Republic of Rwanda

Ministry of Health

National Tuberculosis and other respiratory communicable Diseases Program Annual Report 2018-2019

RWANDA BIOMEDICAL CENTER

A Healthy People. A Wealthy Nation

FOREWORD

The Ministry of Health would like to take this occasion to express its deep appreciation and sincere thanks to all who contributed to the preparation of this annual report of Tuberculosis and other respiratory communicable diseases control in Rwanda.

This report has been developed based on data provided by the Rwanda Health Management Information System (RHMIS) for Tuberculosis (TB) and other respiratory diseases (ORD).

The annual report provides a comprehensive picture of the occurrence and management of TB, ORD and Leprosy in Rwanda and is structured based on the extension 2013-2018 of Rwanda TB National Strategic Plan and the 2014-2018 Rwanda Leprosy National Strategic Plan (2014-2020 Leprosy NSP).

Actions needed toward elimination of TB, ORDs and Leprosy in Rwanda will require strengthened and more integrated national and peripheral health services. It ensures consistent, evidence-based prevention, treatment and support to patients, their families and other contacts, as TB, ORD and Leprosy do not exist in isolation from other health and social concerns.

This report represents a collaborative effort between the Government of Rwanda and its partners. Representatives from all groups of stakeholders involved in the national TB response participated in the production of this report.

I would like to acknowledge the efforts of dedicated staff in the various institutions of the Government of Rwanda who worked tirelessly to complete the interventions included in this report. We remain entirely grateful to the inputs and support provided by our Partners. Special thanks to the members of the civil society, local and international non-governmental organizations (NGOs), bilateral organizations as well as Rwandan Government institutions who greatly participated in the completion of this report. I would also like to thank all members of technical working groups that reviewed and validated the content of this report.

We thank you all for your support in the fight against TB, ORD and Leprosy in Rwanda.

Dr. Diane GASHUMBA

Minister of Health

ACKNOWLEDGEMENTS

The Ministry of Health and Rwanda Biomedical Centre gratefully acknowledge the Government of Rwanda through strong leadership of H.E the President of Republic of Rwanda for the continuous support to fight TB and ORD in Rwanda.

Our gratitude goes out to:

- The staff from different Health Facilities who continue to provide care and treatment to patients and implement activities according to the national policies and guidance.
- To all stakeholders including Civil Society Organizations (CSO) and NGOs for their great contribution.

We would also like to thank the following partners: World Health Organization, Global Fund for HIV&AIDS, TB and Malaria, USG PEPFAR and Action Damien who support the government of Rwanda to reach the global targets by ensuring that Rwanda is free of Tuberculosis and Leprosy.

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ABBREVIATIONS

ACF	Active Case Finding
aDSM	Active Drugs Safety Monitoring
ART	Antiretroviral Therapy
CCM-Rwanda	"Country Coordinating Mechanism" of Global Fund in Rwanda
CDT	Centre for Diagnosis and Treatment of Tuberculosis
CHUB	Butare University Teaching Hospital
CHUK	Kigali University Teaching Hospital
CHW	Community Health Worker
CPT	Cotrimoxazole Preventive Treatment
CT	Centre for Treatment of Tuberculosis
CXR	Chest X-ray
DH	District Hospital
DIAMA	Diagnostics for Multidrug-resistant tuberculosis in Africa
DOT	Directly Observed Treatment
DQA	Data Quality Audit
DST	Drug Susceptibility Testing
EPTB	Extra Pulmonary TB
E-TB	Electronic Tuberculosis surveillance system
FNA	Fine Needle Aspiration
FY	Fiscal year
G2D	Grade 2 Disability
GDF	Global Drug Facility
GFATM	Global Fund for AIDS, TB and Malaria
GLC	Green Light Committee
GoR	Governement of Rwanda
HF	Health Facility
HFN	High False Negative
HFP	High False Positive
HIV	Human Immune Virus
HMIS	Health Management Information System
HRG	High Risk Group
HRTT	Health Resource Tracking Tool
HSSP	Health Sector Strategic Plan
IC	Infection Control
IMCI	Integrated Management of Childhood Illnesses
IPT	Isonizid Preventive Therapy
ISS	Integrated Supportive Supervision
LED-FM	Light Emitting Diode Fluorescence Microscopy
LFN	Low False Negative
LFP	Low False Positive
LTFU	Lost to follow up
M&E	Monitoring and Evaluation
MB	Multibacillary
MCCH	Maternal Child Community Health Division

MD	Medical Doctor
MDR-TB	Multidrug Resistant Tuberculosis
MoH	Ministry of Health
MPPD	Medical Production and Procurement Division
MTEF	Medium Term Expenditure Framework
MTR	Midi Term Review
NGOs	Non Government Organizations
NRL	National Reference Laboratory
NSP	National Strategic Plan
NTPB+	New Pulmonary Bacteriological confirned
NYC	National Youth Council
PAL	Practical Approach for Lung diseases
PB	Paucibacillary
PBF	Performance- Based Financing
PLHIV	People Living with HIV
PMDT	Programmatic Management of Drug Resistant Tuberculosis
QC	Quality Control
QE	Quantification Error
RBC	Rwanda Biomedical Center
RBF	Results Based Financing (of the Global Fund)
RDQA	Routine Data Quality Audit
RH	Referral Hospital
RMH	Rwanda Military Hospital
RRP+	Reseau Rwandais des Personnes vivant avec HIV
RSQA	Rapid Services Quality Assessment
SDGs	Sustainable Development Goals
SMART FMIS	Integrated Financial Management Information System
SOPs	Standard Operating Procedures
SPIU	Single Project Implementation Unit (MoH)
SS-	Sputum Smear Negative
SS+	Sputum Smear Positive
SS0	Sputum Smear Not done
TAF	Treatment After Failure
TB&ORD	Tuberculosis and Other Respiratory Communicable Diseases
TH	Traditional Healer
TSR	Treatment Success Rate
TWG	Technical Working Group
USD	United States Dollars
WHO	World Health Organization

EXECUTIVE SUMMARY

TB screening and diagnosis

During the 2018-2019 FY, 187,871 presumptive TB cases were identified and 56.9% were refereed by CHWs. Among them 5,949 TB cases were notified with 99.2% of treatment initiation. The high risk group represented 53.4% (3174/5,949) of all TB cases and 25.2%(1502/5949) were brought by CHWs. The proportion of TB cases under 15 years among all TB cases countrywide was 7.6%. More than 99% of both TB presumptive and TB cases were tested for HIV and co-infection rate was 21% among total cases.

Techniques for external quality control were performed in the lab, resulting in 91% for microscopy and 93.3% for genexpert, and this was the first time NRL performed External Quality Control testing for genexpert.

The NRL participated in the External Quality Assurance and the results showed that 100% of tests performed for microscopy, genexpert, and LPA matched. Drug Sensitivity Tests performed at 95% for External Quality Assurance.

TB management and treatment outcomes

The treatment success rates were as followed:

- Bacteriological confirmed TB cases: 86.5%
- Clinically diagnosed cases: 82.4 %
- Medical drug resistant TB treatment success rate: 86.1%
- Co-infected cases for drug susceptible TB cases: 76.8%
- Co-infected cases for multidrug resistant TB cases: 76.8%

A high rate of death among clinically TB diagnosed cases was also reported at 15%.

TB prevention

- TB screening was performed by 78.9% of HCWs and 84.5% of CHWs.
- 98% of children under 5 initiated Isoniazid Preventive Therapy (IPT).
- 94.5% of the 2017-2018 cohort that initiated IPT completed their prophylaxis.

TB program management and coordination

The 2018-2019 Epidemiological Review was conducted and concluded that Rwanda has a well-established TB program with a surveillance system producing high quality data.

The electronic individual report was reviewed based on WHO recommendations, and a new system was implemented in July 2017 replacing the aggregated TB quarterly reports.

Rapid quality assessment services were conducted in Centers for Diagnosis and Treatment (CDT) of TB and the overall score increased from 77% to 79.6% from the previous year.

Leprosy control

During this fiscal year, active case finding was conducted in 6 leprosy endemic districts

- 35 cases were diagnosed and initiated on treatment
    - Among them 86% were new cases
    - The proportion of Multibacillary cases among new cases was 57%
    - Among the notified cases, 20% had disability grade 2

The treatment completion rates for MB registered from July 2016 to June 2017 and PB forms registered from July 2017 to June 2018 for new cases were respectively 94.4% and 95.8%.

To mitigate stigma and ensure social support to the leprosy patients, 323 people received CBHI card and 11 houses were renovated during the reported fiscal year.

TB&ORD financing

The total budget of USD 7,428,937 from GF, Government of Rwanda, World Health Organization and Damian Foundation was planned. Regarding total expenditures, the budget execution was 94% of the total budget approved.

The total expenses were composed manly by medicines, health products and medical equipment, human resources, advance payment on CDTs laboratories renovation and capacity building for employees.

TUBERCULOSIS AND OTHER RESPIRATORY COMMUNICABLE DISEASES CONTROL

I.1. Objective 1: Improve early and accurate diagnosis of TB including universal DST through progressive adoption of WHO-recommended rapid tests for all presumptive cases so that TB treatment coverage increases from 84% in 2015 to 89 % by mid-2021.

This objective focuses on intensifying and detecting early TB cases. This requires a comprehensive set of activities including improved quality of screening at peripheral level, ensuring the availability of basic quality TB diagnosis services, expanding access to rapid and sensitive tests and intensified case findings in high risk groups.

I.1.1. Tuberculosis screening

Two screening approaches are used in Rwanda to detect TB cases:

- Passive screening is used in general population
- Active screening is used in high risk groups including prisoners, PLHIV, contact of TB cases, children under 15 years and elderly people above 55 years

I.1.1.1. Tuberculosis screening in general population

- The number of presumptive TB cases reported during this FY 2018-2019 was **187,867**
    - 56.9% of them were brought by CHWs

I.1.1.2. HIV testing among Tuberculosis presumptive

From 187,867 presumptive TB recorded during this fiscal year 2018-2019:

- 99.7% (187,303/187,867) knew their HIV status
- 10.5% (19,666/187,867) of them were HIV positive

This high coverage is due to the integration of TB and HIV activities at national and decentralized level.

Table 1: HIV infection testing among Presumptive TB cases registered during FY 2018-2019

Total # of presumptive TB	Known as HIV+	Unknown HIV status			Total tested	Total # of HIV+ presumptive TB
		# to be tested	# and % of Tested	# and % of HIV+		
187,867	18,635	169,232	168,668	1,031	187,303	19,666
	9.9%		99.7%	0.6%	99.7%	10.5%

I.1.1.3. Tuberculosis screening in high risk groups

TB&ORD Division prioritized five HRG to be systematically screened: prisoners, PLHIV, TB contacts, children and elderly. Two screening approaches were used:

- Symptoms screening followed by GeneXpert as initial diagnostic for those who were presumptive TB
- Radiological and symptom screening followed by GeneXpert for those who have abnormal chest X-ray (CXR) and/or symptoms suggestive of TB. This second approach

is used during active case finding in prisons, in some health facilities with high numbers of PLHIV and youth in Kigali Transit Center

During this FY 2018-2019, a total of 3,768,138 screenings of TB were conducted among HRG and 2.5% of them were classified as presumptive TB.

