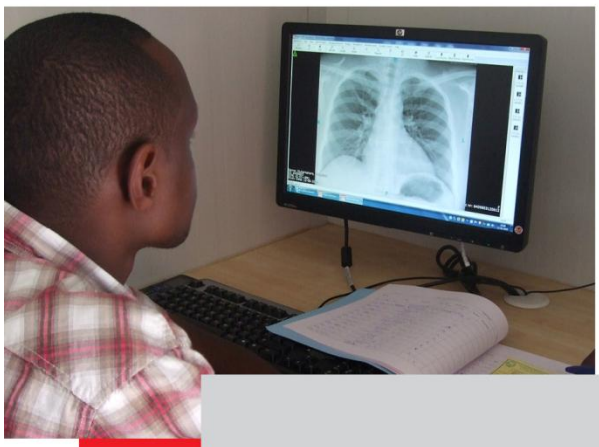
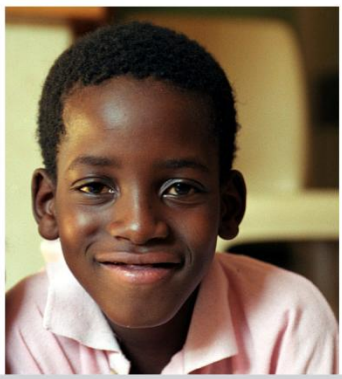


October 7-11, 2013

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Rwanda

Evaluation of TB surveillance system using Standard and Benchmark Checklist

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1 Acknowledgments

We wish to acknowledge the hospitality of Rwanda's Ministry of Health, Rwanda Biomedical Centre (RBC) for their continuous support. In particular, we extend our warmest gratitude to Dr Michel Gasana, the director of the TB & ORD division for making this mission possible. The invaluable help provided by the M&E team, Mr Claude Bernard Uwizeye, Mr Evariste Gasana, Mr Felix Murego and Mr Fidèle Gakuba is much appreciated.

This mission was supported by funding from TB Care APA3.

2 Abbreviations

BMU	basic management unit
CDC	Centre for Disease Control and Prevention
CDT	Centre of diagnosis and treatment
CHW	Community health worker
CT	Centre for Treatment of Tuberculosis
DH	district hospital
DHS	Demographic health survey
DQA	Data quality audit tool
DRS	Drug resistance survey
DSS	Demographic surveillance system
EPI	Expanded Programme on Immunization
ETR	Electronic TB Register
FTE	Full time employment
GF	Global Fund
HC	Health centre
HF	Health facility
HIV	Human Immuno-deficiency virus
HMIS	Health management information system
M&E	Monitoring and evaluation
MDR	Multi-drug resistance
MESST	Monitoring and evaluation systems strengthening tool
MoH	Ministry of Health
NLTP	National Leprosy and Tuberculosis Program
NSP	National strategic plan
PTb	pulmonary tuberculosis
RBC	Rwanda Biomedical Centre
RIF	Rifampicin
RSQA	Rapid Service Quality Assessment
SOPS	Standard operating procedures
TB	tuberculosis
WHO	World Health Organization

3 Executive summary

The National Tuberculosis Programme (NTP) of Rwanda (known as TB & ORD Division/IHDPC/RBC) is preparing to write their next National Strategic Plan and for this reason Rwanda was selected as a country to received technical assistance (TA) to conduct an assessment of their surveillance system using the surveillance checklist as input for the new strategy. This TA was provided under the USAID TBCARE I Core project on Monitoring and Evaluation, Operational Research and Surveillance (C7.08) developed a surveillance checklist with the objectives to assess a national surveillance system's ability to accurately measure TB cases and deaths and to identify gaps in national surveillance systems that need to be addressed in order to improve TB surveillance. From 6-11 October two consultants from KNCV carried out the TA mission with the objectives to: i) conduct the surveillance checklist together with the Rwanda M&E team; ii) provide key recommendations to enhance the surveillance system as input for the new National TB Strategic Plan. Rwanda's TB surveillance system was found to be well-functioning with many strengths observed. Rwanda has a system that is designed to capture a minimum set of variables and all periodic data submission have been received and processed at national level. The surveillance data provide a good overview of the situation in the country and are externally consistent. Of the 13 standards on the checklist, Rwanda met 6, while 4 were partially met, 2 were not met and 1 was not applicable as the country does not currently have an electronic patient based reporting system. Overall the data were accurate, complete and internally consistent although when carrying out a detailed verification of the 2012 Annual TB dataset it was observed that for 4/34 districts (11%) the total of sub-aggregated data did not fully match the total numbers reported. However difference were small, a discrepancy of 9/3571 = 0.25% cases. The Rwanda programme is moving to electronic surveillance in the future and has already designed an electronic TB register (ETR) which is currently being finalized for a planned roll out beginning January 2014. Quality and coverage of a vital registration system is low as although Rwanda has a national system of registering births and deaths, this coverage is not complete and the system does not document causes of death which are registered at the hospitals. It is under discussion to link the two systems and the legal framework is being developed for that. Assessing the internal consistency over time using the alternative standard observing consistency in trend of PTB over EPTB, Male to Female, proportion of child TB cases and the year to year change in notification rate it was concluded that this standard was partially met as the annual change in TB case notification was not consistent over time. Although not all standards were fully met it can be said that coverage of the surveillance system is good as there are no indication that there is severe underreporting of cases and no need was felt to conduct an inventory study. Out of pocket health expenditure stands at 21%, below the 25% cut off value. Access to health care is high in Rwanda with 83% having access to care within 2hrs of their home and health insurance is wide spread with 91% of the population being covered by Community based health insurance. The standards related to surveillance of drug resistant TB and TB-HIV were both met. The standard on surveillance of child TB was not met as the ratio of age groups 0-4 to 5-14 years was below 1 and childhood TB is getting like globally also increase attention in Rwanda. The programme should continue to monitor and try to re-evaluate the quality of diagnostic practices with regards to childhood TB in an attempt to address under-reporting of childhood TB to try and enhancement of contact tracing could also contribute to increase detection of childhood TB cases. Two standards were not met because no inventory study has been done. When looking at the need to conduct an inventory study as outlined in the WHO guide[1], Rwanda would not undertake one as surveillance coverage is good and there is no indication of severe underreporting and no prominent private sector. Therefore these standards will never be met.
In conclusion: although some minor inconsistencies were observed in the data in general the TB surveillance system in Rwanda seems to accurately capture TB cases detected and control program efforts. Key recommendations made for the strategic plan were:

a) Develop a scale-up plan for patient-based system
b) Update the M&E plan to include task-shifting as a result of shifting to an electronic system
c) Develop OR plan outlining key research questions to be answered (initial analysis using patient based data, prospective studies to be integrated etc.)
d) Consider developing a scoring system for supportive supervision to better quantify results
e) Conduct in-depth analysis of the surveillance data over the last 5-10 years
f) Every 5 years, evaluate the surveillance system and the data it generated linked to the external TB Programme Review

[1] Assessing tuberculosis under-reporting through inventory studies, WHO, February 2013, ISBN: 978 92 4 1504942, WHO reference number: WHO/HTM/TB/2012.12, available via http://www.who.int/tb/publications/inventory_studies/en/index.html

4 Introduction

4.1 Background and justification of the mission

The National Tuberculosis Programme (NTP) of Rwanda (known as TB & ORD Division/IHDPC/RBC) is preparing to write their next National Strategic Plan and for this reason Rwanda was selected as a country to received technical assistance (TA) to conduct an assessment of their surveillance system using the newly developed surveillance checklist. The USAID TBCARE I Core project: Monitoring and Evaluation, Operational Research and Surveillance (C7.08) developed a surveillance checklist, also called standard benchmark (SBB). The main objectives of the surveillance checklist are:
1. To assess a national surveillance system's ability to accurately measure TB cases and deaths
2. To identify gaps in national surveillance systems that need to be addressed in order to improve TB surveillance.

4.2 Terms of reference

The detailed ToR is provided in annex 7.1 and also consists of the extensive list of checks and investigations to extensively describe the TB surveillance system and data sources. The standards and benchmarks checklist used the following tools to assess the National system:

a. Data acquisition, data flows, data quality checks, paper-based versus electronic, case-based versus aggregated at the central and lower administrative level, frequency of reporting to the central level, availability and coverage of HIV testing and drug susceptibility testing data among newly registered TB patients; availability and coverage of cohort data on TB incidence and TB mortality among HIV-positive individuals enrolled in HIV care programmes; availability of annual national TB surveillance reports.
b. Staffing and budgeting of routine TB surveillance at central and regional level.
c. Surveillance audits, surveys and data quality assessments
d. Vital registration system with standard coding of causes of deaths.

4.3 Deliverables

a. Draft mission report within 1 week and full mission report within 4 weeks after the mission
b. List of clear recommendations on issues to verify for the program review team
c. Presentation to brief the program review team at the start of their mission

4.4 Methods

The mission was carried out between October 7-11, 2013 by two KNCV consultants, epidemiologist Eveline Klinkenberg and data surveillance consultant Rachel Ochola. Version Prior to the mission, Consultant Eveline Klinkenberg had held a preparatory meeting on September 20th 2013 with the Rwanda team to introduce the checklist and discuss the data needed in order for the team to prepare the required data ahead of the mission. Version 2.4.1 of the surveillance checklist was used for this assessment. The Checklist consists of two parts: part A provides a general description of the TB surveillance system that is being assessed; part B (section 1) assesses the TB surveillance and vital registration systems and covers data quality, system coverage, and TB mortality data from vital registration systems. Additionally, part B (section 2) includes supplementary standards for surveillance of TB/HIV cases, drug resistant cases and TB cases in children. During the mission, together with the Programme's M&E team available data were collated, assessed, and analysed. Based on the finding the checklist was filled out. Data collection included a desk review of documents and datasets. The completed checklist and associated data collection tools and time trends are available in Annex 7.2.

For the checklist the latest complete year data was used which was 2012, however since 2013 the program has moved to electronic HMIS submission and where applicable verification was done using the first 6 months data for 2013 in the HMIS system.

5 Results

5.1 Characteristics of the TB surveillance System

5.1.1 TB surveillance system

Since January 2013, TB data are being recorded using an internet based health management information system (HMIS) by each Centre for Treatment of Tuberculosis (CT) and Centre of diagnosis and treatment (CDT). There are a total of 543 centres of which 199 are CDTs. All CTs and CDTs report online using a standard set of indicators using standardized tools and forms.

Case notification data are recorded and reported by the CDTs who hold the TB case registers, these are the centres that diagnose and initiate TB treatment. The CTs follow up patients after treatment initiation and identify people with presumptive TB, they only report on the latter using the HMIS system**.**

At present, data are aggregated from CDT/CT level upwards. There is a breakdown of where cases originate from including whether a community health worker (CHW) or traditional healer referred them. Rwanda has designed an electronic patient's based system (TB Individual Records management System) which is currently being finalized before scale up in January 2014. Once this is rolled out there will be real time patient level data that will allow multiple episodes of TB in the same person to be identified.

At CDT level data are verified by the M&E officer and the director in charge before the report is signed off and transferred to central level. Each quarter, TB Evaluation meetings are held at district hospital (DH) level, during which the last quarter's TB data are reviewed and cross-checked with the data from the register and agreed upon in case of discrepancies. Once updated, the CDT/CT data managers upload their facility data into the HMIS system. Only the CT/CDT data manager can make changes to the data file for his/her facility. If the central level finds an anomaly during review they discuss with the CT/CDT data manager who will then correct. The DH staff supervises the C(D)Ts in its catchment area and should visit them on monthly basis. During this visit similar to the quarterly review, all data will be verified. In addition, quarterly, data verification visits are conducted by RBC/HMIS wherein also TB is included. During these visits data from the TB register, CDT report, DH report and central level report are verified and crosschecked whether they match. In the new HMIS system for each report it is indicated whether it was submitted in time and there are inbuilt data quality check to verify numbers.

More details of the surveillance system in Rwanda are described in part A of the checklist in annex 7.2

5.1.2 Vital registration system

Although there is a national system of registration of births and deaths in the country, causes of death are not documented. Causes of death are being registered at the hospitals where death certificates are given out. It is under discussion to link the two systems and the legal framework is currently being developed for that.

