

# TB Regional Project on Strengthening Health Systems for Effective TB and DR-TB Control (TB REP)

*Health Workforce Baseline Assessment Tool:*

*Overview of a methodology to baseline existing staff and determine  
future staff requirements in TB programmes*

## USER'S MANUAL

### Introduction

#### *Key features of the tool*

This Tool is developed based on an adjusted service target approach<sup>1</sup> and seeks to identify time requirements to achieve set targets and goals and the assumption that time employed for each service activity is deliverable. It sets specific process and outcome targets according to national guidelines and adapts targets to health workforce requirements.

The simple spreadsheets allow the user to baseline the staff needed in various categories (medical doctors- specialists, mid-level health professionals (nurses, laboratory technicians, etc.), others eg. non-medical specialists (social workers and psychologists). Calculations are based on the time required to perform tasks involved during a patient presentation to the service delivery unit.

The baseline assessment of existing staff includes an assessment of unused time when staff are not available (as per annual leave, public holidays, capacity development activities etc. and other foreseen absences). It requires data on latest patient cohort (duration of stay in the hospital, lost to follow up, died etc.).

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<sup>1</sup> The reasons to adjust service target approach was due to the specific objectives of the programs which require certain interventions and activities. The data required are not very complex, and the involvement of the actual health service providers in estimating the time requirements makes an approach a participatory.

Once all these data have been ascertained, the assessment will calculate the future staffing requirement- how many staff FTE are required at a service delivery level, according to the planned number of patients and model of care. The approach allows scenarios to be developed in line with user variables.

This Tool allows staff requirements to be baselined in close collaboration with health service providers.

It is designed with TB workforces in mind, but the principals can be applied to baselining the requirement of any workforce requirement<sup>2</sup> and it allows countries to ensure that baseline requirements are understood and HWF supply gaps or overprovision to be understood. This is essential for sustainable workforce planning mechanisms to be put in place.

The data required for use in a TB context by different TB patients' and other pulmonary disease patients' groups:

1. People with presumptive TB.
2. Drugs susceptible TB (DS- TB) patients.
3. Drug resistant TB (DR- TB) patients on the shorter regimen.
4. Drug resistant TB (DR- TB) patients on an individualized regimen.
5. Other pulmonary disease patients.

This Tool allows to calculate FTEs needed for one patient and for expected number of patients.

Fields that are marked in orange should be completed by the user. The data which should be entered in the workbook are explained in this user's manual. All fields in grey are automatically calculated and does not require entry of data. The interpretation of these calculations is also explained in this user's manual. All fields in grey are automatically calculated and does not require entry of data. The interpretation of these calculations is also explained in this user's manual.

### *Recommendation how to use the tool*

Unless there is an accurate and properly maintained data source covering relevant staff at national level, it is advised that the tool is used at district level, as epidemiological data can differ and can be higher or lower as national average, therefore necessary FTEs for service delivery will not be the same. Once it is applied at a unit and /or district level, it will give data that can be aggregated to a national level to identify gaps in availability of staff and to start discussions with stakeholders on planning<sup>3</sup> necessary changes.

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<sup>2</sup> The concepts outlined in this tool and in the workforce planning booklet can be applied al health workforce requirements.

<sup>3</sup> The World Health Organization Regional Office for Europe is developing planning guidance. It is anticipated that this will be available in 2019.

## Step 1. Complete the sheet “Title page”

Complete the title page of *Excel Workbook*. Include a list of all participants who were involved in the assessment.

## Step 2a. Complete the sheet “FTE”

This *Excel Workbook* is used to calculate the total number of working hours in 1.0 FTE for MD specialists (TB doctors) and mid- level health professionals (e.g. nurses and laboratory staff) and other staff.