Table 2: Summary results of TB screening and diagnosis among selected high-risk groups, FY 2018-2019

Risk group	Screened	Presumptive TB	
	# of episodes	N	%
Prisoners	163,523	12,679	7.8%
Contacts	13,920	3,626	26.0%
HIV+ (exclude prisoners, contacts, children <15 years, elderly≥55 years	567,826	16,959	3.0%
Children < 15 yrs (exclude children prisoners, children contacts)	1,704,073	19,030	1.1%
Elderly≥55 years (exclude prisoners ≥55 years and contacts ≥55 years	1,270,984	50,507	4.0%
Total	3,768,138	93,710	2.5%

I.1.1.3.1. Active case finding using mobile digital x-ray for screening among TB HRG.
Active case findings using chest x-ray was:

- Conducted in the 3 prisons: Muhanga, Gicumbi and Rwamagana
- 6 health facilities of Huye District (Kabutare DH, CUSP, Matyazo, Huye HC, Mbazi HC and Rango HC) and in Kigali Transit Center

I.1.1.3.1.1. ACF using mobile digital x-ray in prison inmates, youth and People living with HIV

- **TB screening cascade:**
    - A total of 25,740 (88%) out of 29,242 people in HRG (prisoners, youth in Kigali Transit Center and people living with HIV) were screened for Pulmonary Tuberculosis
        - The presumptive rate was 8.1% (2,083/25,740)
        - Among them, 45.5% (947/2,083) were presumptive TB based on chest x-ray without symptoms

Table 3: Result of screening approaches during the active case finding July 2018-June 2019

HRG	Population	Screened	Presumptive TB			
			Symptom screening only	CXR screening only	Symptom and CXR screening	Total
Prisons	22,286	19,466	30	765	833	1,628
KTC	4,451	4,451	22	95	163	280
PLHIV	2,505	1,823	6	87	82	175
Total	**29,242**	**25,740**	**58**	**947**	**1,078**	**2,083**
%		**88.00%**	**2.80%**	**45.50%**	**51.80%**	**8.10 %**

- **Confirmed TB cases**
    - A total of 154 TPB+ cases (including 14 MDR TB cases) were diagnosed TB among these specific HRGs

Table 4: TB cases identied using different screening approaches during the active case finding July 2018-June 2019

Category	Prison	KTC	PLHIV	Total cases	%
Symptom screening only	1	1	0	**2**	**1.30%**
CXR screening only	39	10	2	**51**	**32.90%**
Symptom and CXR screening	71	25	5	**101**	**65.80%**
Total	111	36	7	**154**	

- **Impact of ACF using x-ray on TB screening among prisoners**
    - The results of first and second round of ACF in prison inmates have shown that the trend for TB notification rates are decreasing (832/100,000 first round versus 498/100,000 for 2nd round), this may be due to early identification and effective treatment of TB cases which reduces the transmission of TB among prison inmates

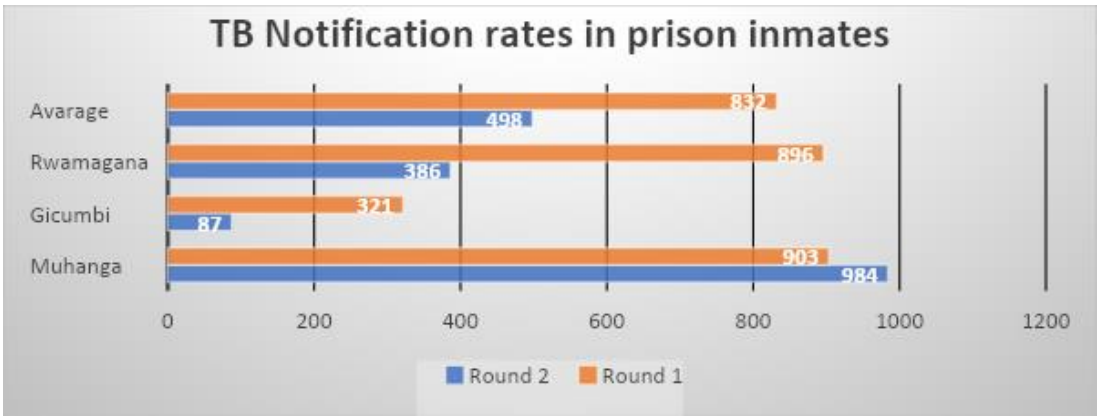

Figure 1: Impact of ACF using x-ray for screening on TB among prisoners

I.1.2. Tuberculosis diagnostics

I.1.2.1. Diagnostic technics used

I.1.2.1.1. Microscopy

- During this FY 2018-2019, all 198 out of 200 CDTs in HFs (with the exception of Bumbogo and Kayenzi health centers) used LED microscopy.
- The total number of presumptive TB cases diagnosed by microscopy technics was 98,698 with a positivity rate of 1.6 %

Table 5: Detection of TB by microscopy technic in Rwanda, FY 2018-2019

Technique	Presumptive TB	TB cases	Positivity rate
Ziehl-Nelsen (Microscopie optique)	259	3	
LED (Microscopie à Fluorescence)	98,439	1543	
Total	98,698	**1,546**	**1.60%**

I.1.2.1.2. Molecular Test

- 44.8% of all TB presumptive (84,194/187,871) cases were tested with Genexpert as initial test
    - This contributed to detect 105 tests with rifampicin resistant which were initiated on TB second line treatment and 4,079 tests with no resistance to rifampicin representing 4.2% (4,079/98,271) of all test performed by Genexpert. The positivity rate of Genexpert was 4.3% (4,184/98,271) which is high comparative to the microscopy positivity rate (1.6%)

We observed a large percentage of errors and invalid (7.5%) compared to the acceptable range (5%), this may be due irregular machine maintenance, irregular power supply (electricity), environmental conditions (high temperatures) and limited knowledge of some laboratory technicians who are using this technique.

Table 6: Genexpert tests performed, FY_2018-2019

Presumptive TB tested on Genexpert as initial test	84,194	
Genexpert Result		**%**
MTB detected; Rif Resistance Detected	105	0.10%
MTB detected; Rif Resistance Not detected	4,079	4.20%
MTB Not detected	86,682	88.20%
Error	5,628	5.70%
Invalid	1,777	1.80%
Grand Total	**98,271**	

I.1.2.1.3. Culture and DST Test

- During July 2018 to June 2019 reporting period, 4,169 samples were received at referral laboratories for culture including 790 for MDR-TB controls. Among cultures for diagnostic testing, only 15.9% (538/3,379) were positive.

Table 7 : Culture and DST performance in Rwanda laboratory network, July 2018-June 2019

	Samples received for culture	Samples for MDR-TB culture controls	Samples for diagnostic			Culture results for diagnostic				Drug Susceptibility Testing		
			New & Relapse cases	Other previously treated	Unknown TB history	Positive	Negative	Contaminated	Pending	LPA (1st line)	DST (1st line)	DST (2nd line)
NRL	3428	772	2195	188	273	499	1944	213	0	365	175	175
CHUB	69	18	51	0	0	25	39	5	0	15	0	0
CHUK	672	0	510	5	0	14	302	75	229	0	0	0
Total	4169	790	2756	193	273	538	2285	293	229	380	175	175

I.1.2.2. External and internal quality control of TB diagnostic technics used

In order to improve and sustain the quality control (QC) of smear microscopy, quality control is conducted in each CDT. This is done at 2 levels:

- NRL does the quality control for all hospitals and private clinics CDT
- District hospitals do the same for the health centres, and CDT in their respective catchment areas

During this FY 2018-2019, quality control was performed at least 3 times for 94.5% (189/200) CDTs and 91.0% of those (182/200) did not show major errors.

- Among 11,210 slides controlled, 0.08% (9) slides have been found with major errors and 0.46% (52/11,210) with minor errors

The annual TB NSP target established at 96% was not reached (91.0%). Compared to the previous fiscal year (2017-2018) where major errors represented 0.14% (14 out of 11,123), we observed an improvement of CDTs as shown in the table 5 below. There is an improvement on TB smear reading and the major errors decreased while the minor errors increased. This shows that some lab technicians had limited skills in quantification on TB smears reading. There is a need of continuous mentorship on microscopy.

Technique used by CDT type	**CDT controlled at least 3x**	Nb slides controlled				Errors					Nb CDT with major error
		Total	Pos	Scanty	Neg	HFP	HFN	LFP	LFN	QE	
CDT – HC with ZN	**2/2 (100%)**	81	1	0	80	0	0	0	0	0	0
DH, RH, HC with FM	**187/198 (94.4%)**	11210	741	227	10241	2	7	1	10	41	7
Total	**189/200 (94.5%)**	**11291**	**742**	**227**	**10321**	**2**	**7**	**1**	**10**	**41**	**7**

CDTs with Major errors	HFN: Kigembe CS (1), Rwanda Military Hospital (1), Muhima DH (3), Kirinda DH (1), Kibogora DH (1) HFP: Butaro DH (1), Kabgayi DH (1).
CDTs with less than 3 controls	Nyamata HC, Rilima HC, Kabuye HC, Kinyinya HC, Carrefour Clinic, La Medicale Clinic Plateau Clinic Gatagara HC, Rubengera HC, KFH, Kibagabaga DH.

Table 8: Quality control of microscopy in FY 2018-2019

HFP: high false positive. LFP: low false positive. HFN: high false negative. LFN: low false negative. QE: quantification error.
ZnM: Ziehl-Nelsen technique microscopy. FM : Fluorescence technique microscopy.

During this fiscal year, TB laboratories have received external quality controls from CDC-Atlanta and SRL-Uganda. In collaboration with **CDC-Atlanta**, we received panels for GeneXpert and 49 sites participated:

- Each site received 4 panels (1 panel for 1 module)
    - Among those 49 sites, 42 passed, 4 sites failed (Gihundwe DH, Nyamata DH, Rutongo DH and Remera HC) and 3 sites not evaluated (Kabgayi DH, Kibilizi DH, Rwamagana PH)
    - The average score was 93.3%

The Rwanda National Referral Laboratory received panels from **SRL-Uganda** for microscopy, GeneXpert, Culture, LPA and DST. Microscopy and GeneXpert were performed 3 times a year and culture, LPA and DST is once year. The findings revealed that NRL performed Microscopy and GeneXpert at 100% in all the three rounds, and culture, LPA at 100% while DST phenotypic was performed at 95%.

I.1.3. Tuberculosis notification

I.1.3.1 Tuberculosis notification in general population

- For this FY 2018-2019, the TB surveillance system in Rwanda reported **5,949 all-forms of TB cases including DR-TB cases**
- 72.9% (4,334/5,949) bacteriological confirmed new
- 25.3% (1,506/5,949) clinically diagnosed
- Newly treated TB cases represented 90.8% (5399/5,949) and 9.2% (550/5,949) was previously treated
- Pulmonary localisations represented **84.5%** (5,025/5,949)
- The TB notification increased comparative to the previous FY 2017-2018 (5,826), this may be due to the addition 19 Genexpert machines
- Among all bacteriological TB cases, 67.7% (3008/4,443) were diagnosed using Genexpert as initial testing
- TB was more diagnosed among men
    - The ratio male: female for all-forms TB cases is 2

- The proportion of TB cases among high risk groups was 53.4% (3174/5,949) versus 47.1% (2743/5,826) for the last FY 2017-2018 and annual target was achieved at 131%
- CHWs contributed with **25.2%** (1,502/5,949) of TB cases all forms including 1,454 cases bacteriologically confirmed, which shows that the target was achieved (>=21%).
- Among 5,841 TB cases eligible to the 1st line treatment
    - 99.2% (5,797/5,841) were initiated on TB treatment
    - The main reasons of non-initiation to TB treatment were death (24) and lost to follow up (20) before initiation on TB treatment.

Table 9: Registration of TB Cases by Case category, Site and Treatment History, FY 2018-2019

	All forms	Classification based on bacteriological status		Classification based of history of previously treated		Overall pulmonary	Bacteriological confirmed (New and Relapse)	TB cases initiated to the 1st line treatment	Cases brought by CHWs
		Bacteriological confirmed	Clinically Diagnosed	Newly treated	Previously treated				
N	5,949	4,443	1,506	5,399	550	5,025	4,334	5,797	1502
%		74.70%	25.30%	90.80 %	9.20%	84.50%	72.90%	99.20%	25.20%

Among the total TB cases New and relapse (5812), 7 districts represented 52.9% (3075) of TB notifications countrywide. This high notification rate may be due to the active case findings conducted in Prisons (Rwamagana, Muhanga), Kigali Transit center (Kicukiro) and the high number of TB in cities. Increased effort should be placed on active case findings in high risk groups and in high spots to detect the missing cases. The figure below shows the notification rates by district.