5.1.3 Checklist for TB surveillance and registration systems

Below for part B1 data quality, coverage, vital registration, drug resistance, TB-HIV and child TB surveillance the main findings and whether or not the standard was met is summarized. Full details for each standard are provided in the detailed filled checklist in annex 7.2

PART B1: DATA QUALITY		
Standard	**Main Findings**	**Results**
B1.1 Case definitions are consistent with WHO guidelines	The latest TB manual (January 2013) was checked to verify definitions. The TB register format was also checked and it was concluded that all 3 benchmarks for this standard adhered to so the standard is met.	**MET**
B1.2 TB surveillance system is designed to capture a minimum set of variables for all reported TB cases	Lab and TB case register formats show that a standard set of variables is routinely being collected and these are also reflected in the quarterly reports submitted by CDTs/DHs to central level.	**MET**
B1.3 All scheduled periodic data submissions, e.g. electronic data files or quarterly paper reports, have been received and processed at the national level	On a quarterly basis, CDTs meet with their respective CTs just prior to meeting with district officers to compile quarterly reports. These are reviewed and agreed upon during the quarterly meetings after which they are uploaded in the system. Although there was no completeness indicator in 2012 showing whether all reports have been received in time, quarterly meetings are held systematically. In the new HMIS system (from 2013 onwards) submission date of each report is available and completeness of report submission can be automatically viewed.	**MET**
B1.4 Data in quarterly reports (or equivalent) are accurate, complete, and internally consistent *(For paper-based systems only)*	Case reporting happens from CDT level upwards and therefore this was chosen as the BMU. There are a total of 199 CDTs in the 5 districts of Rwanda (North, South, East, West and Kigali). Verification of the 2012 annual TB dataset revealed that for 4/34 districts (11%) of the total of sub-aggregated data did not fully match the total numbers reported. This translated to a discrepancy of 9/3571 = 0.25% cases. Therefore if we are strict the first benchmark is not met, however it should be noted discrepancies are minor. The second benchmark could not be verified as no verification at HF level was done during this mission. However the program carries out routine data quality checks (RSQA). The latest RSQA showed that for 31 out of 41 (75%) of HC and DH visited, various discrepancies in recording were identified, although most were not severe discrepancies. The third benchmark is met.	**PARTIALLY MET**
B1.5 Data in national database are accurate, complete, internally consistent, and free of duplicates *(For electronic case-based or patient-based systems only)*	This benchmark is not yet applicable but will be verified when the new electronic system is evaluated.	**NOT APPLICABLE**
B1.6 TB surveillance data are externally consistent	New TB cases among children over the last 5 years was calculated to be between 6.3 – 9.3%, which is between 5-15% as required, therefore this standard is met.	**MET**

PART B1: DATA QUALITY		
Standard	**Main Findings**	**Results**
B1.7 TB surveillance data are internally consistent over time	As there is no vital registration system recording TB deaths the alternative standard was assessed: The ratio PTB/EPTB and Male/Female were consistent in the last 5 years therefore the first two benchmarks are considered met. The proportion of child TB cases out of all TB cases (benchmark 3) showed a sharp drop after 2008 but has been consistent since. For the sharp drop no clear explanation was found. The year to year change in case notification for all and smear positive TB cases (benchmark 4 and 5) showed a more erratic pattern. For all forms of TB case notification declines about 5% per year except for 2010 where it was double at 10%. For smear positive TB annual decline is smaller at 2-4% except for 2010 when it declined with 12%. Data were also available for the 6th benchmark, the ratio of presumptive cases to notified TB cases, this pattern shows a sharp increase for 2011-2012 which can be explained by the programmatic effort of suspect investigation. As the pattern for benchmark 4 and 5 is more erratic it was concluded that this standard was only partially met. The accompanying graphs and more details on further investigation per TB type can be found annex 7.2 and the explanatory notes.	**PARTIALLY MET**
B1.8 All diagnosed cases of TB are reported	There is a general consensus that TB reporting is a legal requirement as TB is a notifiable disease via the TB register. The exact legal status must be confirmed. No inventory study has ever been done in Rwanda therefore using the checklist it should be concluded this standard is only partially met. However, when looking at the need to conduct an inventory study as outlined in the WHO guide[2], Rwanda would not undertake one as surveillance coverage is good and there is no indication of severe underreporting and no prominent private sector. Therefore it was felt the benchmark is not applicable for Rwanda.	**PARTIALLY MET**
B1.9 Population has good access to health care	WHO statistics indicate that under 5 mortality is 55 (42-72) per 1000 live births in 2012. Although it has come down from 180 since 2000, it is not yet below the required 10 per 1000 live births. The Rwanda DHS 2010 shows slightly higher figures reporting 76 per 1000 live births for 2010. Out-of-pocket expenditure as a total of health expenditure was shown to be 21.4% from WHO statistics and has been below 25% for the last 10 years. Access to health care is high in Rwanda with 83% having access to care within 2hrs of their home and health insurance is wide spread with 91% of the population being covered by Community based health insurance[3]. Thus although formally not meeting this standard because the under 5 mortality rate is above 10 per 1000 live births, access to healthcare is considered good in Rwanda.	**PARTIALLY MET**

[2] Assessing tuberculosis under-reporting through inventory studies, WHO, February 2013, ISBN: 978 92 4 1504942, WHO reference number: WHO/HTM/TB/2012.12, available via http://www.who.int/tb/publications/inventory_studies/en/index.html

[3] Government of Rwanda, Ministry of health, Annual Report Community Based Health Insurance, October 2012, available via http://www.moh.gov.rw/fileadmin/templates/Docs/CBHI-Annual-Report-2011-2012f-3__1_.pdf

PART B1: DATA QUALITY		
Standard	**Main Findings**	**Results**
B1.10 Vital registration system has high national coverage and quality	Although there is a system of registration of births and deaths in the country (see also under B 1.7), causes of death are not documented. Birth and death registration, although required by law, is also not complete.	**NOT MET**
PART B2: SUREILLANCE OF DRUG RESISTANT TB; TB/ HIV; CHILD TB		
Standard	**Main Findings**	**Results**
B2.1 Surveillance data provide a direct measure of drug resistant TB in new cases	The last DRS was conducted in 2004/2005. A 2nd one is in preparation and expected to be completed in 2014. In 1995 a localized/rapid assessment was done by University of Antwerp but this was not nationally representative. Therefore there is currently one point but with the next DRS conducted this standard is met. Rif susceptibility status is currently being carried out for MDR risk groups country wide these include: MDR contacts, retreatment cases, TB staff, smear positives prisoners, HIV+ smear positives and those that do not convert at month 2. Kigali is identified as high risk zone for MDR and since 2012 all smear positive TB cases are tested for MDR. GenXpert roll out began in 2012 and is being used in order to test all the above listed MDR risk groups. In addition GenXpert is used to test TB suspect in prisons, people with presumptive TB who are HIV+ as well as severely ill patients who are TB suspect.	**MET**
B2.2 Surveillance data provide a direct measure of the prevalence of HIV infection in TB cases	Besides the testing of TB cases, the National TB Programme started to offer HIV testing to all people with presumptive TB since 2009. HIV testing results are clearly captured in the TB registers as well as quarterly reports. In 2012 99% of all TB cases had an HIV test done.	**MET**
B2.3 Surveillance data for children reported with TB (defined as ages 0-14 years) are reliable and accurate or all diagnosed child TB cases are reported	The ratio of age groups 0-4 to 5-14 years in 2012 was 0.7. This is below the range given. Additionally no inventory studies have been carried out in Rwanda. Therefore this standard is not met.	**NOT MET**

5.2 Conclusions

Although not all standards were fully met it and some minor inconsistencies were observed in the data in general the TB surveillance system in Rwanda seems to accurately capture TB cases detected and can be used to guide TB control program efforts. There are no indications of severe underreporting of cases and no need was felt to conduct an inventory study. Access to health care is high. It is difficult to conclude based on the assessment done whether notification resembles incidence. When the new TB burden estimates based on the national TB prevalence survey for which analysis is being finalized are available an in-depth epidemiological assessment of the routine surveillance data in combination with the TB burden estimated should be conducted to make a valid conclusion on that. Most of the unmet benchmarks for example one linked to vital registration system are beyond the direct scope of the TB control program to address but TB could take an advocate role to support the development of a vital registration system.

	CHECKLIST SUMMARY (TICK THE BOXES WHERE APPROPRIATE)			
STANDARD	**MET**	**PARTIALLY MET**	**NOT MET**	**NOT APPLICABLE**
B1.1	X			
B1.2	X			
B1.3	X			
B1.4		X		
B1.5				X
B1.6	X			
B1.7		X		
B1.8		X		
B1.9		X		
B1.10			X	
B2.1	X			
B2.2	X			
B2.3			X	

6 Recommendations and next steps

M&E priorities based on the conduct of the checklist

1. Further enhance supervision and record verification and strengthen data auditing to solve the minor discrepancies that were observed.
2. Further investigate the reason for the observed drop in proportion of childhood TB case after 2008 and the observed erratic pattern of annual change in case notifications.

Recommendations for the new patient based electronic system

3. Develop phased roll out plan for the patient-based system and ensure that in the new electronic system (ETR) sufficient checks are built in for each verification and approval step now conducted manually, i.e. replacement of paper-based checks/stamps
4. Consider replacing the anticipated checklist form because of the risk of transcription error, consider entering directly from the TB patient cards/TB case register.
5. Carry out duplication checks not only on PINS but also do checks for duplicates using a combination of age, sex and name. Investigate usage of barcodes for patients cards.
6. Conduct an extensive evaluation after the first year of implementation and decide on forehand on key indicators that need to be met in order to conclude the system is working.
7. Develop Analysis Plan to use richer database, what additional information should it bring.
8. Re-evaluate the role and responsibilities of all M & E staff in the new system, there is probably need for task shifting and new roles.
9. Critically review all indicators that are planned to be collected, are they clearly defined and measurable and can they provide the information needed, will all be used?
10. Consider hiring a full time in-house statistician to constantly work on analysis of data that will be generated through the ETR.

Recommendations made for the strategic plan were:

11. Develop a scale-up plan for patient-based system
12. Update the M&E plan to include task-shifting as a result of shifting to an electronic system
13. Develop an operational research plan outlining key research questions to be answered (initial analysis using patient based data, prospective studies to be integrated etc.)
14. Consider developing a scoring system for supportive supervision to better quantify results
15. Conduct in-depth analysis of the surveillance data over the last 5-10 years (Epi-assessment)
16. Every 5 years, evaluate the surveillance system and the data it generated linked to the external TB Programme Review

Other recommendations

17. Consider aligning period of reporting to WHO with country's annual reporting period.

7 Annexes

7.1 Terms of reference

Terms of reference (ToR) – Mission Rwanda

Project:	Making use of Surveillance Checklist
Organization:	KNCV Tuberculosis Foundation
Consultants:	Eveline Klinkenberg, senior epidemiologist – Africa Regional Team
	Rachel Ochola, surveillance consultant, Africa Regional Team
Period:	6 -11 October 2013 (incl travel days)

1. Background

The USAID TBCARE I Core project: Monitoring and Evaluation, Operational Research and Surveillance (C7.08) developed a surveillance checklist. The main objectives of the surveillance checklist are:

1. To assess a national surveillance system's ability to accurately measure TB cases and deaths
2. To identify gaps in national surveillance systems that need to be addressed in order to improve TB surveillance.

The Checklist has two parts: part A provides a general description of the TB surveillance system that is being assessed; part B (section 1) assess TB surveillance and vital registration systems and covers data quality, system coverage, and TB mortality data from vital registration systems. Additionally, part B (section 2) includes supplementary standards for surveillance of TB/HIV cases, drug resistant cases and TB cases in children

The checklist will provide the following information:

1. Description of the TB surveillance system and data sources
    a. Data acquisition, data flows, data quality checks, paper-based versus electronic, case-based versus aggregated at the central and lower administrative level, frequency of reporting to the central level, availability and coverage of HIV testing and drug susceptibility testing data among newly registered TB patients; availability and coverage of cohort data on TB incidence and TB mortality among HIV-positive individuals enrolled in HIV care programmes; availability of annual national TB surveillance reports.
    b. Staffing and budgeting of routine TB surveillance at central and regional level.
    c. Surveillance audits, surveys and data quality assessments
    d. Vital registration system with standard coding of causes of deaths

Rwanda is preparing to write their next National Strategic Plan and for this reason Rwanda was selected as a country to receive technical assistance to conduct an assessment of their surveillance system using the surveillance checklist as input for the new strategy.

2. ***Objectives of the mission:***
   a) To conduct the surveillance checklist together with the Rwanda M&E team
   b) To provide key recommendations to enhance the surveillance system as input for the new National TB Strategic Plan

3. ***Scope of work***
   During the mission the consultants will work with the Rwanda M&E team to perform the assessment using the checklist. Consultant Eveline Klinkenberg held a preparatory meeting on September 20th with the Rwanda team to introduce checklist and discuss the data needed in order for the team to prepare the required data ahead of the mission.

4. ***Team composition***
   A team of two consultants form KNCV TB Foundation will together with Mr Claude Bernard Uwizeye, Mr Evariste Gasana, Mr Felix Murego and Mr Fidèle Gakuba from the M&E team of the TB & ORD Division/ IHDPC/RBC carry out the assessment. The KCV consultants will be Dr. Eveline Klinkenberg (senior epidemiologist) and Dr. Rachel Ochola (Data Management/Surveillance consultant).

5. ***Language***
   The language of the mission will English.