Variable name	Cell	Explanation	Value
<b>Working days</b>			
<i>Example: mid- level health professional- laboratory technician</i>			
Annual total days	C4	Total days in one year, this is fixed at 365 days	
Weekend days	C5	In all likelihood the number of days remains at 104 (52 weeks times two), but can be changed	
National holidays	C6	Input the number of national public holidays in one year	
Annual leave days	C7	Fill in the number of days a staff member is entitled to. This can be an average if the entitled number of days differs based on years of service.	
Average days’ sick leave	C8	The number put here should be determined by a quick round of discussion (if records are not kept) to establish an average of time away from duty station due to sick leave.	
Number of days spent on training per year	C9	The number put here should be determined by a quick round of discussion (if records are not kept) to establish an average of time away from duty station due to training, workshops and seminars	
Number of days spent per year on non-patient related work	C10	The number put here should be determined by a quick round of discussion (if records are not kept) to establish an average of time that is spent on non-patients related work such as administration.	
Hours per working day	C11	Input the daily hours staff are expected to be at their duty station	

Repeat the same information in the *Excel Workbooks* for MD specialists (TB doctors) and mid-level health professionals (nurses) and other staff. Note that all fields in orange should be completed to make the correct calculations. Annual days, weekend days and national holiday only must be entered once, as there will be automatic updated for the other staff since this is expected to be equal for all staff.

## Step 2b. Interpretation

Variable name	Cell	Explanation	Value
<b>Working days</b> <i>Example: mid- level health professional- laboratory technician</i>			
Total working days for 1 FTE per year	C12	These are the total working days for a lab technician with full time employment for direct patient care, calculated as the total annual days – leave days – sick leave – training days – days spent per year on non-patient related work.	
Total working hours for 1 FTE per year	C13	These are the total working hours available for a lab technician with full time employment, calculated as the total working days multiplied by hours per working day.	

There are six more *Excel Workbooks* that need to be completed:

Nr.	Title	Explanation
1.	Presumptive TB	This <i>Excel Workbook</i> is used to calculate additional FTE for people with presumptive TB tested.
2.	DS-TB	This <i>Excel Workbook</i> is used to calculate additional FTE for DS-TB patients treated.
3.	DR-TB short	This <i>Excel Workbook</i> is used to calculate additional FTE for DR-TB patients treated with a 9- month regimen.
4.	DR- TB individual	This <i>Excel Workbook</i> is used to calculate additional FTE for DR- TB patients treated with an individualized regimen.
5.	Other pulmonary disease patients	This <i>Excel Workbook</i> is used to calculate additional FTE for other pulmonary disease patients treated.
6.	Overview	This <i>Excel Workbook</i> is used to calculate additional FTE for an expected number of patients in a year.

### Step 3a. Complete the sheet “Presumptive TB”

Variable name	Cell	Explanation	Value
Percentage of people with presumptive TB tested positive for TB	B2	Enter the estimated percentage of people with presumptive TB that are diagnosed with TB and start treatment.	
<b>Total duration in minutes per unit</b>			
GeneXpert MTB/RIF test per patient	B6	Input the total average time in minutes to complete one GeneXpert MTB/RIF test.	
Sputum smear per patient	B7	Input the total average time in minutes to complete one sputum smear	
First diagnostic visit	B8	Input the total average time in minutes that a patient spends with health care workers during a first diagnostic visit	
Second diagnostic visit (test results)	B9	Input the total average time in minutes that a patient spends with health care workers during a second diagnostic visit in which the test results are discussed	
Treatment initiation	B10	Input the total average time in minutes that a patient spends with health care workers during a visit to initiate treatment	
Patient education	B11	Input the total average time in minutes that a new TB patient spends with health care workers for patient education	
Other (please specify)	B12	Input any other visits that are scheduled for presumptive TB patients which are not mentioned above.	
<b>Mid- level health professional: laboratory technician</b>			
GeneXpert MTB/RIF per patient	C7	Enter the number of GeneXpert test a lab technician does per presumptive TB patient. Note that if GeneXpert is not used this should be zero (0).	
Sputum smear per patient	C8	Enter the number of sputum smears a lab technician does per person with presumptive TB. Note that if sputum smear is not used this should be zero (0).	

Repeat the same information for MD specialists (TB doctors), and mid-level health professionals (nurses) and others. Note that if the specific activity does not exist or is not carried out by the specific staff member, the value should **be zero (0)**. For example, if treatment initiation is carried out by the nurse

only, complete a value of one (1) under nurse and zero (0) under MD specialist and other. Also note that the fields in grey are not open for entry of data because these fields are expected to be zero (0).