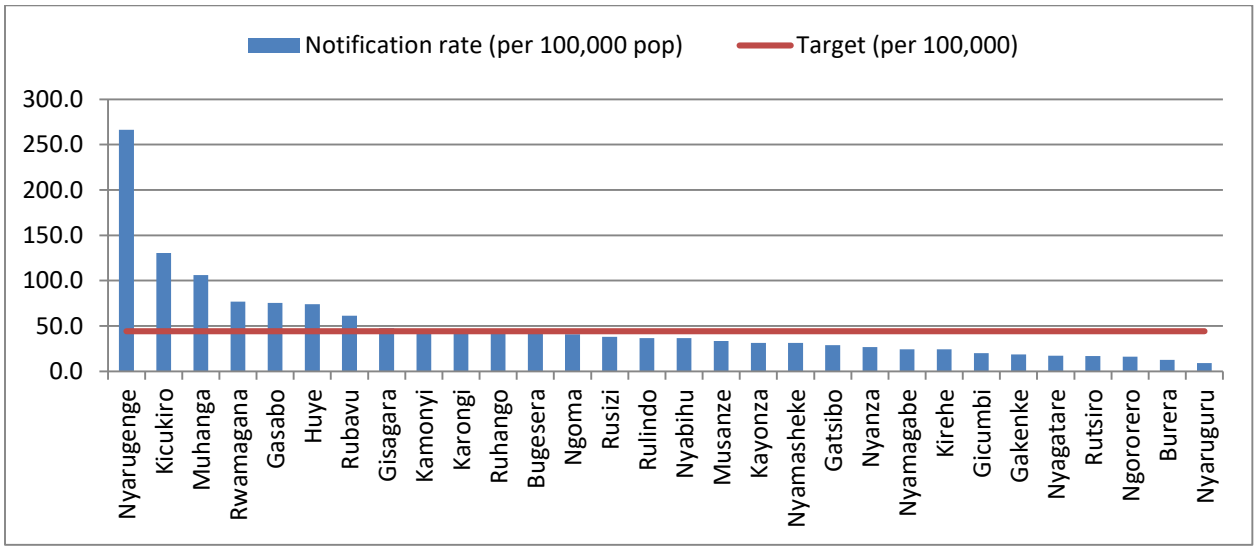

Figure2: TB notification rate by district, FY 018-019

Regarding the age pyramid of TB case by sex, the most affected age range is 15 to 44 for both male and female. In order to improve detection among females, it is necessary to collaborate with the MCCH program to conduct TB screening among females of reproductive age.

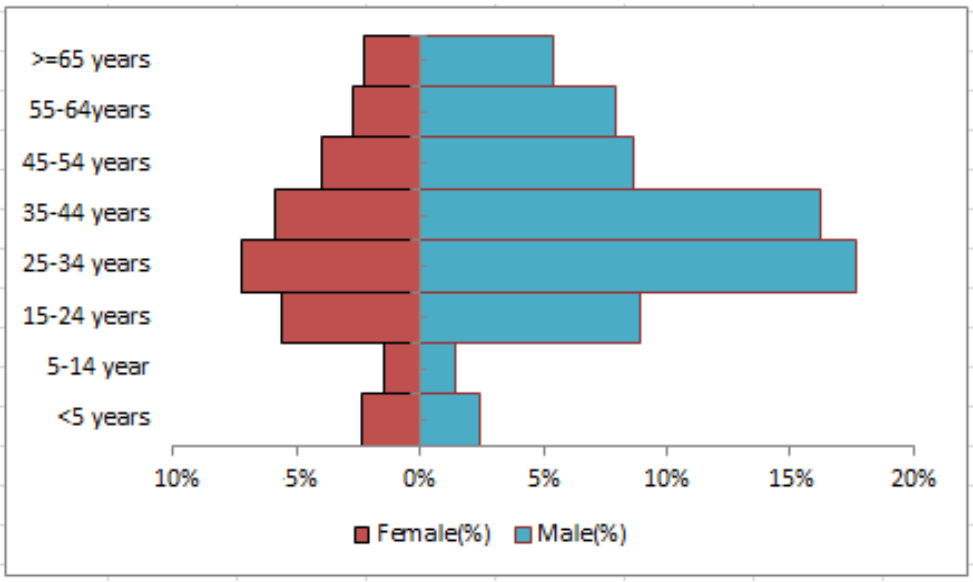

Figure 3: Age pyramid of TB cases all forms by sex, Rwanda, Jul 2018-Jun 2019

I.1.3.2. Drug susceptibility testing (DST) of tuberculosis

To ensure the universal access to DST, the health facilities are requested to perform DST for all bacteriologically TB cases

- DST coverage for first line TB drugs was 90.3% (4,011/4,443) for all new and previously treated cases
- 90.7% (402/443) for previously treated

We observed that WHO use this indicator of universal DST coverage for all TB cases. With the use of individual case based surveillance to be used for 2019-2020 FY, we will be able to produce the data as requested by WHO.

Table 10: Drug susceptibility test for notified TB cases in Rwanda, FY 2018-2019

	DST Performed	**All B+**	**%**
DST All History	4011	4443	90.3%
DST New	3609	4000	90.2%
DST Previously	402	443	90.7%

I.1.3.3. TB/HIV co-infection notification

During this FY 2018-2019, all TB cases were tested for HIV infection

- 21.0% of them were found HIV infected
- Among them 94% received ART

All forms TB Registered	**HIV Tested**	**HIV+**	**Early ART (within the notification quarter)**
5949	5924	1245	1170
	99.6%	21.0%	94.0%

I.1.3.4. Drug resistant tuberculosis notification

During the July 2018 to June 2019 reporting period:

- 109 MDR-TB cases have been diagnosed
- 107 MDR TB patients were initiated on MDR-TB treatment regimens in MDR-TB services while 2 died before treatment initiation

Table 12: Drug resistant Tuberculosis notification and treatment initiation during July 2018 to June 2019.

Number of notified MDR-TB cases	Died before treatment initiation	Not yet treated	Number of patients who initiated MDR-TB treatment
109	2	0	107

Among MDR TB initiated on treatment:

- 1 was clinically diagnosed
  - 28.0% (30/107) were HIV+
  - 76.6% (82/107) were men
  - 2.8% (3/107) children under 15 years
  - 77% (82/107) were diagnosed among new cases

Table 13: MDR-TB cases registered during July 2018 to June 2019, by bacteriology, by sex, by age and HIV status

DR TB categories	**Bacteriologically Confirmed**		**Clinically Diagnosed**	
	Male	**Female**	**Male**	**Female**
RR/MDR among New TB cases	82		0	
RR/MDR among previously treated TB cases	24		1	
Total RR/RR/MDR-TB cases	81	25	1	0
RR/MDR-TB patients HIV Tested	81	25	1	0
RR/MDR-TB patients HIV Positive	19	10	1	0
RR/MDR-TB patients HIV positive on ART	18	10	1	0
RR/MDR-TB patients under 15 years	2	1	0	0
RR/MDR-TB patients under 15 years HIV Tested	2	1	0	0
RR/MDR-TB patients under 15 years HIV positive	0	0	0	0
RR/MDR-TB patients under 15 years HIV positive on ART	0	0	0	0
RR/MDR-TB - Extensively Drug Resistance	0	0	0	0

I.1.3.4. Childhood TB

TB&ORD and MCCH Divisions incorporated childhood TB screening in Integrated Community Case Management (ICCM) guidelines, tools and training materials to improve TB diagnostics among children under five years.

The figure below shows the proportion of children among all TB cases which was 7.6% (455/5,949). The target was achieved (7%) due to mentorship conducted by Rwanda Pediatric Association at health facilities, availability of TST, and active case findings of TB among malnourished children in some districts (Kamonyi, Muhanga, Gakenke, Bugesera).

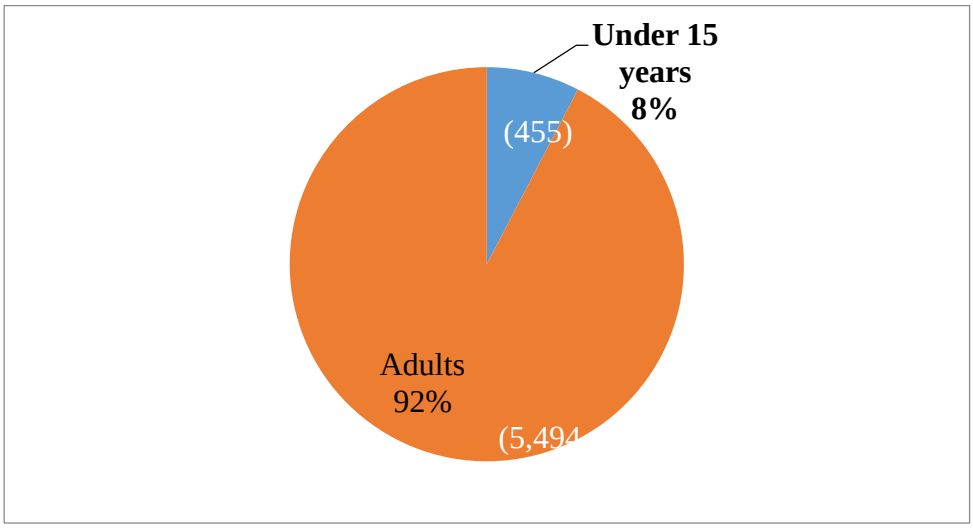

Figure 4.: TB notification for children, FY 018-019

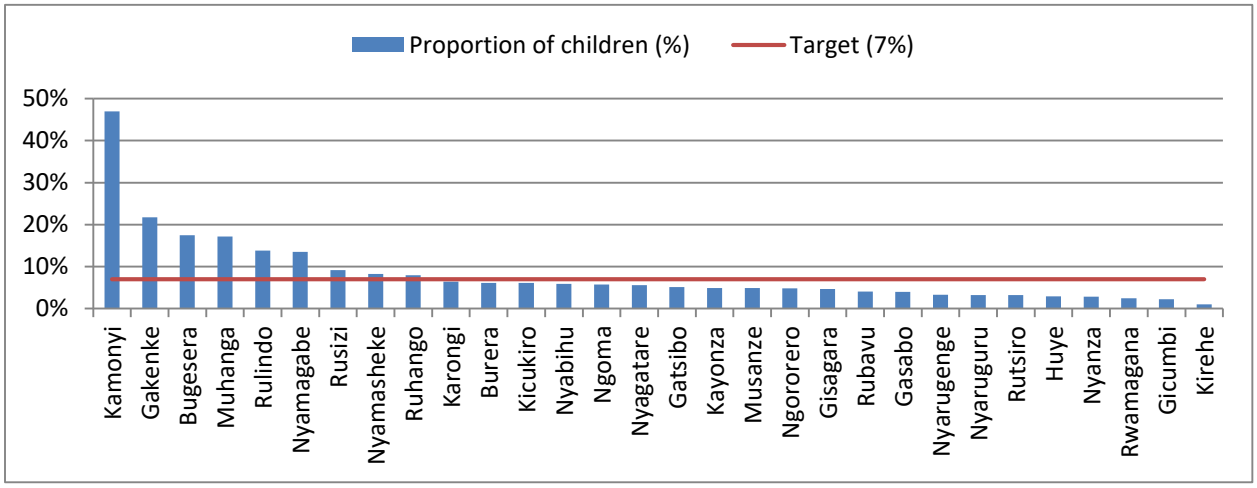

Figure 5.: TB notification rate among children by district, FY 018-019

I.2. Objective 2: Increase treatment success rate from 88% to 90% for bacteriological confirmed TB cases and maintain it at 87% for MDR-TB

This objective has seven strategic interventions which are:

1. Ensure no stock out of first-line and second-line drugs in all CDTs
2. Improve treatment success rates for all forms of TB, specifically to maintain at least 90% for bacteriologically confirmed TB cases
3. Maintain treatment success rate at ≥ 87% for MDR-TB patients
4. Implement active drug-safety monitoring and management (aDSM)
5. Maintain ART coverage among co-infected patients at least at 90%
6. Maintain at ≥ 95% the treatment success rate for patients managed in the community
7. Provide patient-centered treatment including nutritional support for moderate and severely malnourished patients

I.2.1. Ensure that at least 97% of CDTs have no stock out in TB medicines

To ensure logistics for TB control, the national quantification team under the direction of RBC/TB&ORD has conducted an annual forecast and budget required to diagnose, prevent and treat TB. Quantities of TB health related products needed for 2018-2024 was determined, the supply plan of 2018-2019 was reviewed, and the plan for 2019-2020 was developed.