6. ***Reporting***
   A detailed report describing the outcomes of each of the standard of the checklist in detail will be provided by KNCV within 4 weeks of the end of the mission. A mission summary report outlining the key findings and an overview of which standards are met, partially met or not met will be provided within 7 days of the end of the missing. .

7. ***Mission Schedule***
   Below a draft outline of the proposed mission including preparatory activity is outlined. This outline serves as a guide and is a flexible schedule to be adjusted where needed.

Date	Activity	Involved
Preparations	• Contact country to arrange mission, organize local team and start discussion • Discuss data/information needed in order to conduct the surveillance checklist	Eveline Klinkenberg Rachel Ochola Local team
Day 1	• Brief and introduction to country team • Inventory and verification of available data • Detailed programming for the mission • Quick scan of the surveillance checklist/ SBB	Eveline Klinkenberg Rachel Ochola Local team
Day 2-3	• Conduct step by step the surveillance checklist/SBB. The team will be split in two, one group focusing on part A, the other on part B	Eveline Klinkenberg Rachel Ochola Local team
Day 4	• Combine the two part and finalize surveillance checklist/SBB	Eveline Klinkenberg Rachel Ochola Local team
Day 5	• Wrap up discussions and debrief country team • 13.30hrs for airport to travel	Eveline Klinkenberg Rachel Ochola Local team

7.2 TB Surveillance Checklist

PART A: CHARACTERISTICS OF THE TB SURVEILLANCE SYSTEM

Before completing the checklist, it is important to characterise the national TB surveillance system. Please provide answers to the following questions.

COUNTRY NAME: RWANDA **DATE OF ASSESSMENT: 7-11 October 2013**

QUESTIONS	OUTCOMES (Best practises are in bold)	EXPLANATION	KEY ACTION(S) REQUIRED TO ADDRESS THE GAPS	ESTIMATED BUDGET REQUIREMENTS TO ADDRESS KEY ACTION(S)
A1. How are data recorded for individual TB cases at the service delivery level, e.g. in TB diagnostic units, health centres, clinics? *(Tick all that apply)*	☒ **Data are recorded electronically on a national internet-based system** ☐ Data are recorded electronically on a state/provincial/regional internet-based system ☐ Data are recorded electronically on a local system ☐ Data are recorded on paper ☐ Data are not recorded	Since January 2013 TB data are recorded via an HMIS system by each CDT & CT (543 in total, 199 CDTs) using an internet based interface. *Note: a check on which centres are reporting in the HMIS currently shows that there are a total of 517 (missing 26). The HMIS team confirmed all CDT & CTs have been trained and received equipment (laptop plus modem) so could report. It might be an issue of labelling as also total CDT displayed was 206, yet it was confirmed that there should be a total of 199 so some might be incorrectly labelled.*	Verify that all CDTs and CTs are correctly linked and labelled in the HMIS system to accurately determine which facilities are not reporting in time or not at all. Consider creating sending of automatic reminders or updates for overdue report from CTs/CDTs. The TB Focal Point person has the responsibility of checking through each form to ensure that all sections are correctly filled and there is no missing data. This form will then be forwarded to the data manager at each facility to fill into HMIS. The forms are immediately available for viewing at the national level. Ensure transcription is minimised, consider entering directly from the TB patient cards/TB case register.	None within the existing duties of the HMIS TB/IT officer. If additional components are added to the HMIS this might impact on budget.

QUESTIONS	OUTCOMES (Best practises are in bold)	EXPLANATION	KEY ACTION(S) REQUIRED TO ADDRESS THE GAPS	ESTIMATED BUDGET REQUIREMENTS TO ADDRESS KEY ACTION(S)
A2. Do all service delivery points systematically use standardised TB data collection forms and tools?	☒ **Yes, completely** ☐ Mostly ☐ Partially ☐ No, not at all	All CTs and CDTs report online using the HMIS on a standard set of indicators (see sub-annex 1 for a copy of the current recording and reporting forms). The standards set of WHO TB indicators are being collected since January 2013 and include the different types of TB, age and sex breakdown. Case notification figures are reported by the CDTs who hold the TB case registers and diagnose and initiate treatment. The CTs follow up patients after treatment initiation and identify people with presumptive TB, they only report on the latter using the HMIS system**.**	None, the new WHO guidelines have been incorporated. It needs to verify how the shifting of persons from the drug susceptible to drug resistant cohort will be done in practice but this will become easier once all patient records are electronically collected. **Advice**: critically review all indicators collected in the patient-based system and how they will be used to verify whether all denominators are correctly captured. For example, for contact tracing consider noting the number of children <5 years (who are contact) so the proportion screened and put on IPT can be calculated. Currently only the total number of contacts is recorded.	None within the existing duties of the HMIS TB/IT officer. If additional components are added to the HMIS this might impact on budget.
A3. Which TB cases are included in the national TB surveillance data? (*Tick all that apply and describe*):	☒ **All TB cases from all parts of the country** ☐ Some TB cases are excluded ☐Some part(s) of the country are excluded ☐Some case types are excluded ☐Some care providers, e.g. non-NTP providers, prisons, private practitioners, are excluded. ☐ Others, Describe: _____	Prison, refugee camps and private sector have dedicated CDT or CTs which report using the standard format.	No gaps identified **Advice**: as special populations are included and have dedicated CDTs consider analysing these specific groups to gain more insight in these special populations. For example conduct in-depth analysis prison entry screening data and data on cases that appear during imprisonment which information is available.	Assess whether the current team has sufficient capacity and/or time to take this up. If not consider capacity building of existing staff or hiring a dedicated statistician/epidemiologist for these and other recommended analysis (see below).

QUESTIONS	OUTCOMES (Best practises are in bold)	EXPLANATION	KEY ACTION(S) REQUIRED TO ADDRESS THE GAPS	ESTIMATED BUDGET REQUIREMENTS TO ADDRESS KEY ACTION(S)
A4. What types of TB data are available at the national level? *(Tick all that apply)*	☒ ***Patient level data that allow multiple episodes of TB in the same person to be identified are available*** ☐ Case level data are available for all of the country ☐ Case level data are available for parts of the country ☒ Aggregated data are available, i.e. summaries for groups of cases.	Currently data are aggregated from CDT/CT level upwards. Rwanda has designed an electronic patient's based system (TB Individual Records management System) which is currently being finalized before scale up by January 2014. Once this is rolled out there will be patient level data that will allow multiple episodes of TB in the same person to be identified.	No gaps as the country is already in process to move to a patient-based electronic system. This is being finalized and will then be rolled out. **Advice**: once the development of the system is completed start in selected (high case load) sites for 1 month to verify if there are still any challenges/bugs in the system before it is rolled out country-wide. See also advice under A2	
A5. What is the expected frequency of data transmission from the first sub-national administrative level to the national level? *(Tick all that apply)*	☒ ***Real-time*** ☐ More often than monthly ☐ Monthly ☒ Quarterly ☐ Less often than quarterly	Currently quarterly but once patient-based system is rolled out in 2014, it will be close to real time.	None, the new system individual patient-based system will be close to real time. **Advice**: Ensure the program makes use of the additional benefits this system will offer in terms of monitoring but also analysis of richer data to gain more insight in the countries TB epidemiology.	
A6. At what levels of the system are TB data systematically verified for accuracy, timeliness and completeness ? *(Tick all that apply)*	☒ **From the service unit upwards** ☐ From the 1st administrative level upwards ☐ From the 2nd administrative level upwards ☐ Only at the national level ☐ Not at any level	At CDT level data are verified by the M&E officer and the director in charge before the report is signed off and transferred to central level. In the new HMIS system, there will be an indication of whether each report was submitted on time. However, the treatment and lab registers will remain. It is possible to start a report online and then finalize it later. By using different colours to	None in the current system, the new ETR might need input. **Advice:** Make sure that in the new patient-based system checks are carried out to ensure data quality. Especially during the first year (but maybe longer) there should be paper back up. An extensive evaluation should be done of the initial sites and then after the 1st year of implementation. When will the system be	Non, part of the new NSP development

QUESTIONS	OUTCOMES (Best practises are in bold)	EXPLANATION	KEY ACTION(S) REQUIRED TO ADDRESS THE GAPS	ESTIMATED BUDGET REQUIREMENTS TO ADDRESS KEY ACTION(S)
		define whether a section has been completed or not the new HMIS system will be able to indicate the status of a report including whether it was completed and submitted by the lower level. This feature will allow for the tracking of data entry completeness; also it will not be possible to submit an incomplete report.	considered quality enough to abandon the paper back up? Consider what will change in the current DQA and supportive supervision/ TB review meetings. There will be more time for analysis and interpretation of the data. Will the M&E unit at central level get notifications if a report is submitted? What will be reviewed during the review meetings for the patient-based system? Will there be checks against the patients' cards. **Action:** Update the M&E plan with new/shifting roles and responsibilities of the ETR	
A7. What types of quality assurance procedures are systematically undertaken for TB data? *(Tick all that apply)*	☐ **Quality controls are in place for the electronic surveillance system (automated checks at data entry and batch checking, plus SOPs)** ☒ Data are reviewed during supervisory monitoring visits to service units and sub-national levels (How often? quarterly by central level monthly by DH level) ☒ Data are reviewed during meetings with TB staff (How often? monthly with DH level before and during quarterly review meeting with central level being uploaded into the HMIS system) ☒ Other (specify: data verification assessments visit twice a year, covering each facility or more (if budget permits)	Review meetings at district hospital (DH) level are conducted each quarter. During these meeting the TB data are reviewed and agreed upon, after which the CDT/CT data managers uploads their facility data into the HMIS system. Only the CT/CDT data manager can make changes to the data file for his/her facility. Therefore if central level finds an anomaly during review, they must discuss with the respective CT/CDT data manager who will then correct. The DH staff supervises the CTs/CDTs in its catchment area once per month. During this visits, similar to the quarterly	Central level visits each DH every quarter. They generate M&E report which allows them to monitor the performance of each facility and hence allows for follow up during the next visit. Quality controls will be designed in the new patient based system (see also above) **Advice** 1. Consider having a rating system that allows easier follow up and a way to see if there is any improvement or not over time. 2. Consider building in some logic checks to flag issues that need to be verified, for	

QUESTIONS	OUTCOMES (Best practises are in bold)	EXPLANATION	KEY ACTION(S) REQUIRED TO ADDRESS THE GAPS	ESTIMATED BUDGET REQUIREMENTS TO ADDRESS KEY ACTION(S)
		review meetings, the registers are verified for accuracy and completeness using a checklist described in the SOPs and a report is written on the findings of the visit. The central and DH levels have access to the HMIS system and can review the data online. In the HMIS system there is a button "run validation" to check the data once they are entered. The validation run verified whether no invalid values are entered in the system. Quarterly, data verification visits are conducted by RBC/HMIS where also TB is included. During these visits data from the TB register to CDT report, DH report and central level report data are verified to see whether they match. The latest report of such a RSQA visit (July/August 2013) assessing facilities in South, Western and Kigali indicated that: i) Review of 4 TB indicators (PTB+ case finding, HIV testing, treatment outcome) indicated discrepancies in the indicators in several of the facilities. In addition, the GF conduct RSQA assessments annually on	example if a CDT has normally 5 cases and enters 500 accidently or say double the number of cases as otherwise reported it would be good if the system can flag this so someone in charge will verify and accord it the trend is correct. 3. Consider adding an indicator in the RSQA reports on how inconsistent it was, i.e. proportion with error. Also add a more general concluding section on the findings besides the listing per facility to have a quicker overview of the overall status. 4. There should be a continuous follow up system that allows for follow up in case problem areas are identified and thus allows for feedback. Also consider having a kind of rating system and/or indicators to see which facility needs to be re-assessed and if they improve over time.	