### Step 3b. Interpretation

Variable name	Cell	Explanation	Value
<b>Mid- level health professional: laboratory technician</b>			
Total FTE needed for one person with presumptive TB	C13	This is the full time equivalent of a lab technician to test 1 person with presumptive TB. This is calculated by multiplying the total time per units with the number of units per person with presumptive TB. This time is divided by the total working hours for 1 FTE per year to get the FTE per presumptive TB patient.	

The same principles can be applied for the calculations of FTE per presumptive TB patients for the MD specialist (TB doctor), and mid-level health professional (nurse) and others. Note that treatment initiation and patient education are only included in the calculations for people with presumptive TB that are diagnosed with TB and treatment has been initiated.

## Step 4a. Complete the sheet “DS- TB”

Variable name	Cell	Explanation	Value
Duration of intensive phase in months	C4	Insert the duration in months of treatment in the intensive phase as per protocol	
Duration of continuation phase in months	C5	Insert the duration in months of treatment in the continuation phase as per protocol	
Average duration in months a patient is hospitalized during the intensive phase	C6	Insert the average duration in months a patient is hospitalized during the intensive phase	
Average duration in months a patient is hospitalized during the continuation phase	C7	Insert the average duration in months a patient is hospitalized during the continuation phase	
<b>Lost to follow up</b>			
Average times one patient needs an intervention due to lost to follow up	F3	Estimate the average number of times for one patient that needs an intervention due to lost to follow up during the entire treatment course	
Average duration spent on one patient who is lost to follow up in hours	F4	Estimate the average duration of one intervention for a patient who is lost to follow up. Express the duration in hours	
Lost to follow up (%) in latest treatment cohort	F5	Fill out the % of patients that were lost to follow up from the latest available treatment cohort	
Estimate in which month of treatment patient are lost to follow up	F6	Estimate in which month of treatment patients that have ‘lost to follow up’ as their final treatment outcome, were lost to follow up (on average).	
<b>Died</b>			
Patients that died (%) during treatment in latest treatment cohort	I3	Fill out the % of patients that died from the latest available treatment cohort	
Estimate in which month of treatment patients die (1-6)	I4	Estimate in which month of treatment patients died (on average).	

Variable name	Cell	Explanation	Value
<b>Total duration in minutes per unit</b>			
Sputum smear per patient	B11	Input the total average time in minutes to complete one sputum smear	
Treatment monitoring visits (per month)	B12	Input the average duration in minutes of a treatment monitoring visit. If these visits are not carried out this should be zero	
DOTS visits (per month)	B13	Input the average duration in minutes of a DOTS visit	
Home visits (per month)	B14	Input the average duration in minutes of a home visit including time of transportation	
Other (specify)	B15	Input the total average time in minutes to take blood samples	
Other (specify)	B16	Input the total average time in minutes to give treatment injections	
Other (specify)	B17	Input any other visits that are scheduled for TB patients which are not mentioned above.	

### Frequency per month

For each of the activities in B11– B14 indicate how often the MD specialist (TB doctor) and mid-level health professionals (nurses, lab technician) and others carry out this activity per patient per month. The cells in blue do not allow data entry because these cells are expected to be zero (0). For example, if a home visit is carried out twice per month by the nurse, once per two months by the TB doctor and not by the other staff, the values should be 2, 0.5 and 0 respectively.

If there are additional activities that are not mentioned in cell B11– B14, please add this activity in cell B15-B17.



## Step 4b. Interpretation

Variable name	Cell	Explanation	Value
<b>Duration of treatment</b>			
Actual duration of intensive phase in months at the outpatient clinic	C2	This time is what patients actually spend in out-patient clinic during intensive phase of treatment.	
Actual duration of continuation phase in months at the outpatient clinic	C3	This time is what patients actually spend in out-patient clinic during continuation phase of treatment.	