According to the HMIS reports, stocks of TB drugs and reagents were well monitored quarterly at 100% of all CDTs. TB medicines were always available during the fiscal year in 98% of CDTs. However, we observed stock out of other lab products, mostly cartridges, from April to May 2019 at the central level, while only 8 geneXpert sites reported stock out of cartridges. This stock out at CDT is attributed to delay in supply of cartridges due to differences in procurement policies between Rwanda Public Procurement laws and GDF procurement regulations.

All received medicines and cartridges (100%: 33/33) in 2018-2019 were recorded and reported in online price quality reporting database of the Global Fund.

I.2.1.1 Forecast accuracy of TB medicines

The total expected TB cases all forms was 5,528. The registered TB cases all forms on first line medicines totaled 5,841 cases, meaning the target was achieved at 106%. MDR-TB cases registered for the period of July 2018 June 2019 represented 115% (107/93) of expected cases.

Table 14: Forecast accuracy of TB medicines

Regimen	Target in Quantification	Cases registered	%	Comments
Patients under first line adult medicines	5308	5458	103%	Quantity needed were under estimated of 3%

Children under pediatrics formulation	320	383	120%	Quantity needed were under estimated of 20%
DR TB Cases	93	109	117%	Quantity needed were over estimated at 17%

The number of TB cases on pediatric formulation increased likely due to mentorship conducted by Rwanda Pediatric Association at health facilities, availability of TST, and active case finding of TB among malnourished children in some districts (Kamonyi, Muhanga, Gakenke, Bugesera). This increased consumption of child friendly formulation TB medicines alerts MPPD Division (Central Medical stock) to speed up procuring processes to ensure uninterrupted supply of pediatric TB medicines.

I.2.1.1.2 Procurement status of TB products at end of June 2019

70% of the planned products to procure in 2018-2019 were delivered and 19% are still in the pipeline. The procurement status of each products was reviewed and the figure below shows additional details.

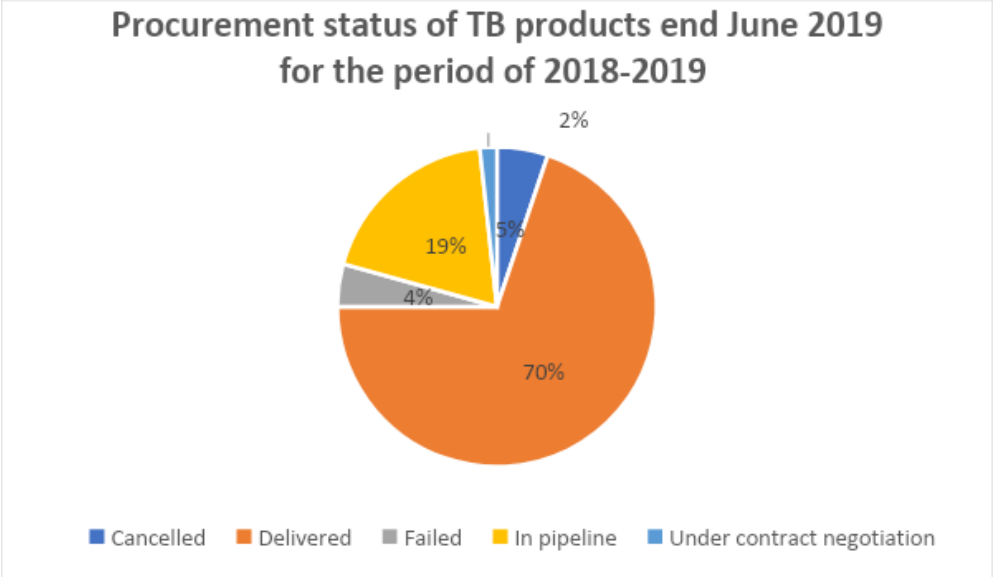

Figure 6: Procurement status of TB products, FY 018-019

I.2.2. Improve treatment success rate for all forms of TB, specifically to 90% for bacteriological confirmed TB cases.

For the July 2018 to June 2019 reporting period, treatment outcomes presented are for the cohort of TB cases registered from July 1st 2017-June 30th 2018.

- Among bacteriological confirmed cases new and relapse (B+ N&R)
  - The treatment success rate (TSR) was **86.4%** (3,528/4,083**)**
    - **77.0%** (3,144/4,083) cured
    - **9.4%** (384/4,083) treatment completed
- NSP targets were achieved at **96.0%** for TSR and **91.7%** for cure rate among B+ N&R

- For clinically diagnosed (CD), the treatment success rate was **82.7 %** (1,278/1,545**)** and NSP target (80%) was achieved at **103.4%**
- For the mentioned two categories, the main unfavorable TB treatment outcomes was "died" which represented **6.6%** (271/4,083**)** for bacteriological confirmed cases new and relapse and **15.0%** (232/1,545) for clinically diagnosed cases. Not evaluated represented **1.3%** for both B+ N&R (55/4,083) and clinically diagnosed (20/1,545)
- When considering the treatment outcomes for all-forms, it was observed that **85.4%** (4,907/5,744**)** were successfully treated
    - **8.8%** (503/5,744) were "died"
    - **1.3%** (77/5744) not evaluated
    - The NSP target (87%) was achieved at **98.2%**
- When considering the treatment outcomes for all-forms, it was observed that **85.4%** (4,907/5,744**)** were successfully treated
    - Among TB patients with HIV infection on ART **78.8%** (904/1,147) were successfully treated for TB (cured or treatment completed)
        - **13.5%** (155/1,147) were reported died
        - **4.7%** (54/1,147) lost to follow up
        - However, when considering all HIV+ TB patients (on ART or not on ART), the TSR decreases to **77.0%** (933/1212) and mortality increases to **15.3%** (186/1212). Early initiation on ART regimen may contribute to the improvement of TB treatment success rate.

The TB treatment success rate among TB patients registered during July 2017-June 2018 and followed up through the community-DOT (by CHWs) was **94.5%** (2364/2501), almost achieved the annual NSP target for 2018-2019 FY which is 95%.

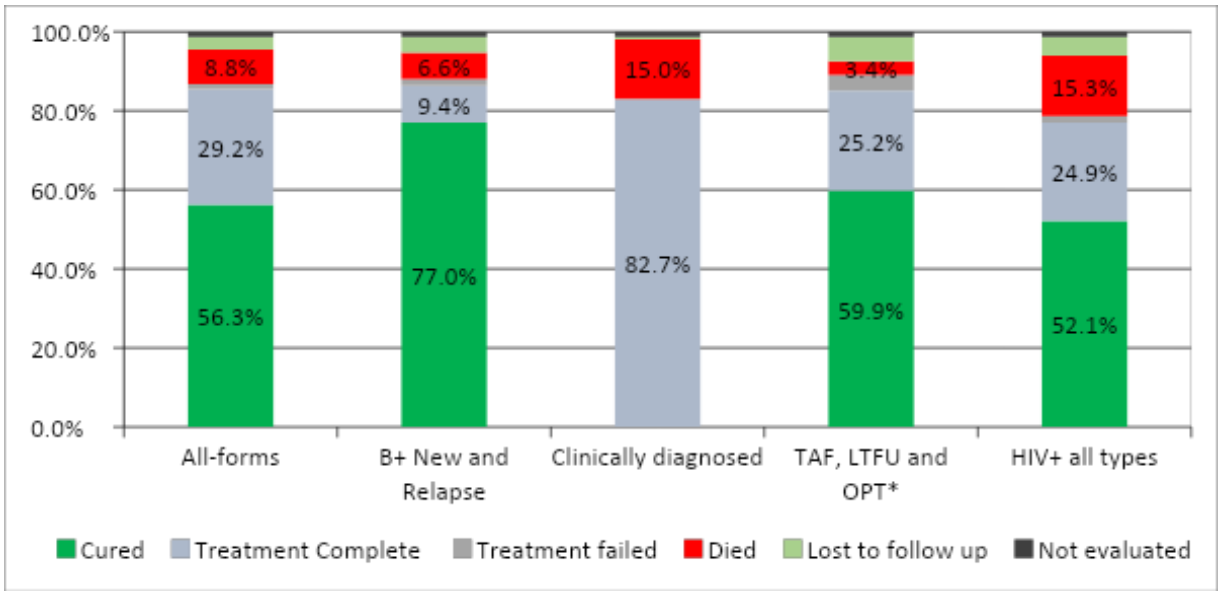

Figure 7: TB Treatment outcomes for the TB cohort registered during July 2018-June 2019, by case category and in special populations.

** OPT: Other previously Treated TB cases*

The figures below illustrate the poor treatment outcomes for bacteriologically confirmed and clinically diagnosed by district catchment area. Seven districts among 30 contributed to 55% of 271 deaths registered.

Eight districts represented 83.7% of 172 LTFU; those districts are Kicukiro, Nyarugenge, Gasabo, Rubavu, Nyagatare, Kamonyi, Bugesera and Huye

Five districts (Nyarugenge, Kicukiro, Gasabo, Rubavu and Kirehe) counted themselves for 66.7% of 57 not evaluated cases countrywide. Efforts to improve treatment outcomes should be mainly orientated in Kigali and Rubavu district hospitals.

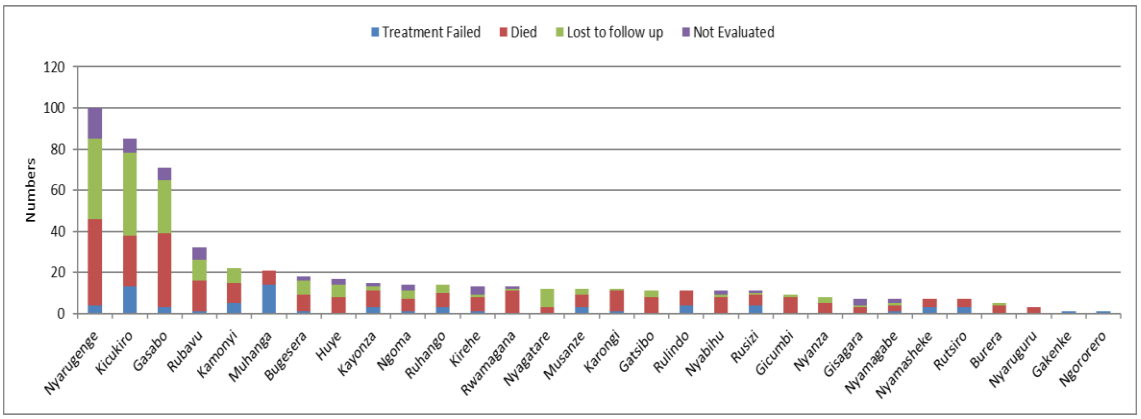

Figure 8: Districts contributing to the poor treatment outcomes in bacteriologically confirmed TB during July 2018-June 2019.

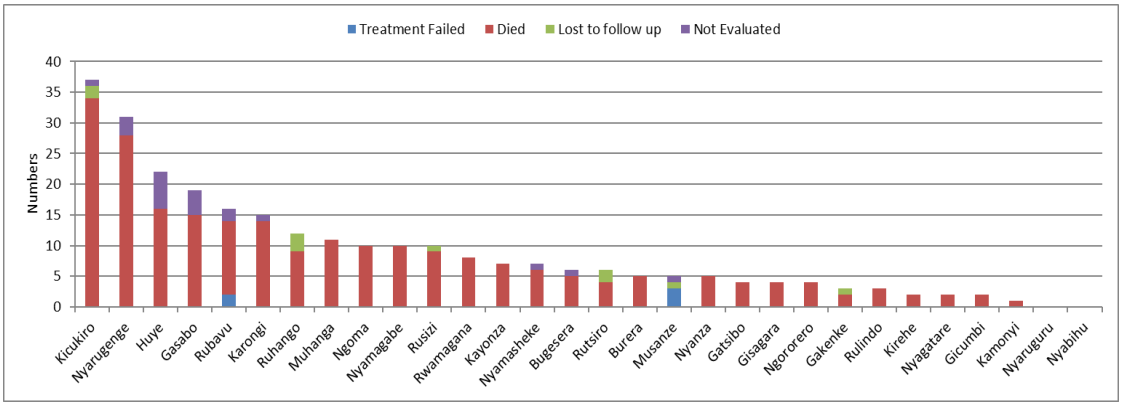

Figure 9: Districts contributing to the poor treatment outcomes for TB Cases clinically diagnosed during July 2018-June 2019.