QUESTIONS	OUTCOMES (Best practises are in bold)	EXPLANATION	KEY ACTION(S) REQUIRED TO ADDRESS THE GAPS	ESTIMATED BUDGET REQUIREMENTS TO ADDRESS KEY ACTION(S)
		selected indicators. The latest report from Sept 2012 indicated two major issues: i) Inadequate use of written back up and security procedures for patient information ii) Inadequate information in patients files iii) Also inconsistencies during crosschecking of the data were observed. The next RSQA by GF is expected in the next 1-2 months and should reveal whether the earlier identified issues have been addressed.		
A8. Is feedback on TB data quality systematically provided to all lower reporting levels?	☒ **Yes, completely** ☐ Mostly ☐ Partially ☐ No, not at all	Chapter IV of the SOPS (manual technique) describes in detail the procedures for all forms of feedback (report, meetings etc.) Also the CT/CDT data manager is the only person who can adapt the data in the HMIS system so once data anomalies are found at central/district level the CT/CDT data manager is contacted to discuss and amend the data as needed. Feedback of supervisory reports (see A7) is given to the director of the hospital. However, if there is a serious problem it is copied to the mayor of the district for immediate action.	None, except those identified above related to changing roles and responsibilities in the new electronic system	

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		Each HF has a feedback register where key feedback issues are written and which is not specific to TB. Any visitor can use it and is in parallel to the supervisory report.		
A9. When are national TB case data for a given calendar year considered ready for national analyses and reporting?	☒ **Before April the following calendar year** ☐ Before May the following calendar year ☐ Before June the following calendar year ☐ On or after beginning of June the following calendar year	The fiscal year in Rwanda runs from 1st July to 30 June, 1 month after the end of the year data are finalized. In July/Aug each year an annual TB review meeting is held wherein the final data are presented to all districts staff (DH in charge, district M&E staff, TB in charge etc), partners and other stakeholders. For the WHO global report the annual data are recompiled to match the Jan- Dec calendar as requested by WHO. This means that the national data and WHO data are slightly different. In 2009 and before the TB program reported Jan- Dec but since being integrated into RBC, they now use the fiscal year of 1st July to 30th June. 2010 was a transition year where both reports were made. 2009 and before the reporting was aligned with WHO A comparison of the last 3 years data show the difference between WHO and RBC annual report illustrate that they are not aligned (see sub annex 2).	**Advice**: Consider aligning what is reported to WHO with what is reported annually in the country to have consistency in this.	None, communication with WHO

QUESTIONS	OUTCOMES (Best practises are in bold)	EXPLANATION	KEY ACTION(S) REQUIRED TO ADDRESS THE GAPS	ESTIMATED BUDGET REQUIREMENTS TO ADDRESS KEY ACTION(S)
A10. Are there national guidelines for recording and reporting of TB data, e.g. documentation or instructions? *(Tick all that apply)*	☐ **Yes. They are posted on the internet.** ☒ **Yes. They are available in a manual or other reference document, e.g. training materials** ☐ No	These are available in the HMIS system as soon as the data manager and others are logged in.	**Advice**: Consider posting the guidelines on the RBC website to make them publicly available. Consider developing SOPs for patient-based systems including checks etc before piloting/rolling out the system Consider developing 'Help' buttons within the system for definition/clarification on indicators and other issues	none
A11. Does the national TB programme have a training plan which includes staff involved in data collection and reporting at all levels of the reporting process?	☒ **Yes** ☐ No	The Manual Technique has all the SOPs and is used for all trainings. There is also a training plan in the TB National Strategic Plan that is used. A 4 day training specific for TB M&E is given to the M&E officer, TB supervisor, TB focal person & data manager.		1. Data analysis training for central and other level staff 2. TSRU participation
A12. How often do TB programme staff receive training specifically on TB surveillance, i.e. recoding and reporting of TB data? *(Tick all that apply)*	☒ **Training is routinely received at national and sub-national levels** (How often? every 2 years and for new staff and when new guidelines are introduced) ☐ Training is received on an ad hoc basis ☐ Staff receive training when they are hired ☐ No routine training is received	Training is done routinely for district staff. Each is trained every two years. In addition to routine training, training is given for new employees and when new guidelines are developed or there are other important changes in policy or practice. National staff do not receive routine training.	**Advice:** consider training for central level staff to keep their skills up-to-date and thus familiarize them with the latest development. This could include analysis of data, changes in guidelines, software training, surveillance topics etc. It could be interesting for Rwanda to join the TSRU (Tuberculosis Surveillance Research Unit)[4]	

[4] http://www.kncvtbc.org/tsru

QUESTIONS	OUTCOMES (Best practises are in bold)	EXPLANATION	KEY ACTION(S) REQUIRED TO ADDRESS THE GAPS	ESTIMATED BUDGET REQUIREMENTS TO ADDRESS KEY ACTION(S)
A13. How many staff work on TB surveillance at the national level? *(Tick all that apply)*	☒ **Epidemiologist- full-time** (#___2____) ☐ Epidemiologist- part-time (#_____) ☐ **Statistician- full-time** (#_____) ☐ Statistician- part-time (#_____) ☐ **Data manager- full-time** (#_____) ☐ Data manager- part-time (#_____) ☐ **Data quality officers-full time** (#_____) ☐ Data quality officers-part time (#_____) ☐ Other (specify: public health specialist 2 FTE; IT officer 1 FTE)	5 full time M&E staff at national level, 1 epidemiologist with 2 assistants PH specialist, 1 IT officer (HMIS) and 1 epidemiologist seconded from CDC. In addition, the supportive supervision is carried out by all 12 TB staff- visit 42 district hospitals. 5 TB district coordinators were moved from central to the districts early 2013.	**Advice:** There is no statistician in-house. Consider hiring a statistician especially when the patient-based system becomes fully operational, there will be more data generated. The risk of not having one in-house means that data analysis will not be carried out consistently.	0.5-1 FTE statistician
A14. Is a national TB surveillance report routinely produced and disseminated on an annual basis?	☒ **Yes** ☐ No	Besides the Annual Report of the TB & ORD Division, there is the Annual Report of RBC which has about half a page on TB (notification, treatment success rate, TB/HIV and MDR-TB indicators). In addition there is an MOH summarizing the key indicators and findings of the RBC report.	**Advice**: Consider making all reports publicly available on the RBC website TB section.	None, just discussion and agreement needed
A15. Are there written goals of the surveillance system?	☒ **Yes** ☐ No	The SOPs describe the importance of the surveillance system and the need for systematic collection of data (sub annex 3). Although not formulated as objectives they could be considered as such.	**Advice**: consider adding well formulated goals in the new M&E plan that is under development.	No additional cost, integration in updated M&E plan

A16. Policies and procedures are in place to protect the confidentiality of all surveillance data e.g. records, registers.	☒ **Yes, completely** ☐ Mostly ☐ Partially ☐ No, not at all	The SOPS have a section on archiving and data security describing how data should be stored (both electronic and paper. Paper in locked cabinets/rooms and electronic password protected). The chapter does not specifically refer to storage of sensitive medical data and any law pertaining to that. This is specially spelled out in the M&E plan section IV.2.5. Confidentiality of medical data.	**Advice**: Consider adding in the section of data security, a more elaborate plan for data confidentiality and storage and access to the TB register data with personal identifiers. Make reference to any existing law for protection of medical records etc. similar to the section in the M&E plan. Additional advice: a) Consider adding a section on data quality in chapter 1 where the filling of the different forms is explained- what checks should be conducted before the forms are be submitted. b) Consider adding an overview of the main TB indicators (target of the NSP) and how they are calculated using the collected information and for what they are used for. **Advice:** Indicator Reference Sheet should be added to the M&E plan	No additional cost, integration in updated M&E plan
A17. Is there a long term financial plan and budget in place to support TB surveillance activities?	☒ **Yes** ☐ No	Yes there is a budget in the annex of the M&E plan (mainly GF money). In addition, the needs for strengthening identified with the MESST tool was also budgeted for. The latest MESST exercise indicated that 6% of the TB budget is for M&E and this will be increased to 8%. In addition, there is another financial plan that outlines M&E plans funded by the government.	**Advice**: Have 1 consolidated financial plan to minimize duplication- this will allow for assessment of gaps and better overall planning	1-2 day meeting with M&E team and partners to consolidate the different financial plans

A18. When was the last time the TB surveillance system was evaluated?	☒ **Within the last 5 years** ☐ Within the last 5-10 years ☐ Never	A MESST assessment was done in 2010 and the latest one in July 2013 with rating: minor gaps (B) This indicated that: i) The dashboard indicated nearly all completely or mostly filled, two not at all, these were TB indicators in large survey and socio-economic breakdown of TB cases i) The M&E plan needs updating to reflect some recent changes. iii) Part of MDR TB data are missing in the HMIS hence not entirely available for use iv) M&E budget should increase from the current 6% to 8% in the M&E Plan 2013-2017	**Advice**: Every 5 years, the surveillance system should be evaluated and an in-depth analysis eg Epi-assessment carried out linked to Programme Review. Additionally, during 2015 the TB patient-based system should be evaluated thoroughly.	1. Budget (including TA) for evaluation of patient based system after one year operation 2. Budget (including TA) for next round of surveillance system evaluation 3. Budget (including TA) for conduct of Epi-assessment 4. Budget (including TA) for external program review every 5 years

ADDITIONAL NOTES:

a. The consultants advised the country to conduct an in-depth epidemiological assessment reviewing the surveillance data of the last 10 year and evaluating whether the effort in TB control has been productive and led to a reduction in TB burden. This analysis could well be linked to the results of the prevalence survey and the discussion on what the lower than expected observed TB burden means for the country, and whether and if so, what different approaches are needed in TB control. An outline of a standardized TOR of such an analysis is outlined in sub annex 6.

b. A clear plan of action and quality controls for use of HMIS and eTB i.e. who has access, clear checks, parallel systems for at least 1 year with clear indicators that should be met. Review how checks used for paper-based will change with new system i.e. automatically generated reports when CTs/CDTs upload their data, next level checks it before it goes up the chain. Use 2/3 HF in Kigali to pilot for at least a month to see if any challenges including internet issues or not & then evaluate before complete roll out which should be done in phases. Guidance/SOP for using eTB; clear evaluation plan and when it is acceptable to abandon old system?

c. What will change with the real time system- does not make sense to use quarterly reports? What other data analysis/indicator can be carried out? (Better patient management; these plans should be put in OR/M&E section of strategic plan). Many opportunities within the new systems exist and can allow one to incorporate smaller studies within the system eg a batch of patients in one area can be monitored for a set of standards etc

PART B (Section 1): CHECKLIST FOR TB SURVEILLANCE AND VITAL REGISTRATION SYSTEMS

For each standard, please assess whether the system is able to satisfy the associated benchmark(s), using the methods recommended in the user guide. Indicate 'Met', 'Partially met', "Not met" or 'Not applicable' in the results column. Describe the key results, any actions recommended to improve the quality of the system and the estimated budget to address these actions in the last two columns.

STANDARD	BENCHMARK(S)	RESULTS (See the User Guide for interpretation)	REMARKS	RESULTS (DESCRIPTION) INCLUDING KEY ACTION(S) REQUIRED TO ADDRESS THE GAPS	ESTIMATED BUDGET REQUIREMENTS TO ADDRESS KEY ACTION(S)
TB SURVEILLANCE SYSTEM DATA QUALITY					
B1.1 Case definitions are consistent with WHO guidelines	All three benchmarks should be satisfied to meet this standard: • Laboratory-confirmed cases are distinguished from clinically diagnosed cases [5] • New cases are distinguished from previously treated cases • Pulmonary cases are distinguished from extrapulmonary cases	☒Met ☐Partially met ☐Not met	The latest TB manual (January 2013) was checked to verify SOPs & definitions. TB register was also checked and was noted that all 3 benchmarks are distinguishable so the standard is met. Note: the current TB manual does not yet reflect the latest revised case definitions of WHO of March 2013. The program is in the process of updating the Manual to reflect the latest revision. The registers are already updated and have a column for GeneXpert results.	No gap identified as the manual is already being updated. In February, key staff were trained on the latest manual (but this has not yet been adapted). There remains the need for a refresher training on the new revised case definitions.	3 day trainings (by province)- all HFs one person (543 persons) plus all TB district coordinators (5 people), 60 mentors (2 per admin district); plus 42 TB supervisors (DH), M&E staff (42 persons); TB focal points (MD) at DH (42 persons)
B1.2 TB surveillance system is designed to capture a minimum set of variables for all reported TB cases	Data are routinely collected for at least each of the following variables for all TB cases: • Age or age group • Sex • Year of registration • Bacteriological results • History of previous treatment • Anatomical site of disease • For case-based systems, a patient identifier, e.g. numeric ID.	☒Met ☐Partially met ☐Not met	Lab and TB case registers show that benchmark variables are routinely being collected and are also reflected in the quarterly reports submitted by CDTs/DHs to central level.	No gaps	

[5] i.e. by smear, culture or WHO-endorsed molecular test e.g. GeneXpert MTB/RIF

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B1.3 All scheduled periodic data submissions, e.g. electronic data files or quarterly paper reports, have been received and processed at the national level	• *For paper-based systems:* 100% of expected reports from each TB basic management unit have been received and data aggregated at national level • *For national patient-based or case-based electronic systems that import data files from sub-national. e.g. provincial or regional, electronic systems:* 100% of expected data files have been imported	☒Met ☐Partially met ☐Not met ☐Not applicable	On a quarterly basis, CDTs meet with their respective CTs just prior to meeting with district officers to compile quarterly reports. These are submitted during the quarterly meetings. Additionally, the various records: lab register, TB treatment cards and TB case registers are crossed checked by District officer by way of quality checks before compiling quarterly reports. There is no overview indicator that can be used to show whether all reports have been received on the indicated date. However, there is an excel overview showing whether the extra forms (IC) have been submitted for each CT/CDT. In the new HMIS system this can be automatically viewed, but a check of 2013 quarter 2 data showed that there was a mismatch of number of CTs/CDTs (Refer to A1). This may be because all reports might not have been submitted. As the system was only launched in June 2013 and retrospectively the reports from January 2013 will still be submitted this needs to be rechecked. The system did indicate that the large majority of reports are submitted on time.		