Variable name	Cell	Explanation	Value
<b>Lost to follow up</b>			
Additional hours to track patients lost to follow up (per patient)	F17	This is the additional time needed by to track a patient that is lost to follow up. This variable is calculated by multiplying the average times one patient is lost to follow up during one treatment course with the average time the nurse spends on the patient to follow-up.	
Time (in %) saved for patients that are lost to follow up during treatment	F18	This is the time (in %) health care workers save on patients that are lost to follow up during treatment because these patients do not come for visits any longer. Calculation: the month in which the patients was lost to follow up is subtracted from the total treatment duration to get the treatment time that was remaining, which is then divided by the total treatment duration to get the percentage of time that is saved for one patient that is lost to follow up. This percentage is multiplied by the % lost to follow up in the latest treatment cohort to get the average time savings for all patients that are treated for lost to follow up.	
<b>Died</b>			

Additional hours for patients that died	I5	This is the time (in %) that health care workers save on patients that died during treatment because these patients do not come for visits any longer. Calculation: the month in which the patient died is subtracted from the total treatment duration to get the treatment time that was still remaining, which is then divided by the total treatment duration to get the percentage of time that is saved for 1 patient that died. This percentage is multiplied by the % died in the latest treatment cohort to get the average time savings for all patients that are treated for lost to follow up.	
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Variable name	Cell	Explanation	Value
<b>Mid- level health professional: laboratory technician (intensive phase)</b>			
Total FTE needed for one drug susceptible TB patient	C18	This is the required FTE for a lab technician in order to treat one additional patient during the intensive phase in ambulatory care.	
Total FTE needed for one DS- TB patient taking into account lost to follow up and patients that die	C19	This is the required FTE for a lab technician in order to treat one additional patient during the intensive phase in ambulatory care. This value incorporates time savings from patients that are lost to follow up or that die during treatment, because they are not monitored or treated during the full treatment duration.	
Total FTE needed for one DS- TB patient per day	C20	This is the required FTE for a lab technician in order to treat one additional patient for one day during the intensive phase.	

The required FTE for the MD specialist (TB doctor) and mid-level health professional (nurse) and others are calculated the same manner and could therefore be interpreted in the same manner. Note that there are separate calculations for the intensive and continuation phase of treatment.

**Step 5a/b. Complete the sheet “DR-TB short”**

**Step 6a/b. Complete the sheet “DR-TB individual”**

## Step 7a. Complete the sheet “Other pulmonary diseases”

Variable name	Cell	Explanation	Value
Number of diagnostic visits per patient	C3-F3	Input the total number of diagnostic visits per patient per one year.	
Number of follow up visits per patient	C4-F4	Input the total number of follow up visits per patient per one year.	
Average duration of diagnostic visit per patient in minutes	C5-F5	Input the total average time in minutes that a patient spends with health care workers during a s diagnostic visit in which the test results are discussed.	
Average duration of follow up visit per patient in minutes	C6-F6	Input the total average time in minutes that a patient spends with health care workers during a s follow up visit in which the treatment results are discussed.	

## Step 7b. Interpretation

Variable name	Cell	Explanation	Value
Total FTE needed to treat 1 additional pulmonary patient	C8-F8	This is required FTE per one pulmonary patients in order to treat him/her per staff category.	

## Step 8a. Complete the worksheet “Overview”

Variable name	Cell	Explanation	Value
<b>Overview</b>  <i>The number of patients required to enter in the “Overview” worksheet are the expected number of TB patients to be diagnosed or treated for the next year at national, district, facility or community level.</i>			
Number of people with presumptive TB expected to be tested	C3-F3	Enter the number of people with presumptive TB that are expected to be tested for TB in the next year by different categories of staff.	
Number of DS- TB patients expected to be treated	C4-F4	Enter the number of DS-TB patients that are expected to be treated for TB in the next year by different categories of staff.	
Number of DR-TB patients on the short regimen expected to be treated	C5-F5	Enter the number of DR- TB patients on the short regimen that are expected to be treated for TB in the next year by different categories of staff.	
Number of DR-TB patients on an individualized regimen expected to be treated	C6-F6	Enter the number of DR- TB patients on an individual regimen that are expected to be treated for TB in the next year by different categories of staff.	
Number of people with other pulmonary disease	C7-F7	Enter the number of patients with other pulmonary disease that are expected to be treated in the next year by different categories of staff.	

## Step 8b. Interpretation

In this worksheet, you will find an overview of all calculations. For people with presumptive TB, DS/DR-TB on a different treatment regimens and patients with other pulmonary diseases. The additional required FTEs are displayed for a given number of the expected number of patients. There are separate tables for MD specialists (TB doctors) and mid- level health professionals (nurses and laboratory technicians) and others. These numbers are summarized in graph in the bottom of the overview worksheet.

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