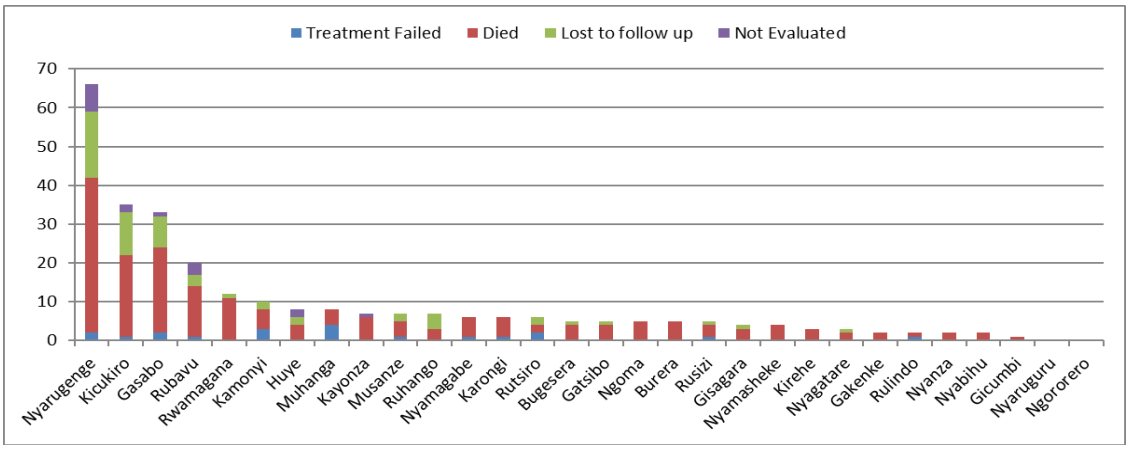

Figure 10: Districts contributing to the poor treatment outcomes for HIV+ during July 2018 – June 2019.

I.2.3. Maintain ART coverage among co-infected patients at least at 90%

Table 15 shows the cohort of HIV+ TB patients registered during July 2017-June 2018, the proportion of those on antiretroviral therapy (ART) by the end of their TB treatment reached 94.7%. **The RBF target for this indictor and for 2018-2019 FY is 90%.**

Table 15: ART provision among HIV+ TB patients registered during July 2017-June 2018

TB/HIV patients evaluated	TB/HIV patients on ART	% on ART
N	N	%
1238	1173	**94.7%**

I.2.4. Treatment outcomes for MDR-TB patients

A MDR-TB treatment interim result shows the effectiveness of MDR-TB treatment, and predicts a positive final result of MDR-TB treatment. Out of the 91 confirmed patients enrolled on second line anti-TB treatment during October 2017-September 2018, 64 (70.3%) had negative culture (**Interim result: conversion rate**).

Among the 27 with unfavorable outcome, 11 had contaminated cultures, three patients were with sputum cultures not done, ten died before six months, and three were lost to follow up by the 6th month of treatment.

The NSP target was 82% and achieved 85.7% due to a high contamination rate (12.1%) of control cultures from MDR-TB patients on treatment and the mortality rate at 11% before completing six months of treatment.

Table 16: Interim results – culture conversion at six months: MDR-TB cases with negative culture at the end of six months of treatment, cohort initiated on treatment during October 2017-September 2018

Nb confirmed MDR-TB	Deaths before 6 months	Negative culture	≥ 1 positive culture	Culture not done	Contaminated culture	LTFU
91	10	64	0	3	11	3
	11.00%	70.30%	0.00%	3.30%	12.10%	3.30%

80 MDR-TB patients, including 78 with bacteriological confirmation of MDR-TB disease, were notified in 2017-2018 fiscal year and all were initiated on 2nd line TB treatment.

One Category IV failure with resistance to fluoroquinolone was initiated on the 20 months treatment for pre-XDR TB and will be evaluated in July 2020. The remaining 79 were treated with the shorter (9 months) MDR-TB treatment regimen. The treatment success rate was **86.1%** (60/79), with 75.9% cured and 10.1% with treatment completed. The annual NSP target was achieved at 99.0%. The TSR of MDR-TB HIV is 76.5%. Eleven patients (13.9%) died before completion of the MDR-TB treatment; among them 63% were HIV positive.

Table 17: Final treatment outcome: Confirmed MDR-TB patients enrolled on the shorter and long MDR-TB treatment regimen.

	Treatment start period	**Nb registered MDR-TB cases who initiated the treatment**	**Cured**	**TC**	**TF**	**Dead**	**LTFU**	**NE**	**TSR**
Short Regimen	FY 2017-2018	79	60	8	0	11	0	0	**86.10 %**
			75.90%	10.10 %	0.00 %	13.90 %	0.00%	0.00 %	
Long Regimen	FY 2016-2017	0	0	0	0	0	0	0	**NA**
			NA	**NA**	**NA**	**NA**	**NA**	**NA**	
	Total	79	75.90%	10.10 %	0.00 %	13.90 %	0.00%	0.00 %	**86.10 %**

TC: Treatment completed. *TF: Treatment failed.* *LTFU: Lost to follow up.*
NE: Not evaluated. *TSR: Treatment success rate.*

I.2.5. Implement active drug-safety monitoring and management (aDSM)

The information on the Adverse Events (AEs) report was integrated in the revised Tuberculosis individual records (e-TB). Implementation of this updated surveillance system will enable active drug-safety monitoring and management (aDSM) at all levels and timely accessibility at the central level.

I.3. Objective 3: Improve TB prevention by increasing LTBI treatment coverage among contacts < 5 years from 78 % to 90 % by mid-2021

TB infection control (IC) practices are implemented at health facility level and we continue strengthening application of basic IC measures in all health facilities. We emphasize on administrative measures considering the existence of TB IC plan and appointed TB focal point. Triage of coughers and their separation among others in waiting room for fast tracking of TB presumptive through registers were done in health facilities. The confirmed TB cases have to be separated with other patients and put them in their wards. Information Education and Communication for cough hygiene are assessed as well, and optimization of the natural ventilation looking at windows and doors if they are always opened.

I.3.1. Implementation of the minimum package of TB infection control measures in Health facilities

The minimum package of TB infection control in Rwanda include six basics measures: the existence of the IC plan, appointment of the TB focal point, Health workers trained on TB, cough Triage system and separation of coughers, IEC on the cough hygiene, doors and windows opened in the all services. Methodologically, health centers are assessed by hospitals, and hospitals are assessed by central level.

According to TB&ORD surveillance, the proportion of Health facilities applying all six basics measures remained stable and represent respectively 82.7% (465/562) for the last quarter of the 2018-2019 FY (April-June 2019), versus 81.8% during 2017-2018 FY (April-June 2018).
During the FY 2018-2019, health facility workers reported were 23,568. Among them 78.9% (18,601/23,568) were screened for TB, 351were TB presumptive and 10 TB case were diagnosed. Compared to health facilities workers that were screened in the previous fiscal year 2017-2018, we observed a slight improvement as those screened were 77.4% (17,551/22,726).
Regarding TB screening among community health workers (CHWs)countrywide, 50,276 were reported, of them 84.5% (42,465/48,729) were screened, 924 identified as presumptive TB and 8 TB cases were confirmed. Compared to community health workers that were screened in the previous FY 2017-2018, we observed an improvement as those screened were 77.5% (31,113/40,135).
In the line of assessing and improving the implementation of TB IC measures in health facilities across the country, the National TB Program conducted an assessment of TB IC from 13th to 31th May 2019. This assessment had covered 20% of health facilities, randomly selected from a total of 562 including 42 District hospitals. Cluster sampling (or Multistage sampling technique) was applied in the first stage concerning the selection of 50% of the District hospitals, randomly selected and proportionally to the number of hospitals in each province. So, 21 Hospitals were drawn from 42 Hospitals.
The second step of selection of 20% health centers from the catchment area of each District hospital previously selected, where a systematic sampling technique was applied in each cluster to identify the health facilities to be visited.
We came out with a total of 123 health facilities that were expected to be assessed, and 100% of HFs sampled were reached and assessed during the assessment by Supervisors/Data collectors.
Main and key findings are the following:

- ✓ Fifty-four percent (66/123) health facilities assessed had a TB IC focal point versus56% (68/121) obtained in the previous assessment. Reason for this decrease is due to lack of appointment official letters for TB IC focal points in some health facilities assessed. We may assume that the turnover/restructuring of staff might caused this decrease.
- ✓ Eight five percent (105/123) of HFs assessed were found with a TB IC plan against83% (101/121) in previous assessment
- ✓ Forty-nine percent (60/123) of health facilities assessed had a TB IC committee compared to 66% (67/101) in previous assessment
- ✓ Eighty-two (101/123) of health facilities assessed had performed TB screening among HCP versus 85% (103/121 xx) in previous assessment
- ✓ Thirty-six percent (44/123) of health facilities assessed had performed TB screening among CHW. (NA in previous assessment)
- ✓ Ninety-one percent (112/123) of health facilities assessed with hospitalization, diagnosed TB cases who are hospitalized are separated from other patients

Much efforts have to be put in place for improving where we observed a decrease compared with findings of previous TB IC assessment conducted in 2017.

I.3.2. TB sensitization and awareness in congregate settings (Refugees camps and Prisons)

With the aim of reducing the mortality and morbidity rate of tuberculosis in the community residing in refugee camps and prisons; the TB & ORD Division in collaboration with District Hospitals and Rwanda Correction Service (RCS) organized and conducted a sensitization campaign on the detection and management of tuberculosis and leprosy by Peer Educators. Community health workers and peer educators were refreshed on TB and leprosy symptoms and how to prevent the disease transmission.
The cumulative number of peer educators in prisons that benefited refresh training on TB prevention, symptoms and screening during the fiscal year 2018-2019, was 2,576 out 2,596 expected, which represent 99.2% and 96.3%(653/678) in the refugees camps.

1.3.3. TB Sensitization for TB opinion leaders and peer educators in the community

During the fiscal year 2018-2019, TB Program has started implementing the "**Club of formers TB patients as opinion leaders and peer educators in the Community**". This club will have the role of providing testimony in the community to improve treatment adherence and reduce discrimination and stigma of TB patients. This implementation pilot phase started being implemented in 2 District Hospitals: Masaka and Rwamagana DHs. The selection of these hospitals was done by convenience and based on available budget allocated to this activity. Hospitals have organized trainings for former TB patients within their respective catchment areas, respectively on 08th May 2019 for Rwamagana DH and 09th May 2019 for Masaka DH. Two clubs of former TB patients in two Districts (Kicukiro and Rwamagana) were created and members were committed to conduct sensitization on TB in the community and support also TB patients. Participation rates in training for former TB patients were 96.8% (27/28) for Rwamagana DH and 100% (20/20) for Masaka DH.
The next way forward is to strengthen these 2 clubs and create others in remaining Districts, so we should have an association of former TB patients gathering all clubs countrywide.

I.3.4. Increase awareness and commitment in TB fighting

I.3.4.1. TB sensitization through radio and TV talks

During 2018-2019 FY, IEC/BCC messages were aired on local private, public (Community radios and National Radio), on international radio stations and in media papers to increase awareness of the general population, and they were performed as follow:

- Twenty (20) Radio and TV Live talk show programs,
- Airing of TB spot by 9 radios and 3 TV spot on TV1, Flash radio and RTV,
- Six (6) articles on New Times, Igihe.com, Imvaho Nshya, Kigali today, Panorama

Different topics related to tuberculosis awareness were covered such as:

- Importance of TB screening among health care workers; TB among children;
- Knowledge on the etiology, transmission, symptoms, early screening and treatment of TB and follow up of TB patients;
- Extra pulmonary TB;

- Current situation of multi-drug resistant TB and follow up of MDR-TB patients.

I.3.4.2. World TB Day 2019 celebration.