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B1.4 Data in quarterly reports (or equivalent) are accurate, complete, and internally consistent *(For paper-based systems only)*	All benchmarks should be satisfied to meet this standard: • Sub-totals of the number of TB cases by age group, sex, and case type equals the total number of reported TB cases in ≥95% of quarterly reports (or equivalent) from basic management units. • The number of TB cases in ≥95% of quarterly reports (or equivalent) matches the number of cases recorded in TB basic management unit registers and source documents (patient treatment cards and laboratory register) • Data for a minimum set of variables are available for ≥95% of the total number of reported TB cases in BMU TB registers	☐Met ☒Partially met ☐Not met ☐Not applicable	CDTs carry out case reporting and was thus chosen as the BMU. There are a total of 199 CDTs in the 5 districts of Rwanda (North, South, East, West and Kigali). Kigali caters to the majority of TB clients, followed by South and East who see similar volumes and then North and West. A sampling frame taking this weighting into account was thus drawn up and CDTs chosen randomly as follows: North and West 8 CDTs each, South and East 10 CDTs each, and Kigali 15 CDTs Verification of the 2012 annual TB dataset revealed that for 4/34 districts (11%) of the total of sub-aggregated data did not fully match the total numbers reported. This translated to a discrepancy of 9/3571 = 0.25% cases. Therefore the first benchmark is not met. The second benchmark could not be verified as no verification at HF level were done. The latest RSQA showed that for 31 out of 41 (75%) of HC and DH visited, various discrepancies in recording were identified, although most were not severe discrepancies. The third benchmark is met.	Enhance supervision and record verification to meet this standard. Could conduct a formal DQA countrywide or monitor more in-depth several key indicators related to data quality. (WORK OUT PROPOSAL) It is suggested that formulae on the Excel sheets should be locked. There should be built in checks to check totals. The annual Registration Excel Sheet (ENR_AN) Title should reflect the timeframe from which the data is collected ie should read Annual not 3rd trimester. The order of reports in the compiled paper trimester report should be in the same/fixed order of the National Database. If corrections are made on the submitted forms it should be clear who made them by signing and dating the correction made – this is stated in the new SOP – people have now been trained on this.	

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B1.5 Data in national database are accurate, complete, internally consistent, and free of duplicates *(For electronic case-based or patient-based systems only)*	All benchmarks should be met to reach this standard: • Data validation checks are in place at national level to identify and correct invalid, inconsistent, and missing data in the minimum set (B1.2) • For each variable in the minimum set (standard B1.2), >90% of case records are complete, valid and internally consistent for the year being assessed. • <1% of case records in the national dataset for the year being assessed are unresolved potential duplicates	☐Met ☐Partially met ☐Not met ☒Not applicable			
B1.6 TB surveillance data are externally consistent	• Among new TB cases, the percentage of children diagnosed with TB is between 5-15% in low- and middle-income and <10% in high-income countries	☒Met ☐Not met	New TB cases among children over the last 5 years was calculated to be between 6.3 – 9.3%		
B1.7 TB surveillance data are internally consistent over time	If vital registration data are available, then the following benchmark should be satisfied for this standard to be met: 1. Year to year change in the national number of reported TB cases is consistent with the year to year change in national TB mortality (HIV-negative, from national vital registration) i.e. trajectories with the same direction.	☐Met ☒Partially met ☐Not met	A system of registering births and deaths exists in the country but it does not function optimally. Across the country exists various administrative offices ("Secteurs") whose function are to register all deaths and births within a specified period. There is a law that mandates all births and deaths to be notified within 30 and 15 days respectively, however not everybody is conversant with the law. Furthermore, the cause of	The TB programme can strive to register the causes of death amongst cases.	

STANDARD	BENCHMARK(S)	RESULTS (See the User Guide for interpretation)	REMARKS	RESULTS (DESCRIPTION) INCLUDING KEY ACTION(S) REQUIRED TO ADDRESS THE GAPS	ESTIMATED BUDGET REQUIREMENTS TO ADDRESS KEY ACTION(S)
	If vital registration data are not available, then the following benchmarks should be satisfied for this standard to be met. At the national level, Evidence of internal consistency over the previous five years for the following benchmarks: 1. Ratio of notified pulmonary to extrapulmonary TB cases 2. Ratio of male to female TB cases 3. Proportion of child TB cases out of all TB cases 4. Year to year change in the case notification rate for all forms of TB 5. Year to year change in the case notification rate for new smear positive TB and if data are available, 6. Ratio of the number of people with presumptive TB to total notifications of TB cases		death is not specified so it is not possible at this moment to ascertain TB mortality. In addition to the "secteurs," the CHW/HF register death/births The country is in the process of amending the law to allow for the linking of the 2 efforts and thus will develop in the long run a vital registration system with recording of causes of death systematically. (see more details in sub annex 4) Thus, the alternative standard was assessed and benchmark 1 and 2 were met (see graphs in annex 5). However benchmark 3, the proportion of child TB cases out of all TB cases showed a sharp drop after 2008. Benchmarks 4 & 5 showed case notification changes much more sharply in 2010. Data are also available for the 6th benchmark: this shows a sharp increase for 2011-2012 but this can be explained by the fact that mid-2011 a countrywide boost was given to community case detection and trained CHWs were deployed nationwide possibly sharply increasing the number of suspects being investigated. Although it should be noted that the number of cases did not increase considerably in 2010 (See graphs sub annex 4). As there is no vital registration system recording TB deaths the		

STANDARD	BENCHMARK(S)	RESULTS (See the User Guide for interpretation)	REMARKS	RESULTS (DESCRIPTION) INCLUDING KEY ACTION(S) REQUIRED TO ADDRESS THE GAPS	ESTIMATED BUDGET REQUIREMENTS TO ADDRESS KEY ACTION(S)
			alternative standard was assessed: The ratio PTB/EPTB and Male/Female were consistent in the last 5 years (see graphs attachment 5) therefore the first two benchmarks are considered met. The proportion of child TB cases out of all TB cases (benchmark 3) showed a sharp drop after 2008 but has been consistent since. For the sharp drop no clear explanation was found, there was no obvious change in methodology to diagnose and if anything an increase would have been expected not a drop. When investigating further and looking by type of TB, all show a similar pattern but the drop is strongest in smear negative therefore the drop could be related to improved diagnostics reducing over diagnosis of smear negative children as TB but this should be further confirmed. The year to year change in case notification for all and smear positive TB cases (benchmark 4 and 5) showed a more erratic pattern. For all forms of TB case notification declines about 5% per year except for 2010 where it was double at 10%. For smear positive TB annual decline is smaller at 2-4% except for 2010 when it declined with 12%. When looking at the patterns of for Smear negative and EPTB it can be		

STANDARD	BENCHMARK(S)	RESULTS (See the User Guide for interpretation)	REMARKS	RESULTS (DESCRIPTION) INCLUDING KEY ACTION(S) REQUIRED TO ADDRESS THE GAPS	ESTIMATED BUDGET REQUIREMENTS TO ADDRESS KEY ACTION(S)
			observed that for smear negative annual change in case notification is similar with a larger drop in 2010 while for EPTB the pattern is much more erratic (see graphs in sub-annex 5 below). Data are also available for the 6th benchmark, the ratio presumptive cases to notified TB cases, this pattern shows a sharp increase for 2011-2012 which can be explained by the programmatic effort of suspect investigation. As the pattern for benchmark 4 and 5 is more erratic it was concluded that this standard was only partially met.		

TB SURVEILLANCE SYSTEM COVERAGE					
B1.8 All diagnosed cases of TB are reported	Both benchmarks should be satisfied to meet this standard: • TB reporting is a legal requirement • ≥90% of TB cases are reported to national health authorities, as determined by a national-level investigation, e.g. inventory study, conducted in last 10 years	☐Met ☒Partially met ☐Not met	There is a general consensus that TB reporting is a legal requirement as TB is a notifiable disease via the TB register. The exact legal status must be confirmed. No inventory study has ever been done in Rwanda therefore using the checklist it should be concluded this standard is only partially met. However, when looking at the need to conduct an inventory study as outlined in the WHO guide[6], Rwanda would not undertake one as surveillance coverage is good and there is no indication of severe underreporting and no prominent private sector. Therefore it was felt the benchmark is not applicable for Rwanda.		
B1.9 Population has good access to health care	Both benchmarks should be satisfied to meet this standard: • Under-5 mortality rate (probability of dying by age 5 per 1000 live births) is <10 • <25% total health expenditure is out-of-pocket	☐Met ☒Partially met ☐Not met	WHO statistics indicate that under 5 mortality is 55 (42-72) per 1000 live births in 2012. Although it has come down from 180 since 2000 it is not yet below the required 10 per 1000 live births. The Rwanda DHS 2010 shows slightly higher figures reporting 76 per 1000 live births for 2010. Out-of-pocket expenditure as a total of health expenditure was shown to be 21.4% from WHO statistics and has been below 25% for the last 10 years. Therefore this benchmark is met.		

[6] Assessing tuberculosis under-reporting through inventory studies, WHO, February 2013, ISBN: 978 92 4 1504942, WHO reference number: WHO/HTM/TB/2012.12, available via http://www.who.int/tb/publications/inventory_studies/en/index.html

QUALITY AND COVERAGE OF VITAL REGISTRATION SYSTEM					
B1.10 Vital registration system has high national coverage and quality	Both benchmarks should be satisfied to meet this standard: • Cause of death documented in ≥90% of total deaths recorded in a a) national vital registration system OR b) sample vital registration system • <10% of deaths have ICD codes for ill-defined causes (defined as ICD-9 780-799 and ICD-10 R00-R99)	☐Met ☐Partially met ☒Not met	Although there is a system of registration of births and deaths in the country (see B 1.7 for more details), causes of death are not documented. Additionally, CHWs/HF collect some data on births/deaths but this is not captured at the "Secteurs."However, it is anticipated there will be a change in the law that will allow this information to be gathered/merged as well as causes of death to be better specified by involving the hospitals. Alternatively, there is also no sample vital registration system and no Demographic Surveillance Site (DSS) in Rwanda which provide a proxy for the required information. What is important to mention is that the program did start recording additional cause of death information for all those that died during TB treatment to assess whether they died of TB or other causes. This is important information to assist in estimating the true TB deaths and this information could be used together with the lessons from loss tool[7] to improve TB care.	Set up of a vital registration in the longer term, this is not directly in the hands of the TB & ORD Division, but they could advocate for it within RBC and the MOH.	

[7] Mitchell, E.M.H., van den Broek, J., Wandwalo, E., Colvin, C. *Lessons from Loss: A Guide to Conducting TB Patient Mortality Audits using a Patient-Centered Approach*. The Hague: KNCV Tuberculosis Foundation TB CARE I 2012; available via tbcare1.org/publications/toolbox/

PART B (Section 2): SUPPLEMENTARY CHECKLIST FOR TB SURVEILLANCE

For each standard, please assess whether the system is able to satisfy the associated benchmark(s), using the methods recommended in the user guide. Indicate 'Met', 'Partially met', "Not met" or 'Not applicable' in the results column. Describe the key results, any actions recommended to improve the quality of the system and the estimated budget to address these actions in the last two columns.

STANDARD	BENCHMARK(S)	RESULTS	REMARKS	RESULTS (DESCRIPTION) INCLUDING KEY ACTION(S) REQUIRED TO ADDRESS THE GAPS	ESTIMATED BUDGET REQUIREMENTS TO ADDRESS KEY ACTION(S)
SURVEILLANCE OF DRUG RESISTANT TB					
B2.1 Surveillance data provide a direct measure of drug resistant TB in new cases	One of the two benchmarks should be satisfied to meet this standard: • Rifampicin susceptibility status (positive/negative) documented for ≥75% of new pulmonary TB cases • Rifampicin susceptibility status (positive/negative) documented for a nationally representative drug resistance survey of new pulmonary TB cases	☒Met ☐Partially met ☐Not met	The last DRS was conducted in 2004/2005. A 2nd one is planned and expected to start in November 2013. In 1995 a localized/rapid assessment was done by Antwerp this was not nationally representative. Rif susceptibility status is currently being carried out for MDR risk groups country wide these include: MDR contacts, retreatment cases, TB staff, smear positives prisoners, HIV+ smear positives and those that do not convert at month 2 are being tested Kigali is identified as high risk zone and from 2012 all smear positive TB cases are tested. GeneXpert roll out began in 2012 and is being used in order to test all the above listed cases. In addition GeneXpert is used to test TB suspect in prisons, people with presumptive TB who are HIV+, and severely ill patients who are TB suspect.	No gap identified. Although not obligatory it would be good to verify coverage of risk groups tested. For all risk groups the nominator, i.e. number of risk group tested for MDR is routinely reported (section VII of the reporting form, see sub-annex 1). For retreatment and non-converters coverage of those tested could be easily calculated using the routine figures reported for these groups as denominator For prisoners and contacts of MDR patients, the denominator might be less readily available but could be the information could be obtained. It could be useful to monitor coverage of testing of (some) risk group as indicator in addition to absolute number to move in the direction of full coverage.	

