briefly the TB infection control activities implemented at this facility.

- Do you have a written infection control plan (which include TB infection control)?(Yes/No)
- Do you have an infection control focal person?(Yes/No)
- If Yes, was the focal person trained on Infection control?(Yes/No)
- Are health workers screened for TB? (Yes/No) How often?
- Assess waiting areas, patient flow, lab,
- Are HCW practicing triage? (indicate for which clients)
- Availability of PPE (e.g. N95)

Step 10:

Final meeting with facility team at the end of the visit

Visiting team and facility staff again review recommendations from last visit, analyze summary tables, summarize the current findings and agree on main strengths, weaknesses and proposed action points. A copy of the summary table and summarized report of strengths, weaknesses and proposed actions should be left at the facility after the feedback meeting.

Table: Summary of Strengths, Weakness and Recommendations

Strengths	**Weaknesses**	
Action points to address weaknesses / challenges that were identified (who does what and by when)		
Action point	Responsible officer	Time line

Annex 4: Health Facility summary tables

Name of facility: _____ Catchment Population: (year)_____

Data are taken from Quarterly facility TB reports.

For all the indicators data from the last full year should be used. When deciding to classify an indicator as strength or weakness now, the rate/percentage from last year provides the baseline, but the numbers from the last quarter (and earlier quarter this year) tells if the situation is the same as last year or has changed.

TB Presumptive TB cases

Indicator #1: Presumptive TB cases per 100,000:_____ (write absolute number divided by population)

Indicator #2: Positivity rate among presumptive TB cases with laboratory results:_____ (write absolute numbers as well as %)

Period	Number identified	Number with sputum sent to the laboratory	Number with microscopy result	Number with a positive smear result	Number with HIV test results	Number with HIV positive result
1st QTR 2014						
2ND QTR 2014						
3RD QTR 2014						
4TH QTR 2014						
All 2014						
1ST QTR 2015						
2ND QTR 2015						

Comments: (strength or weakness?)_____

Presumptive DR-TB cases

Indicator #18: Proportion of retreatment cases with result of Rifampicin resistance tests (Xpert, culture and DST):_____

Apart from last year, look at the quarters of the current year, especially last quarter

Period	# of previously treated TB cases registered	# of previously treated TB cases with specimen sent to the lab for Rifampicin Resistance test	# of previously treated TB cases with specimen sent to the lab with results	% of previously treated TB cases with Rifampicin resistance
1st QTR 2014				
2ND QTR 2014				
3RD QTR 2014				
4TH QTR 2014				
All 2014				
1ST QTR 2015				
2ND QTR 2015				

Comments:

_____

_____

_____

TB cases

Indicator #3: Notification rate per 100 000 all TB cases: _____ (write absolute number divided by population)

Indicator #4: Notification rate per 100 000 new bacteriologically confirmed TB cases:_____ (write absolute number divided by population)

Indicator #5: Percentage of new pulmonary TB case without sputum lab results in patients older than 5 years: _____. (write absolute numbers as well as %)

Period	**Pulmonary bacteriologically confirmed**		**Pulmonary clinically diagnosed**		**Extra-pulmonary: bacteriologically confirmed or clinically diagnosed**		**Total**
	New	All previously treated	New	All previously treated	New	All previously treated	
1st QTR 2014							
2ND QTR 2014							
3RD QTR 2014							
4TH QTR 2014							
All 2014							
1ST QTR 2015							
2ND QTR 2015							

Pulmonary TB cases 5 years of age and above: Total and number without DSM result 2013 and 1.quarter 2014 by quarter

Period	**All new pulmonary TB cases ≥ 5 years**	**Pulmonary TB cases ≥ 5 years without bacteriological test result**
1st QTR 2014		
2ND QTR 2014		
3RD QTR 2014		
4TH QTR 2014		
All 2013		
1ST QTR 2015		
2ND QTR 2015		

Comments:

_____

TB/HIV (from Quarterly facility report of case finding)

Indicator #6: Proportion of TB patients with HIV results recorded:_____

Indicator #7: Proportion of TB cases with an HIV result who are HIV positive:_____

Indicator #8: Proportion of HIV positive TB cases on CPT:_____

Indicator #9: Proportion of HIV positive TB cases on ART:_____

Period	# of TB patients registered	No of TB patients with HIV results	No. of TB patients with HIV + results	No of TB patients with HIV + results on CPT	No of TB patients with HIV + results on ART
1st QTR 2014					
2ND QTR 2014					
3RD QTR 2014					
4TH QTR 2014					
All 2014					
1ST QTR 2015					
2ND QTR 2015					

Comments:

_____

_____

_____

DOT

Indicator: Proportion of TB patients observed by health workers:_____

Indicator: Proportion of TB patients observed by trained community observers including trained family members:_____

Indicator #10: Proportion of TB patients observed by either health workers or trained community observers including trained family members:_____ (sum of the two previous indicators)

PERIOD	# of TB patients registered	# On Health Facility Based DOT	# On Community Based DOT/trained family	# non-DOT
1st QTR 2014				
2ND QTR 2014				
3RD QTR 2014				
4TH QTR 2014				
All 2014				
1ST QTR 2015				
2ND QTR 2015				

Comments:

_____

TREATMENT OUTCOMES

Outcome data may also be collected from TB facility register for patients who started treatment 3rd and 4th Quarter 2014, although the routine quarterly report is not due yet.

Indicator #11 & 12: Proportion of all TB cases successfully treated:____

Indicator #13: Proportion of all TB cases failed treatment:____

Indicator #14: Proportion of all TB cases lost to follow-up:____

Indicator #15: Proportion of all TB cases died:____

Indicator #16: Proportion of all TB cases not evaluated (include transfer out and those whose treatment outcome is unknown):____

YEAR	ABSOLUTE NUMBERS						RATES IN PERCENTAGE				
	No. Registered	Treatment completed	Died	Lost to follow up	Failed treatment	Not evaluated	Treatment completed	Died	Lost to follow up	Failed treatment	Not evaluated
1q 2013											
2q 2013											
3q 2013											
4q 2013											
All 2013											
1q 2014											
2q 2014											

Comments