The World TB Day 2019 was prepared and held in Kamonyi District on 22 March 2019. Key achievements during the event were:

- Mobilization of Kamonyi District officials, Remera Rukoma DH personnel as well Community Health Workers,
- CHWs (13) awarded and received 13 bicycles as best performers.
- Active Case Finding (ACF) for PLHIV from Remera Rukoma DH using the mobile chest X ray machine.
- Rwandan artist Mico the Best, in partnership with Stop TB with the purpose of creating awareness about TB
- Live talk shows were conducted on RBA radio and BTN television.

I.3.5. Tuberculosis preventive therapy

I.3.5.1. Isoniazid preventive therapy (IPT) for under 5 years children

During the FY 2018 - 2019, TB&ORD Division in collaboration with HIV Division and Partners, through a joint technical working group (TWG) in different workshops and meetings have worked and developed materials on Tuberculosis Preventive Therapy (TPT) program among PLHIV. One of key recommendations taken was to implement TB Preventive Therapy(TPT) program among newly tested HIV positive starting with small scale. One District per Province was selected based on the high number of PLHIV and in total 5 Districts with their respective health facilities will implement TPT among newly HIV people enrolled starting by July 2019. District selected are the following: Musanze, Rwamagana, Rubavu, Kamonyi and Gasabo. The TPT implementation in newly PLHIV enrolled by small scale will inform on C-Xray accessibility, workload in radiology department at Hospital, then lessons learnt should help in scaling up of TPT countrywide in effective manner.

Orientation meetings on TPT implementation for 83 health facilities from Districts mentioned above were organized and coordinated by TB Program/Care and Treatment Unit, where leaders of these HFs and health care workers that should be involved in TPT were briefed for the new strategy.

I.3.5.2. Isoniazid preventive therapy (IPT) for under 5 years children

Rwanda started to implement the WHO recommendation for all children contact to be screened for TB and either referred for diagnosis and treatment if they have symptoms of TB disease. The contact investigation policy recommends screening all sputum smear positive contacts at the beginning and at the end of TB treatment of the TB index case. It also recommends to initiate the Isoniazid Preventive Therapy (IPT) for children under 5 years without TB disease. During the 2018-2019 year, 99% (1,429/1,443) of all children under 5 years who were contacts of tuberculosis bacteriologically confirmed cases were screened for TB. Of them 10.5% (150/1,429) were identified as presumptive TB cases and 28 were confirmed as TB cases.

The percentage of children that initiated IPT was 97.7% (1,383/1,415).

Table 18: Cascade of TB contact screening and initiation of isoniazid preventive therapy among children under 5 years, Rwanda. July 2018-June 2019

IPT by Provinces	Number of contact	Contact screened for TB		TB Presumptive TB among screened		TB Cases among children <5years		Eligible on IPT	Contacts of TPB+ < 5 years put on IPT	
	Number	#	%	#	%	#	%	#	#	%
East	427	422	99%	25	6%	12	48%	415	406	97.8%
Kigali City	312	308	99%	60	19%	4	7%	308	298	96.8%
North	139	139	100%	17	12%	8	47%	131	131	100.0%
South	300	300	100%	26	9%	1	4%	299	288	96.3%
West	265	260	98%	22	8%	3	14%	262	260	99.2%
Total	**1,443**	**1,429**	**99.0%**	**150**	**10.5%**	**28**	**18.7%**	**1,415**	**1,383**	**97.7%**

I.3.6. Contact tracing screening among index TB case at the beginning and end of their TB treatment

The contact tracing is done two times, first when index case is diagnosed and second six months after before the index case finishes his treatment. The data for second contact tracing is reported twelve months after, for identifying whether they might have developed TB disease or not.

The total number of contacts of TPB+ cases regardless the age during the FY 2018 - 2019, registered at the beginning of TB treatment of index cases, was 14,245 and 97.7% (13,920/14,245) were screened. Among them 26% (3,626/13,920) were TB presumptive and 4.2% (151/3,626) were TB cases.
The number of contacts of TPB+ at the end of treatment of index case 6 months after registered was 14,724 and 89.6% (13,198/14,724) were screened. Among them 10.1% (1,341/13,198) were TB presumptive and 4.1% (55/1,341) were TB cases.

I.3.7. Civil Society in fight against TB

IEC sessions were conducted by the National Youth Council (NYC). A total of 51,732 students in 157 schools were sensitized, where 9 cases of TB were confirmed. These Schools mentioned are located in 6 administrative districts, which are Nyanza, Nyamagabe, Huye, Nyarugenge, Gasabo and Karongi. HIV testing as well TB screening were done for all TB presumptive; 6 people were tested HIV positive and 5 were confirmed TB.
In IWAWA rehabilitation center, sensitization of 3,998 youths was done on TB where 298 were screened TB presumptive. Among screened people, 4 were confirmed TB.

Rwanda Network of People Living with HIV - RRP+, within its mandates of reducing morbidity and mortality due to TB among PLHIV, his strategic orientation focuses in TB sensitization by peer education within cooperatives and associations in 25 Districts.
Two thousand six hundred eighteen (2,618) peer educators were trained to conduct the educative session in the community and ensure linkage of presumed TB patients with Health facilities for the TB screening and follow up. A total of 127,608 members of RRP+ cooperatives/associations were sensitized on TB symptoms and prevention. Sensitization by peer educators was organized around 341 health facilities for people living with HIV.

I.4. Objective 4: Improve managerial capacities of the TB program; enhance the performance of the TB surveillance to achieve concordance between aggregate and case-based systems; and develop research.

1.4.1. Strengthen tuberculosis surveillance system

1.4.1.1. Quarterly evaluation meeting

TB&ORD Division conducted four quarterly evaluation meetings with participation of all Referral, Provincial, District hospitals and all health centers representatives, to review the quality of data and validate TB&ORD data of previous quarter, by confronting pre-established aggregate reports and source documents such as registers, TB patient treatment cards, etc. Key outputs from the quarterly evaluation meetings are the following:

- Validate data were entered in the HMIS aggregate system and constituted the basis of the current TB&ORD Annual Report,
- Identifying challenges faced and provide recommendation to improve the management of data and patients,
- Tracking progress of indicators whereby corrective measures are developed on time for the indicators ,

In order to reduce discrepancies in TB data collected, health facilities are recommended to conduct their own data verification and validation before QEM at District level.

1.4.1.2. Completeness and timely report in HMIS during 2018 -2019 FY

In 2018-2019 FY, the HMIS report expected were 17,877 for different data sets. The below table summarizes the completeness and timeline of some data sets reported in HMIS by CDTs and CTs and timeliness is considered for all reporting entities which entered data before the end of fifth days following the end of the evaluated quarter. The target of timely submission of TB reports in HMIS was at 98 **%** for 2018-2019 FY.

Table: 19: Completeness and timely report in HMIS during 2018 -2019 FY

Dataset	**Expected Reports**	**Actual Reports**		**Reports On Time**	
		N	**%**	**N**	**%**
MDR-TB Treatment Outcomes	8	8	100%	4	50%
MDR-TB Registration	8	8	100%	4	50%
TB Registration of TB Cases (CDT only)	800	797	100%	785	98%
TB Treatment Outcome report(CDT Only)	800	795	99%	704	88%
TB - HIV Testing among TB Cases, Laboratory and Smears examined (CDT only)	800	798	100%	710	89%
TB - TB/HIV and TB among people at high risk of TB and Community DOTS, Screening	2276	2246	99%	1963	86%
TB - HIV Testing among TB Cases, Laboratory (CT only)	1468	1448	99%	1270	87%
TB_Infection Control Evaluation form and Triage	2272	2241	99%	1953	86%
TB Drug Management (CDT only)	800	795	99%	670	84%
TB Management of Ambulatory MDR TB cases (CDT or CT)	2276	2233	98%	1980	87%
TB - Bacteriological conversion and Suspicion of MDR TB	812	795	98%	708	87%
Leprosy notification & detection	2272	2223	98%	2081	92%
Leprosy patients Under treatment-Treatment Outcome and Disability assessment	2272	2214	97%	1873	82%
TB_Annual surveillance among health facility staff and CHWs	569	551	97%	499	88%
TB_Samples sent for culture	176	165	94%	158	90%
TB_Xpert tests performed (Xpert sites only)	256	216	84%	87	34%
TB_Culture and DST proportion and LPA methods	12	8	67%	8	67%
Total	**17 877**	**17 541**	**98,1%**	**15 457**	**86,5%**

The timeless is still low especially for MDR-TB Treatment Outcomes (50%), MDR –TB registration (50%), TB_Xpert tests performed (34%) and TB_Culture and DST proportion and LPA methods (67%) due to:

- Delay to assign HMIS GXPERT data set to the new Gxpert sites
- Delay of NRL complete the information related to culture and DST
- Delay on Kibagabaga and Kabutare MDR centre to report on registration and outcome of MDR-TB cases

I.4.2. Revision of the national MDR-TB guidelines and TB &ORD Standard Operating Procedure.

a. Update MDR –Guide line

World Health Organization (WHO) in March 2019 released its new "WHO consolidated guidelines on drug-resistant tuberculosis treatment". Main changes from this new guideline have been presented to the national DR-TB technical working group for discussion on the implementation arrangements. Four new DR-TB treatment regimens have been adopted for use in Rwanda starting by July 2019 and these include:

- Shorter regimen: **4Am– Cfz – E – Z – Mfx – H – Pto /5Cfz – E – Z – Mfx** for eligible newly diagnosed RR-TB cases;
- Longer regimen: **6Bdq – Lzd – Lfx – Cfz – Cs/12Bdq – Lfx – Cfz – Cs** for RR/MDR-TB cases who are not eligible for the shorter treatment regimen;
- Pediatric: **6Dlm – Lzd – Lfx – Cfz – Cs/12Lfx – Cfz – Cs** for children who are not eligible for the shorter treatment regimen and
- Pre-XDR **FLQ**/XDR: **6Bdq – Lzd – Cfz – CS – Dlm – Z/12Bdq – Cfz – Cs – Z** for any resistance to fluoroquinolones.

Adopted DR-TB treatment regimens have also been presented to international DR-TB experts (WHO, Union, PIH and MSF) for advice and supported the country choice/decision.

b. Update the TB&ORD Standards Operating Procedures of Monitoring and evaluation

The workshop to update the existing TB &ORD SOP to respond to the need of the program in regards of the new interventions and tools have been organized in June from 17.to 21 may 2019. The draft of the Update the existing TB &ORD SOP is available waiting for review and validation

1.4.3. Rapid Service Quality Assessment (RSQA)

Rapid Service Quality Assessment (RSQA) visits were conducted in 90.5% (181/200) Centers of TB diagnostics and treatment (CDTs). After this RSQA we were able to compare results of 2017-2018 and 2018-2019 FYs for the health facilities visited in both periods.

Overall score has increased from 77.0% to 79.6% during 2017-2018 and 2018-2019 FYs respectively. The component of aDSM newly introduced in February 2018 has improved from 30.5% to 47.8%. However, this domain area (aDSM), evaluation of infection control plans still need particular attention.

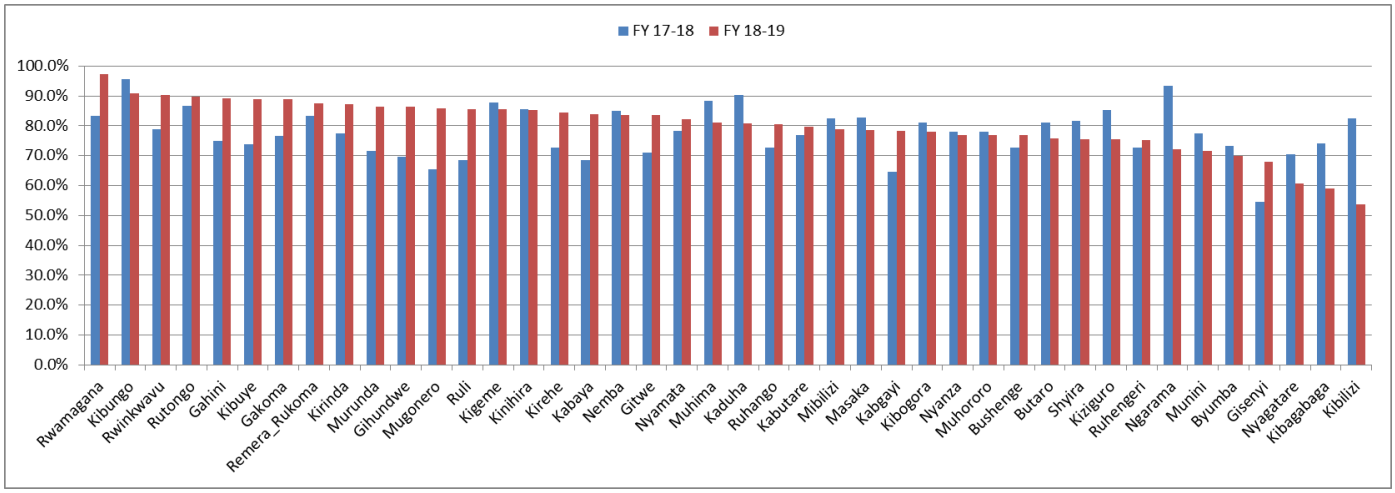

Figure 11: Overall score of RSQAs for CDTs visited at least twice from FY2017-2018 to FY2018-2019, by Hospital catchment area, countrywide.