STANDARD	BENCHMARK(S)	RESULTS	REMARKS	RESULTS (DESCRIPTION) INCLUDING KEY ACTION(S) REQUIRED TO ADDRESS THE GAPS	ESTIMATED BUDGET REQUIREMENTS TO ADDRESS KEY ACTION(S)
SURVEILLANCE OF TB/HIV					
B2.2 Surveillance data provide a direct measure of the prevalence of HIV infection in TB cases	One of the two benchmarks should be satisfied to meet this standard: • HIV status (Positive/Negative) documented for ≥80% of all notified TB cases • HIV status is available from a representative sample from all TB cases notified in settings with a low-level epidemic state [8] or where it is not feasible to implement routine surveillance	☒Met ☐Partially met ☐Not met	The Programme started to test all people with presumptive TB not only cases from 2009. Results are clearly captured in the TB registers as well as quarterly reports. In 2012 99% of all TB cases had an HIV test done.	No gaps.	
SURVEILLANCE OF CHILD TB					
B2.3 Surveillance data for children reported with TB (defined as ages 0-14 years) are reliable and accurate or all diagnosed child TB cases are reported	Both of the benchmarks should be satisfied to meet this standard: • Ratio of age groups 0-4 to 5-14 years is in the range 1.5-3.0 • ≥90% of child TB cases are reported to national health authorities, as determined by a national-level investigation, e.g. inventory study, conducted in last 10 years	☐Met ☐Partially met ☒Not met	The ratio of age groups 0-4 to 5-14 years in 2012 was 0.7. This is below the range given. Additionally no inventory studies have been carried out in Rwanda. Thus this bench mark remains unmet.	Several ideas to enhance this standard include: - Improving contact tracing; analysis of the existing data to ascertain how many children are seen in comparison to those tested can guide the way forward. - Strengthened collaboration with EPI programme to allow for active case finding especially during school vaccination programs - Investigate further the WHO roadmap for childhood TB.	

[8] Low-level epidemic state: HIV prevalence has not consistently exceeded 5% in any defined subpopulation.

	CHECKLIST SUMMARY (TICK THE BOXES WHERE APPROPRIATE)			
STANDARD	**MET**	**PARTIALLY MET**	**NOT MET**	**NOT APPLICABLE**
B1.1: WHO case definition	X			
B1.2: TB indicators routinely collected	X			
B1.3: All reports timely received at national level	X			
B1.4: Quarterly reports accurate and complete		X		
B1.5: Electronic database free of duplicates				X
B1.6 : Externally consistent TB data	X			
B1.7: Internally consistent TB data		X		
B1.8: Reporting of all TB cases		X		
B1.9: Access to health care		X		
B1.10: Vital registration system coverage			X	
B2.1: Drug resistance TB in new cases	X			
B2.2 : HIV prevalence in TB cases	X			
B2.3: Childhood TB surveillance			X	

Sub-Annex 1

CT/CDT TB reporting formats

I. Identification /Identification					
Name of Health facility		Population			
District		Year		Quarter	
Type de service tuberculose					

II. Number of TB cases registered/ Nombre de cas de TB enregistrés(CDT only)

Types de cas	0-14 years		15-24 years		25-34 years		35-44 years		45-54 years		55-64 years		? 65 years	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
NTPM+/ New Pulmonary TB with smear positive														
Rechutes / Relapses														
Échecs / Failures														
Traitement après abandon/ Return after defaulters														
NTPM-/ Pulmonary TB Negative smears														
NTPM0/ Pulmonary TB with Microscopy Not Done														
TB Extra Pulmonaire/ Extra Pulmonary TB														
Autres / Others														
Total des cas de TB	0	0	0	0	0	0	0	0	0	0	0	0	0	0

III. HIV testing among TB cases (excluding incoming transfers): CDT only
Test HIV parmi les cas de TB (excluant les transferts entrants)

	NTPM+ (NSS+)				Autres formes (NTPM-/0, EPTB, Retraitement			
	0-14 years		? 15years		0-14		? 15years	
	M	F	M	F	M	F	M	F
Enregistrés/ Registered	0	0	0	0	0	0	0	0
Testés pour VIH (PVV et nouvellement testés) / Tested for HIV (PLHIV and newly tested)								
VIH positives/ HIV positive								
CTX								
ARVs								

IV. LABORATORY / LABORATOIRE : CDT et CT

	CDT	CT	CHWs	TP/Traditional Healers	Total
Nombre de patients suspectées par/ Number of patients suspected by					0
Nombre de suspects positifs détectés/ Number of positive suspects detected					0

V. Number of Smears examined FOR CDT ONLY (CDT Will complete including CT)
Nombre de frottis examinés POUR CDT SEULEMENT (CDT vont completer en incluant les CTs)

	1+, 2+, 3+	1-9 B/100 c	Nég	Total
Nombre de frottis de diagnostic/ Number of smear of diagnosis				0
Nombre de frottis de suivi / Number of follow up smears				0

VI. TB/HIV and TB among people at high risk of TB: CDT and CT **TB/VIH et TB parmi les groupes à risque**	
Nombre de suspects TB vivant avec le VIH/ Number of TB suspects living with HIV/AIDS	
Nombre de suspects TB à statut VIH inconnu/ HIV screening among TB Suspects With unknown HIV status	
Nombre de suspects TB à statut VIH inconnu testés pour le VIH/ Number of TB suspects With unknown HIV status tested for HIV	
Nombre de suspects TB à statut VIH inconnu testés pour le VIH et trouvés VIH+/ Number of TB suspects With unknown HIV status whose Status become HIVpositive (after test)	
Nombre total de suspects TB VIH +/ Total number of HIV positive suspects	0
Nombre de personnes VIH+ suspects de TB qui ont bénéficié du test Genexpert/ Number of HIV+ TB suspects who beneficiated fron Genexpert test	
Nombre total de cas de retraitement TB qui ont bénéficié du test Genexpert/ Total number of TB retreatment cases examined with Genexpert	
Nombre total de cas de retraitement TB)/ Total number TB retreatment cases)	0

VII. Nombre de personnes à risque de TB qui ont été examinés pour recherche de TB
Number of persons at high risk groups of TB screened for TB disease (CDT and CT)

Risk group :	Number	Screened	Suspects	TB Cases
Prisonniers évalués à l'entrée/ Number of new prisoners examined at entry				
Contacts de cas TPM+ (tout âge) / Contacts of SS++ (all age)				
Contacts de cas TPM+ < 5 ans mis sous INH / Contacts of SS++ (all age)				
Personnes VIH+ / HIV+ persons			0	
	Total	0	0	0

VIII. Community DOTS (CDT and CT)	
Nombre de cas TB nouvellement confiés aux ASCs pour suivi du traitement pendant le trimestre évalué / Number of TB cases newly entrusted to CHW for treatment during the quarter evaluated	

IX. Bacteriological conversion at the end of intensive (Data for the previous quarter on quarter evaluate)
Conversion bactériologique à la fin de la phase intensive (cohorte enregistrée un trimestre avant ce trimestre évalué) : CDT only

	Registered/Enregistres	Positive at C2/ Positif à C2	Positive at C3/ Positif à C3	Negative/ Négatif	Deaths/ Décès	Transfered/ Transféré	Control not done/ Contrôle non fait
Controle NTPM C2 NSS+ at C2							
Controle rechute C3 Relqpse at C3							
Controle abandon C3 Return after default at C3							

XI. Suspicion of MDR/TB: Number of eligible persons who had culture of their sputum done Suspicion de la TB-MR: nombre de personnes éligibles qui ont eu la culture de leurs crachats faits (CDT only)		
Culture/Type of TB	Number registered	Number with culture
Nombre de NTPM+ positif à C2/ Number of positive SS+ at C2	0	
Nombre d'échecs/ Number of Failures	0	
Nombre de Rechutes / Number of Relapses	0	
Nombre de Retour après abandon / Number of Return after default	0	
Nombre de NTPM+ en prisons / Number of NSS+ in prison		
Nombre de NTPM+ parmi le personnel de FOSA/ Number of NSS+ among health providers		
Nombre de NTPM+ parmi les PVV/ Number of NSS+ among PLWHIV	0	
Nombre de NTPM dans les zones à haut risque / Number of NSS+ diagnosed in High-risk area		
Nombre de contacts TB MR examinés / Number of MDR/TB contacts examined		
Nombre de cas TB diagnostiqué parmi les contacts de cas TB MR/ Number of TB cases diagnosed among MDR TB contacts		
XII. Management of MDR TB cases/Prise en charge de malades TB MR : CDT and CT		
Nombre de malades TB MR sous traitement au début du trimestre évalué/ Number of MDR/TB cases on treatment at the beginning of quarter		
Nombre de cas TB MR confirmés durant ce trimestre évalué / Number of MDR/TB cases confirmed during the quarter		
Nombre de cas TB MR sous traitement à la fin de ce trimestre évalué/ Number of MDR/TB on treatment at the end of quarter		
Nombre malades TB MR sous traitement dans unités spécialisées TB MR à la fin de ce trimestre évalué/ Number of MDR/TB patients on treatment at the end of quarter in the specialized unit		
Nombre malades TB MR sous traitement à la fin de ce trimestre évalué en ambulatoire / Number of MDR/TB patients on treatment at the end of quarter in ambulatory		
XIII. GESTION DES ANTITUBERCULEUX/ TB DRUGS MANAGEMENT (CDT only)		

Sub-Annex 2

Comparison of RBC/NLTP annual report and WHO global reported TB data

Table Comparison of reported TB data in the annual report of RBC (and before NLTP) and the WHO global report

	2011		2010		2009	
	RBC (July 2010-June 2011)	**WHO**	**RBC**	**WHO**	**RBC**	**WHO**
New Sputum pos	3,962	3,811	3,785	3,785	4,184	4,184
New sputum neg	756	686	738	738	852	852
NEW EPTB	1,507	1,300	1,577	1,577	1,582	1,582
other (smear not done plus other)	558	573	334	334	387	387
TOTAL new	**6,783**	**6,370**	**6,434**	**6,434**	**7,005**	**7,005**
RTx	447	414	442	631	475	475
other	-	-	**189**	-	164	164
All FORMS	**7,230**	**6,784**	**7,065**	**7,065**	**7,644**	**7,644**

Note: for the year 2011 there is a discordance since NLTP had been incorporated into RBC and they report using the fiscal year (July-June) and no longer from January to December. For the WHO global report the team re-organize the data to report from Jan-Dec. The reporting period is no longer in concordance with the annual reporting period in the country, hence the discrepancy of the data.

Sub-Annex 3

Importance and objectives of the surveillance system as described in "Manuel de procedures" (July 2013) – page 3:

1) Le suivi et évaluation est un aspect important permettant l'évolution d'un programme;
2) La mesure de cette évolution se fait par l'intermédiaire des indicateurs ;
3) Ces indicateurs sont obtenus par collecte de différentes informations en utilisant différents outils;
4) Une bonne fiabilité de ces informations implique une bonne utilisation des outils de collecte des données, un contrôle de qualité de ces données, une analyse de ces données ainsi qu'un rapportage permettant l'exploitation et utilisation de ces données pour une prise de décision appropriée;
5) Les procédures suivies pour ces différentes étapes ci-haut citées doivent être menées de la même façon par les différentes personnes intervenant, afin d`assurer la fiabilité, la comparabilité ainsi que la crédibilité des informations colligées ;
6) Ces procédures sont énoncées et regroupées dans un même document appelé « Manuel de procédures ». Celui-ci détaille aussi les responsabilités, les actions à mener ainsi que les délais (périodicité).

Sub-Annex 4

Additional Information on the development of Rwanda's Vital Statistics

1. National Institute of Statistics of Rwanda has developed the National Strategy for the Development of Statistics (NSDS) 2009-2014. NSDS document is a blueprint of the programs, projects and activities of the National Statistical System (NSS) to be pursued from the year 2009 to 2014 in major sectors of the society. Further, the generation of statistics from the Civil Registration System to generate Vital Statistics will be developed. For a more information please refer to this website: http://www.paris21.org/sites/default/files/RWANDA-NSDS2009-14-final.pdf
2. According to the Country Accountability framework : Assessment/Scorecard,

   (http://www.who.int/woman_child_accountability/countries/Rwanda_Scorecard_and_Roadmap.pdf), there a good systematic community reporting of birth and maternal and child death only. Verbal autopsy is done for maternal, newborn and child death in 1/3 of the whole country. No data quality checks are currently done. There is an annual statistical book available on the RNIS website which includes information on vital statistics.