I.4.4. Integrated Supportive Supervision and Data Quality Assessment

From 1st April to 24th May 2019, the unit of Monitoring and evaluation under PMEBS division conducted an integrate supportive supervision and data quality assessment (ISS/DQA) for all health domain in health facilities. On TB program, they assessed the quality of specific data elements. The DQA findings are captured in the following table.

Table 20: Proportion of HFs with less than 5% discrepancy.

Data elements (grouped)	Proportion of HFs with < 5% discrepancy n=71
TB cases registered October-December 2017.	85%
TB treatment outcome of TB cases registered October-December 2017.	83%
TB –HIV+ cases new and relapse registered October-December 2017.	93%
TB –HIV+ cases new and relapse registered October-December 2017 put on ART.	86%
TB cases bacteriologically confirmed registered in October-December 2018 tested for any drug susceptibility.	88%

The table above shows the proportion of health facilities found with less than 5% of discrepancy, which is recommended by the Standard Operating Procedures for Management of Routine Health Information (version 2016) for Rwanda.

Regarding ISS, findings revealed that updated algorithms for TB diagnosis and treatment and leprosy are available in OPD, ART, one stop TB-HIV in 100% (n=42) hospitals. Regarding GeneXpert test for high risk groups, the results were available for 99.2% (n=1019) elderly (over 55 years), 96.6% (n=426) children of under 15 years, 100% (n=52) of TB contacts and 97.4% (n=366) people living with HIV.

1.4.5. Individual TB case based surveillance system

Based on the observations from expert, we clearly defined the goal of our Individual TB cases based surveillance system and decided to redesign it to be friendly usable. In collaboration with the team from HIS-PMEBS division and HISP-RWANDA, the new system was developed based on WHO module. The implementation of this new system will start from July 2019 countrywide replacing the aggregated TB quarterly reports for TB notification and outcome.

1.4.6. External reviews and evaluation of TB program and surveillance

1.4.6.1 TB epidemiological program review (Epi-Review)

In September 2018, a team composed by staff from WHO and CDC headquarter conducted the epidemiological review using WHO Standards and Benchmarks for TB Surveillance and Vital Registration Systems checklist.

The objectives of the review were to:

- Describe and assess the capacity of national TB surveillance and vital registration systems to measure TB burden (incidence and mortality),
- Assess the level and trends in TB disease burden by geographic area and demographics,
- Assess the relation of these trends to changes in TB-specific interventions considering external factors. Based on the findings,

In 2018, 8 of the 13 standards were met, 2 partially met 2 not met and one not applicable which was the standard B 1.5 about electronic case-based only under development compare to 2013 where 6 were met, 4 partially met and 2 did not meet.

The two standards partially met in 2018 were:

- B 1.8 related of all diagnosed TB cases are reported was not met due to fact that TB notification is not legally required and no inventory study has been done in the 10 years to determine potential under-reporting as the standard requires
- B 1.9 related to population has good access to health care which assessed using indicators on under 5 mortality rate < 10 per 1000 live births which was at 40% and an out-of-pocket expenditure out of all health expenditure < 25% which was at 26%.

The two standards not met were:

- B 1.10 related to Vital registration system with has high national coverage and quality but our CVRS is being piloted to strengthen the notification and classification of health facility and community deaths
- B 2.3 related to surveillance data for children reported with TB are reliable and accurate assess by the ratio of TB cases in children ages 0-4 years old to 5-14 years old to be within the range of 1.5-3.0 but our ratio was 1.3, and all diagnosed childhood TB cases are reported assessed by 90% or more of childhood TB cases are notified as determined by an inventory study but in Rwanda no inventory study has been conducted.

The review noted that TB incidence, mortality and notification are declining in Rwanda as a result of TB specific interventions as well as external factors. There is political commitment to control TB at all levels of the Ministry of Health and the Rwanda Biomedical Center (RBC), the TB program has a NSP with an assigned budget. Related programs, divisions, and institutions work in coordination to increase efficiency of interventions and provide patient-centered care. Among the most notable TB specific interventions are: the nationwide reach of community and health facility based case detection and treatment services free of cost to patients, the active case finding activities among high risk groups, and the strong HIV/TB integration.

The review concluded that Rwanda has a well-established TB program with a surveillance system producing high quality data and good monitoring of HIV/TB co-infection and drug resistant TB. Its main weakness relates to the ongoing extended transition to a case-based electronic online system, the probable under-diagnosis of TB in children and women, and a weak vital registration system.

1.4.6.2. Audit of Global Fund and Rwanda General Office (OIG)

The office of auditor general of Global Fund visit was conducted in 27 HF selected and the feed back was done: Findings for TB : Few negligeable variance and high number of clinically diagnosed with low success rate. The variance was observed between medecine consumattion and TB cases notified.

1.4.6.3. Green Light Committee (GLC) evaluation mission in Rwanda

In September 2018 Rwanda received an evaluation on the implementation of programmatic management of drug-resistant (PMDT) in Rwanda. This evaluation was conducted by two consultants from WHO-GLC (One medical doctor for clinical component of the PMDT with a laboratory specialist for laboratory part). This activity was coordinated by the Director of MDR-TB Unit.

1.4.7. Operational research

A study protocol on the "Clinical and social long term outcomes among multi-drug resistant tuberculosis (MDR-TB) patients who successfully completed MDR-TB treatment under the Rwanda TB program" has been prepared and submitted for review and approval. Data collection for this study is planned to be conducted during 2019-2020 FY.

A scientific article about "Highly successful treatment outcome of multidrug-resistant and genetic diversity of multidrug-resistant Mycobacterium tuberculosis strains in Rwanda" was published in the Tropical Medicine & International Health journal in May 2019.

During 2018/2019 FY a workshop was organized to analyze data collected during RDHS 2014-2015 on TB-related knowledge and care-seeking behavior among Rwandan population. The final report is being finalized and the findings will be disseminated during 2019/2020 FY.

In 2018/2019 FY a workshop was organized to clean and to analyze data collected during 2017-2018 on associated risk factors for TB diseases in patients attending health facilities in Rwanda. The meeting to discuss on preliminary results have been organized and inputs have been provided waiting final results of analysis for validation. The final report is being finalized and the findings will be disseminated during 2019/2020.

Diagnostics for MDR-TB in Africa (DIAMA)

This is an MDR-TB diagnostic trial [https://clinicaltrials.gov/ct2/show/NCT03303963], evaluating a novel multiplex deep sequencing-based drug resistance diagnostic platform that simultaneously provides sequence information of genes that confer resistance to key TB drugs, called Deeplex-MycTB. In addition, lower technology molecular assays such as TrueNat TB Test and Xpert XDR cartridges will be validated under this study. Lastly, the study is evaluating approaches for treatment monitoring by faster alternative approaches to the WHO recommended monthly cultures: serial sputum samples will have Fluorescein DiAcetate (FDA) vital stain microscopy and measurement of the bacterial load using the Xpert MTB/Rif. This five years study funded by the EDCTP has started on 04/05/2017. So far, the study has enrolled 202 rifampicin-resistant on Xpert, and 141 retreatment patients with a rifampicin-susceptible on Xpert. Through this study, we discovered a novel strain of Mycobacterium tuberculosis complex phylogenically placed at the basal of the complex, thus named "Lineage 0". This discovery was presented in the 2019 European Society of Mycobacteriology Congress, and further genomics analyses are being conducted for scientific documentation of this discovery. In addition, we observed a high rate of false rifampicin-resistant Xpert MTB/RIF. A very low TB bacterial load in sputum is the main driver of false rifampicin-resistance results in the Xpert MTB/RIF assay. Consequently, the Xpert MTB/RIF testing algorithm should be revised to consider a very low TB bacterial load as a key start point for investigation of RR results on Xpert. An abstract on this analysis has been accepted for oral presentation in the 50th Union World Conference on Lung Health, 2018, and a full manuscript on this analysis is being developed.

Studies on Multidrug-resistant TB in Rwanda: Turning off the tap.

This is a PhD thesis by Jean Claude S. Ngabonziza embedded in the DIAMA project, hosted at the RBC (NRL and TB & ORD divisions) and the Institute of Tropical Medicine, Antwerp, Belgium. The studies aimed to document the impact of programmatic management of MDR-TB interventions on the diagnostic- and treatment delays, and the resulting genotypic clustering of MDR-TB over a decade in Rwanda, and to characterize mutations associated with rifampicin resistance that are not detected by the currently implemented methods, and measure their prevalence. Moreover, under this PhD, the phylogeny and transmission dynamic of MDR-TB will be documented. The PhD output will essentially contribute to the global goal "End TB strategy" in general with likely important impact on our National Tuberculosis control Program as it will permit to further optimize the programmatic management of multidrug-resistant tuberculosis.

In the first work packadge, we showed that a shortened diagnostic and treatment delays of rifampicin-resistant TB was associated with a decline in mortality. The mortality dropped from 30.8% in 2006 to 6.9% in 2016 while the delays in diagnosing and treating RR-TB were shortened through the nationwide scale-up of rapid molecular rifampicin susceptibility since 2014 (Manuscript under review). While the genomic analysis for second work package is ongoing, the preliminary results show that MDR-TB in Rwanda has mostly been driven by high transmission of one dominant circulating type representing most of the MDR-TB population structure (49th Union World Conference on Lung Health, 2018)

1.4.8. PAL Strategy

The Practical Approach to Lung health (PAL) is a syndromic approach to the management of patients who attend primary health care services for respiratory symptoms. In PHC facilities, the majority of patients with respiratory symptoms aged 5 years or more are identified as non-TB cases, and at least 80% of them are considered to be ARI cases (1).

The standardized procedures have been clearly defined for the management of PAL respiratory conditions in children and adults. The additional equipment either 336 peak flow meters and 35,400 filtering face piece respiratory masks were distributed to the health center in this reported fiscal year in order to respond about required management.

Furthermore, the PAL capacity building that aimed to enhance the management of PAL disease at primary health care settings was ensured in the integrated training of medical doctors conducted within TB&ORD Division, as well the mentorship was performed in the health facility where the RSQA has been conducted. Finally, looking at the PAL is covering upper and lower respiratory disease while the possibility to monitoring all of them over times does not effective. We proposed to get more emphasis as small scale on lower respiratory conditions disease that includes asthma & COPD. This should be programmatically addressed in the new TB NSP.

I.4.9. Capacity building of human resource

The aim of capacity building of staff is to improve the efficiency of services offered through different approaches such as trainings, workshop, mentorship and technical working group meeting of staff focusing on practical competencies and covering all TB control components in order to achieve the goals of the TB&ORD Division.

Summary on Trainings, Workshops and Mentorship done during FY July 2018-June 2019

In October 2018,42 MDs and Laboratory technicians have been trained on FNA. A Practical training on abdominal ultrasound in the diagnosis of extra pulmonary TB has been conducted in March 2019, in total 25 Internist specialist countrywide attended this training. In November 2018 a Training of New in charge of Community Health Workers on TB integrated in ICCM has been conducted. A Training on quantification method and quantification tools has been done in November to December 2018. In April and May 2019,85 Medical Imaging technician and MDs country wide were trained on Chest x-ray interpretation as screening tool. In May 2019 a Training of MDs on TB services package and new tools used in Rwanda and Chest X-ray interpretation has been conducted, in total 40 MDs countrywide have been trained.