Sub- Annex 5 Graphs accompanying standard B1.7

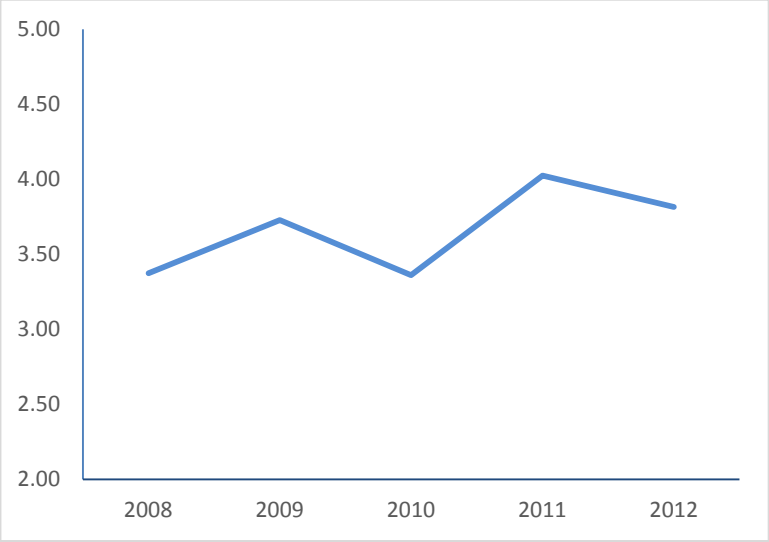

Figure 1 ratio of notified PTB to EPTB cases

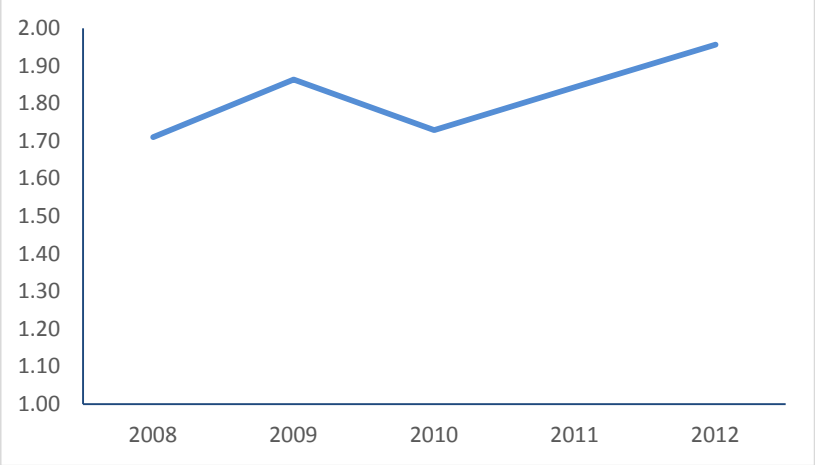

Figure 2 ratio of male to female new sputum smear positive TB cases

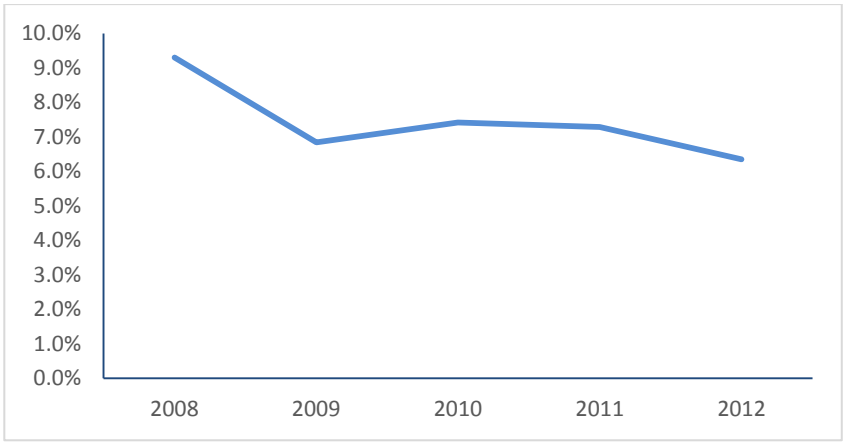

Figure 3 Proportion of child TB cases out of all TB cases – all forms combined

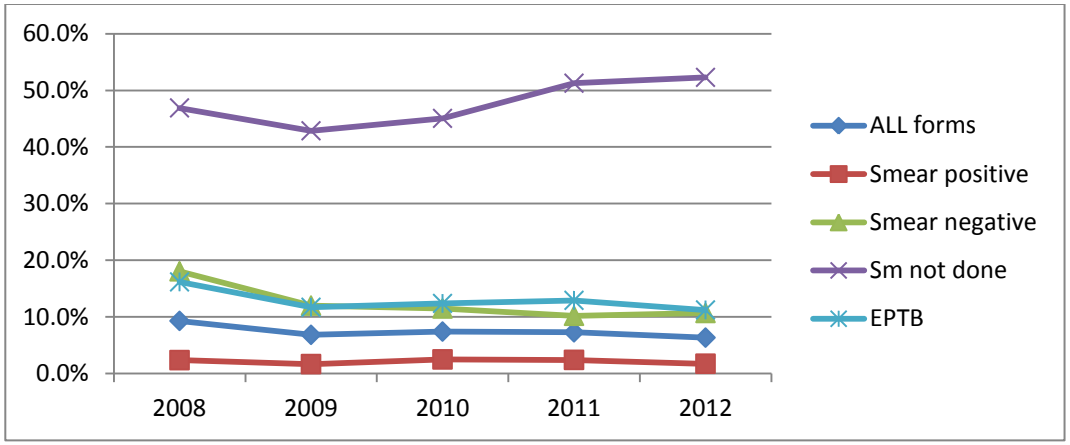

Figure 4 Proportion of child TB cases out of all TB cases for all forms, smear positive, smear negative and smear not done

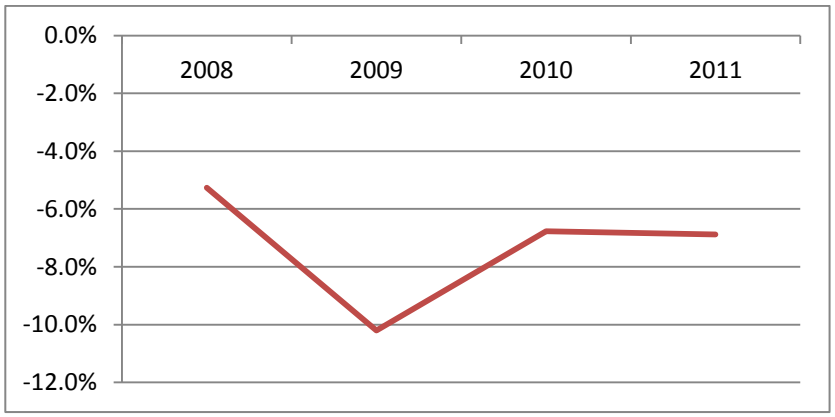

Figure 5 Percentage change of case notification rate for all-forms TB

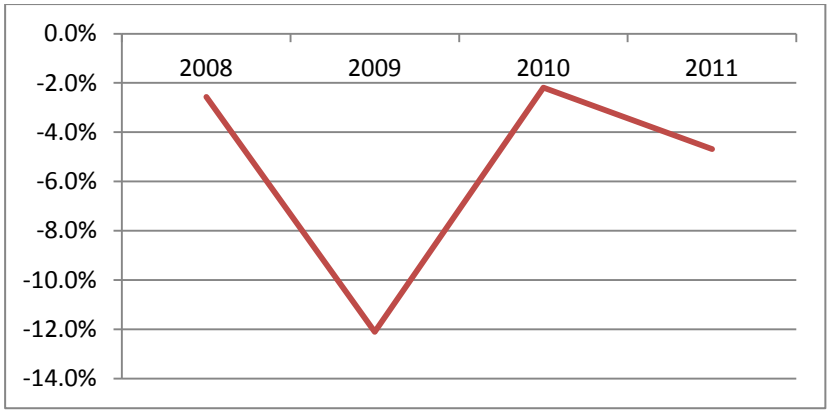

Figure 6 Percentage change of case notification rate for new smear positive

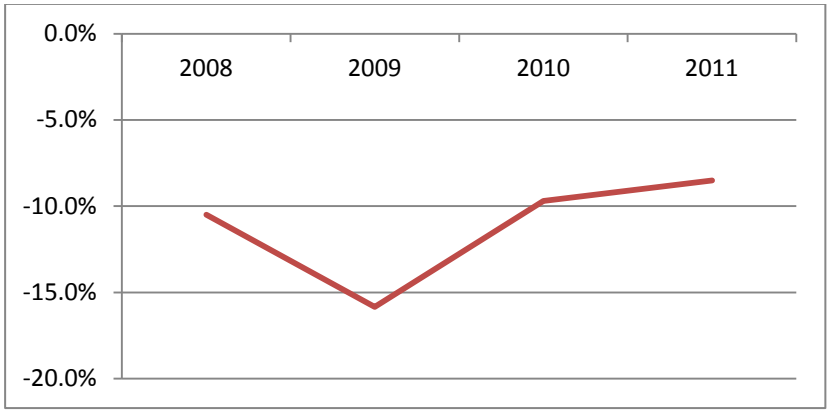

Figure 7 Percentage change of case notification rate for smear negative

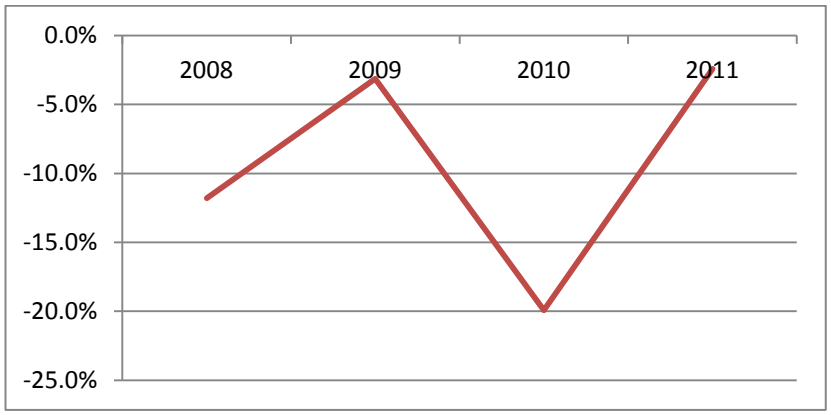

Figure 8 Percentage change of case notification rate for extra pulmonary TB

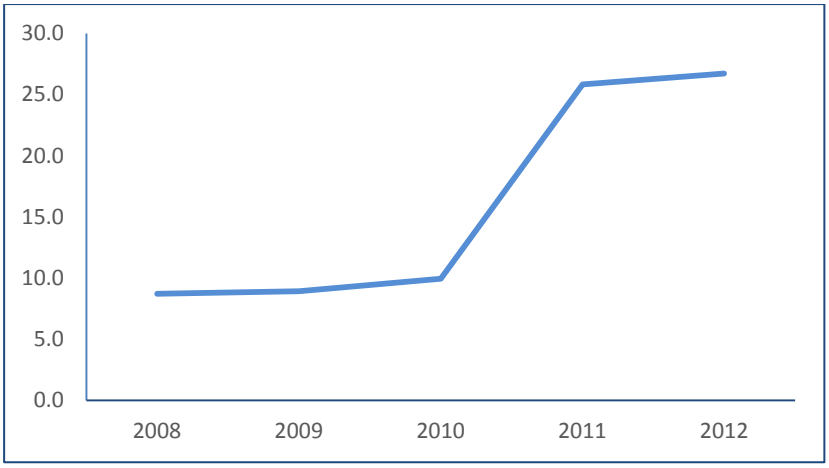

Figure 9 Ratio of presumptive cases to total notified TB cases

Sub annex 6 standardize ToR for Epi assessment

National health sector and national TB programme reviews, and "Epidemiological stage" for Global Fund concept notes:

Terms of reference for TB epidemiological and impact analysis

7.3 1. BACKGROUND

An excellent understanding of the level of, and trends 9 in, disease burden and how these have been (and can be) influenced by the implementation of prevention and treatment interventions is of considerable importance to national health programmes, as well as international donor agencies. It can help to ensure the appropriate allocation of funding and ultimately help to save more lives in the future. Epidemiological and impact analysis should be included systematically as part of National Health Sector Reviews and disease-specific programme reviews. Such analyses are also now required as part of the development of "concept notes" that provide the basis for funding applications to the Global Fund in the new funding model introduced in 2013; in this context, the analyses are called the "Epidemiological stage", and should precede the development of the concept note. These terms of reference cover the objectives and associated tasks and expected deliverables for TB epidemiological and impact analyses conducted as part of national TB programme reviews, as inputs to health sector reviews and for the "epidemiological stage" of the Global Fund's new funding model.

7.4 2. OBJECTIVES

1. Describe and assess current national TB surveillance and vital registration systems, with particular attention to their capacity to measure the level of and trends in TB disease burden (incidence and mortality).
2. Assess the level of, and trends in, TB disease burden (incidence, prevalence, mortality) using available surveillance, survey, programmatic and other data.
3. Assess whether recent trends in TB disease burden indicators are plausibly related to changes in TB-specific interventions taking into account external factors including economic or demographic trends.
4. Define the investments needed to directly measure trends in TB disease burden in future.

7.5 3. TASKS BY OBJECTIVE

7.5.1 Objective 1: Assessment of current national TB surveillance and vital registration systems with particular attention to their capacity to measure the level of and trends in TB disease burden

a) Provide a written description and explanation of the main features of the current national TB surveillance and vital registration systems. These should include the data being captured (e.g. notified cases, treatment outcomes, causes of death); definition of the agencies/individuals responsible for data collection, analysis and reporting and how they interact; mechanisms/processes used to capture and transmit data between different

[9] Analyses of time trends should be attempted as far back in time as possible before the health sector or programme review.

administrative levels and agencies (e.g. standardized forms; paper-based and/or electronic systems) and to assure data quality; timing and timeliness of reporting including lag times that hamper capacity to detect, investigate and contain events such as local epidemics (including events related to the emergence of drug resistance); the type of data available at the national level (e.g. aggregated reports, case-based data); approach to analysis and reporting of data; staffing levels; how systems for capturing TB data are related to/linked with other health information systems (e.g. health insurance, hospital reporting systems, district health information systems). *To help characterize the TB surveillance system, Part A of the WHO TB surveillance checklist (18 questions) should be completed.* [10]

b) Assess the current capacity of national TB notification and vital registration systems to provide a direct measure of TB disease burden using the WHO TB surveillance checklist (Part B). *The ultimate goal is to measure TB incidence and mortality directly from notification and vital registration data, respectively; Part B of the checklist consists of a set of 13 standards and associated benchmarks that allow assessment of the extent to which existing surveillance systems (notification and vital registration) meet these standards.* (NB the first standard in the checklist relates to case definitions. In this context, there should be an assessment of whether the 2013 WHO revised case definitions and reporting framework have been adopted and implemented, and at what scale, and any actions needed to introduce or fully implement them).

c) Summarize the main strengths of the current surveillance system and the weaknesses/gaps that need to be addressed, based on the findings from a) and b).

(*Suggested data sources* [11] : Interviews with relevant staff; national and sub-national case-based or aggregated TB notification data, national or sample vital registration data, results from facility audits (e.g. Service Availability and Readiness Assessment, SARA) or reviews of the quality of recorded data, results from drug resistance surveillance including drug resistance surveys, research literature). A comprehensive list of data sources is provided in the user guide that accompanies the checklist).

7.5.2 Objective 2: Assessment of the level of, and trends in, TB disease burden

This assessment includes review and compilation of published estimates of TB morbidity and mortality that are already available to assess the level of, and trends in, TB disease burden (at least nationally and when feasible sub-nationally and among sub-populations); analysis of TB notification data; and interpretation of available data.

a) Analysis of the level of, and trends in, TB mortality.
   i. Analysis of trends in TB mortality among HIV-negative individuals. This is best done using data from a national or sample civil registration system of vital statistics with cause of death data that meet the standards defined in the WHO TB surveillance checklist. Each year, WHO publishes estimates of TB mortality among HIV-negative people from 1990 onwards for all countries in the annual global TB report (the global TB report also identifies the countries for which mortality among HIV-negative individuals has been estimated from vital registration data and mortality surveys, and the countries for which estimates rely on other methods).

[10] http://www.who.int/tb/advisory_bodies/impact_measurement_taskforce/meetings/en/

[11] It is likely that some of the suggested data are not yet available. The identification of these data gaps is important and they should be identified in a specific section of the final report, along with clearly defined next steps for addressing these gaps.

ii. Analysis of trends in the distribution of contributory causes of AIDS deaths (with particular emphasis on TB), if data are available. From 2012, estimates of TB mortality among HIV-positive people are being produced using the TB component of Spectrum, and published on an annual basis by WHO and UNAIDS.

(*Suggested data sources*: WHO TB database, AIDSinfo database, records from national or sample civil registration of vital statistics with cause of death data from NTP/MoH databases, results from mortality surveys, research literature).

b) Analysis of the level of, and trends in, TB prevalence. If data are available from a baseline and at least one repeat survey, then there is strong evidence about trends in disease burden. If results from two surveys conducted about 10 years apart are not available, estimates of trends are available from WHO but uncertainty intervals are wide. The results from a recent survey can be used to assess the current level of TB disease burden and may also provide important evidence about the effectiveness of current TB programmatic efforts and actions needed to improve TB care and control.

(*Suggested data sources*: results from surveys of the prevalence of TB disease, WHO TB database, research literature)

c) Analysis and interpretation of the level of, and trends in, TB case notifications (e.g. for the last 5-10 years).

i. Plot time series of case notifications and analyse results, including to assess trends and to identify if there is any evidence of reporting problems (e.g. missing data or sudden changes in time-series of reported new episodes of TB at national and first subnational level e.g. state or province). Analysis of results should take into consideration any changes in reporting policies and practices, and case definitions.
ii. Analysis of the geographic distribution of case notification rates among subnational areas and how this has changed over time, and exploration of reasons for observed trends and geographical heterogeneity. These include, but are not limited to, the availability of TB diagnostic services, case finding activities, changes in the ratio of TB cases to the number of people investigated for "presumptive" TB (note that data on the number of people investigated for TB are often not quality-assured and duplicate entries from multiple visits by the same person may exist), health systems characteristics, determinants of/risk factors for TB (e.g. overall levels of income and poverty, HIV prevalence).
iii. Analysis of trends in the proportions of notified cases: (a) by type of TB disease - bacteriologically confirmed and extra-pulmonary TB; (b) by age group, including the proportion of cases among children (0-4, 5-14); (c) by category (retreatment out of the sum of new and retreatment cases).
iv. Trends in age- and sex-specific case notification rates, the average age of newly notified cases, and the extent to which these can be explained by demographic or other factors.
v. Analysis of the level of (and ideally trends in) under-reporting from national inventory studies if these are available before the assessment.
vi. Any data available on TB in high risk groups such as people living with HIV, the elderly, people with diabetes, people with compromised immune systems, prisoners, miners, etc.; numbers, denominators; and if available proportions and trends.

vii. Other miscellaneous analyses that may be relevant in specific settings (to be determined by the epidemiologist(s) undertaking the assessment).

(*Suggested data sources*: National and sub-national case-based or aggregated TB notifications, laboratory data, results from inventory studies to measure TB under-reporting (and under certain circumstances estimate incidence), laboratory data, research literature, national databases with information about overall health system characteristics and determinants/risk factors related to TB)

7.5.3 Objective 3: Are recent trends in TB disease burden plausibly related to changes in TB-specific interventions accounting for other external factors?

Funding for and implementation of high-quality TB-specific interventions should result in detection of people with TB and curative treatment; in turn, this should have a direct impact on TB mortality (cutting case fatality rates compared with no treatment or substandard treatment). Shortening the duration of disease through detection and treatment of cases will also reduce the prevalence of TB disease, and therefore, transmission. There will be an impact on TB incidence if transmission can be reduced sufficiently and/or if preventive treatment of people with latent TB infection is effectively implemented on a large scale. At the same time, a range of factors besides TB-specific interventions influence levels of TB disease burden, by affecting population susceptibility to both TB infection and the risk of developing TB disease once infected. These include overall levels of wealth and the distribution of wealth (measured e.g. as GNI per capita, the proportion of people living in poverty), the overall coverage and quality of health services and the prevalence of HIV and other risk factors for TB. Having considered trends in disease burden in Objective 2, it is important to assess whether these trends can partly be related to changes in TB-specific interventions (and associated funding).

a) Define and compile data that are relevant to assessment of the extent to which changes in TB disease burden in recent years (e.g. for the last 5–10 years) can be explained by TB-specific interventions/programmatic efforts. This should include, at a minimum:

i. Government and international donor funding for TB care and control;
ii. Number of health facilities providing TB diagnostic services per 100,000 population;
iii. Number of health facilities providing TB treatment services per 100,000 population;
iv. Number of people investigated for presumptive TB (if available data are reliable) and the ratio of presumptive TB to notified TB cases;
v. Performance of community/active case finding (number of cases screened and detected by each mechanism);
vi. Performance and coverage of public-private mix activities in the country. Coverage should be expressed where possible both as % of the country (geographic) and type, the % of providers covered (e.g., 30% of estimated pharmacies and 50% of estimated private pulmonologists);
vii. Any quantitative data on diagnostic delays (due to patient, private sector, or public sector delays);
viii. Number of people successfully treated for TB out of all notified;
ix. MDR-TB treatment coverage (comparing numbers detected and treated with the estimated number of cases among notified TB patients and describing the size of waiting lists), and treatment outcomes among MDR-TB patients. This is especially

relevant in countries in which MDR-TB cases account for a relatively large share of the total number of TB cases;

x. HIV testing, ART and CPT coverage of TB patients, treatment outcomes among PLHIV. This is especially relevant in countries with a high TB/HIV burden.
(*Suggested data sources*: WHO TB database, NTP database and reports, Service Availability and Readiness Assessments (SARAs), results from inventory studies that show the level of TB under-reporting, research literature, grey literature, national TB prevalence surveys, WHO HIV/AIDS data and statistics, AIDSinfo database, MOH and NGO databases, http://www.foreignassistance.gov for USAID funding data).

b) Define and compile data that are relevant to assessment of the extent to which changes in TB disease burden in recent years can be explained by factors that are not specifically related to TB-specific funding and associated interventions. This should include, at a minimum:

i. Prevalence of HIV among the general population, and ART coverage. (*Suggested data sources*: WHO HIV/AIDS data and statistics, AIDSinfo database);
ii. Prevalence of diabetes, tobacco use and under-nutrition. (*Suggested data sources*: WHO HIV/AIDS data and statistics, AIDSinfo database, WHO Global Health Observatory)
iii. GNI per capita and the % of the population under the poverty line, and the impact of economic crises. (*Suggested data sources*: World Bank Indicators);
iv. Coverage of financial protection for health care costs (by government health budget or health insurance etc.) and social protection programmes (overall, and for DS-TB and MDR-TB specifically where available) and the percentage of health-care expenditures accounted for by out-of-pocket payments (*Suggested data sources*: Research literature, national health accounts, social protection/welfare programme information on coverage of target groups, as relevant and available from WHO at www.who.int/nha; research literature)
v. Demographic changes; percentage of population who are less than 15, and those more than 65, years (*Suggested data sources*: UNPD database)
vi. Under-5 mortality rate (as an indicator of the overall performance of the health-care system).
(*Suggested data sources*: WHO Global Health Observatory)

7.5.4 Objective 4: Assessment of investments needed to directly measure trends in disease burden in the future

a) From the implementation of the WHO TB surveillance checklist: for standards defined in the checklist that are not yet met due to data gaps or data quality problems, identification of the investments required to improve surveillance (including estimated budget).
(*Suggested data sources*: same as in 1.b, NTP reports)

b) Assessment of whether a baseline or repeat survey (e.g. prevalence survey, inventory study, cause of death survey) is needed and if so what timing would be appropriate. An appropriate amount of time should be ensured between repeat surveys (for example, a repeat TB prevalence survey should normally be done about 10 years after the previous one). Guidance on countries where prevalence surveys are recommended is available from the Global Task Force on TB Impact Measurement.

7.6 4. DELIVERABLES

A comprehensive report addressing all tasks under the three objectives of the epidemiological and impact analysis outlined in this document with a conclusion section on:

a) The robustness of estimates of TB incidence, prevalence and mortality and their sources of uncertainty.
b) Whether it is plausible that TB control interventions have contributed to changing the course of the TB epidemic, accounting for other external factors.
c) Whether there are specific geographical areas or subpopulations (vulnerable/those with poor access) or sectors (e.g. mining, prisons/detention, etc.) in which the burden of disease is especially high and that warrant increased attention including greater investment of financial resources and/or reallocation of resources to focus on more effective, higher impact interventions.
d) Investments needed to improve evidence about trends in disease burden in future.

7.7 5. PROFILE REQUIRED

- A senior epidemiologist or statistician with extensive quantitative skills and a proven track record of producing results and communicating them well (including in scientific publications in peer reviewed journals);
- Excellent understanding of TB epidemiology, TB policies and interventions, and health systems;
- Extensive experience in working with national TB health programmes and offering technical assistance.

7.8 6. TIME REQUIRED

This depends in part on the extent to which the person(s) conducting the analysis are already familiar with the country where the assessment is being done and the associated data, their previous experience of conducting such analyses, but also the availability and expertise of national M&E counterparts who will participate in this exercise. For someone familiar with the country and the data and with previous experience of such work, it is estimated that 2 weeks of in-country work are required. An additional 2 weeks of preparatory work might be necessary depending on the country context.

Guidance on and related examples of schedules for previous missions that covered the Terms of Reference described are available from WHO and KNCV on request.

7.9 Distribution list

Name	Function	Organization
Dr Michel Gasana	Director	TB & ORD division, RBC
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