In August 2018, A workshop to develop a tool for childhood TB-HIV mentorship at decentralized level has been done. In September 2018, a Workshop on e-TB & HIMS use, Data analysis, Interpretation and draft of manuscript has been done. TB/HIV Technical Working Group Meeting has been done, a workshop to Build capacity on analysis and use of Tuberculosis Epidemiological data has been done, a workshop to discuss on TPT program implementation among PLWHIV has been conducted in October 2018. In February 2019, A Workshop of TB surveillance for health care workers has been done, 75 nurses TB FP from Southern & Western Provinces have been participated. A Childhood TB TWG Meeting has been done, In March 2019 a Workshop has been done with 36Supervisors and MDs TB focal persons from 21 Hospitals in Northern Province, Kigali city and Western Province to monitor progress of TB death audit outcome. A workshop has been done to develop SOP and tool on chest x-ray interpretation as screening tool among PLHIV. TB KAP workshop has been conducted.

In September 2018, Childhood TB-HIV mentorship at decentralized level has been conducted in 8 Hospitals and selected HCs.In January 2019, Mentorship on TB death audit in hospitals with high TB mortality rate has been conducted in 5 Hospitals. In May 2019 it has been conducted in 5 hospitals. Clinical Mentorship of FNA Practice in DHs has been conducted in 24 Hospitals.

During 2018/2019 FY, different sessions of supervisions and mentorships have been conducted in Kibagabaga and Kabutare MDR-TB centers. These sessions were used to train newly appointed staff in the MDR-TB centers on DR-TB management, to prepare MDR-TB practical trainings for nurses from health facilities with MDR-TB patient on ambulatory phase and to

ensure data reported in R-HMIS were reflecting the real information on MDR-TB patients' files and registers.
These sessions were an opportunity to work with MDR-TB centers on the preparation and implementation of the research protocol on the "Clinical and social long term outcomes among multi-drug resistant tuberculosis (MDR-TB) patients who successfully completed MDR-TB treatment under the Rwanda TB program".

I.5. Objective 5: Strengthen the coordination across MoH divisions and other government ministries as well as the collaboration with communities, civil society, private care providers and local administrations so that zero TB-affected families are facing catastrophic costs due to TB.

Provide support to MDR-TB patients.

I.5.1. Support organization and implementation of monthly MDR-TB selection committee meeting to discuss MDR-TB issues:

Twelve MDR-TB selection committee meetings have been organized and held at Kabutare and Kibagabaga on rotation basis. Difficult DR-TB cases on second-line TB treatment and presumptive DR-TB patients have been discussed for correct management and, administrative issues around the DR-TB management have also been discussed.
To improve the management of MDR TB patients, contracts were signed with Specialist Medical Doctors from the nearest CHU for regular visits and technical support to MDR wards.

I.5.2. Psycho-emotional support is provided throughout treatment

Individual counseling after MDR-TB diagnosis includes health education on the disease, possibility of treatment, duration of treatment and the mode of treatment. The patient is advised to begin treatment as soon as possible. Upon entering the MDR-TB center at district level, another individual counseling session is organized. During hospitalization at the MDR-TB center, group counseling led by an MDR-TB psychologist or one of the nurses are carried out weekly. During ambulatory care, the health center providing DOT is mainly responsible for counseling and treatment follow up.

I.5.3. Provision of socio-economic support throughout treatment

Transport for MDR TB patients is ensured at initiation of treatment (from health facilities to MDR TB wards) and during ambulatory phase. In addition, nutrition support is also provided during the course of MDR treatment.
For susceptible TB patients, corn soya blend (CSB) were procured for patients with BMI <18.5.

CHAPTER II: LEPROSY CONTROL

For the 2018-2019 fiscal year, this report is globally including all activities that have been implemented to fight against leprosy. Therefore leprosy prevention and control activities was mostly carried out in endemic areas. Main interventions were oriented to active case finding that enable earliest detection of new case of leprosy in the community, contact investigation, providing social support to the identified vulnerable leprosy patients and promoting the behavior changes communication toward entire population.

II.1. Objective 1: Improve early detection of leprosy and reduce the proportion of new cases with grade 2 disabilities less than 10%

II.1.1. Conduct leprosy active cases finding activities in endemic areas

A total of 35 cases were registered and initiated on multidrug therapy (MDT) during the FY 2018-2019. Compared to the previous fiscal year, the number of new cases is still the same (30). Among them we detected more MB cases than PB while in previous years PB cases were more than MB.

We assumed that the increase of MB cases may be due to the effective diagnostic which resulted from the training of health care providers conducted in Gisagara district with one nurse from Jarama HC in Ngoma district. The sensitization effort in Kigembe has also increased in the community and ownership of the HFs. The proportion of female among new cases was 70 % (21), while 10% (3) were children.

Table 21: Notification of leprosy cases, Rwanda, July 2018-June 2019

LEPROSY CASES	MB	PB	Total
New cases (NC).			
Number of new cases (NC)	**17**	**13**	**30**
Number of children among new cases (0-14 years)	**2**	**1**	**3**
Number of women among new cases	**13**	**8**	**21**
Number of cases evaluated for their disability at diagnosis	**17**	**13**	**30**
Proportion with grade 1disabilities among NC	**17.60%**	**0%**	**10%**
Proportion with grade 2 disabilities among NC	**35.30%**	**0**	**20%**
Retreatment cases			
Number of relapses	**4**	**0**	**4**
Number of retreatment after default	**1**	**0**	**1**
Total of case	**22**	**13**	**35**

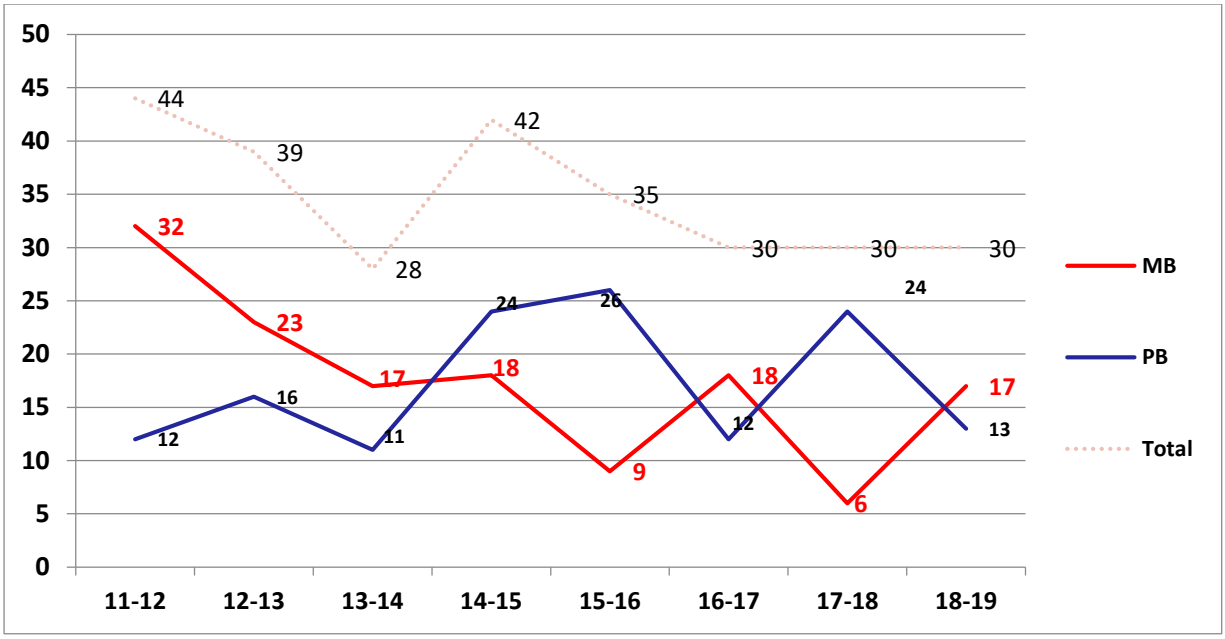

Figure 12 : Trends in leprosy notification, by case category, Rwanda, July 2004 to June 2019

II.1.2. Strengthen quality control services against leprosy and the capacity of health care providers and community health workers

The quality of services was improved in term of provision of Multi Drug Therapy (MDT) with long shelf life, register of contact investigation was developped and piloted in Jarama and Nzangwa health center and ACF conducted in all endemic zones.

About capacity building, one staff of ORD unit attended the training on leprosy management at Leprosy Mission hospital- Naini in India with sponsorship of Action Damien.

The mentorship is regularly done to the health care providers working in endemic area when active case finding is conducted.

Capacity building of health care workers from Mibilizi and Gakoma DHs were conducted from 19-20/12/2018 with participation rate of 94% (49/52). In additional, 346 CHWs from Gishubi health center, and newly elected CHWs from Mibilizi hospital were also trained with the aim to increase knowledge on leprosy symptoms then involve them in sensitization of the community.

Newly trained Community Health Workers in charge of prevention in village

We received Action Damien technical assistance composed by Medical Advisor and in charge of project to improve management of leprosy and also we discussed the possibility to extend technical assistance in domaine of MDR TB and support the country to develop the new leprosy NSP 2019-2024.

II.2. Objective 2: Increase treatment completion rate to 90% for MB cases and 95% for PB cases and properly support disabilities of leprosy

II.2.1. Leprosy treatment outcome

The treatment completion rates for MB registered from July 2016 to June 2017 and PB forms registered from July 2017 to June 2018 for new cases were respectively 94.4% and 95.8%. The NSP targets of 90% for multibacillary and 95% for paucibacillary were met.

Table 22: Outcomes of treatment for Leprosy cases, Rwanda, July 2018-June 2019

Cases	New cases		Relapses		Retreatment after default	
	MB	PB	MB	PB	MB	PB
Registered	18	24	2	0	3	1
Treatment completed	17	23	2	0	3	1
Discontinuation of treatment	1	0	0	0	0	0
Died	0	0	0	0	0	0
Non evaluated	0	0	0	0	0	0
Treatment success (%)	94.4%	95.8%	100.0%	0.0%	100.0%	100.0%
Disability Grade 2 after treatment	3	0	0	0	0	0

II.2.2. Improving prevention and management of disabilities

The prevention and management of disability is still improving through sensitization of community, contact investigation, passive or active case finding countrywide, especially in the endemic areas. Six cases of multibacillary form with G2D was mostly found in the last quarter of this reported fiscal year. The physical disability of garde 2 increased from 3.3% in 2017-2018 FY to 20% in 2018-2019 FY while the leprosy NSP target is less than 10%. Much effort should be invested in the community for early diagnosis. The new cases initiated on the treatment received the counseilling on how to prevent themselves the physical disability caused often by neurtis, untreated reactions of leprosy. The Chloramine tablets were distributed to the former patients with ulcer, and the self care of patients affected by leprosy is always recommended.

II.2.3. Medical rehabilitation and socio-economic reintegration of patients affected by leprosy

II.2.3.1. Surgery for leprosy patients with physical disabilities

Chronic sequelae and disabilities are the main problems in leprosy. Furthermore, systematic follow-up after completion of treatment is important, when new disabilities may occur, or existing disabilities may get worse. The cleanliness surgery is mostly required to the patients that have the chronic ulcer or infection of bones. Among the 20% of patient with G2D, we did not see any need of surgical treatment, except only one former patient in Kizura.

II.2.3.2. Socio-economic reintegration of vulnerable groups who suffered from leprosy

Stop discrimination and promote inclusion of vulnerable people affected by leprosy aimed to integrate them in the society and afford to all services like others. We ensured the payment of Community based health insurance (CBHI) to 323 people and 11 houses renovated. Two prosthesis manufactured at Africa en marche were procured and distributed. In addition, the project of goats breeding set in Jarama in the previous fiscal year for two former patients amputed was now successful implemented.

II.3. Objective 3: Increase awareness, information and communication, in order to reduce stigma and discrimination of individuals and families affected by leprosy

The awareness of general population is an entry point to let know them about the signs of leprosy, worsen physical impairment due to the delay of diagnosis, and then take care of any skin lesion occurred by seeking immediately the health care services.Main activities of increasing awareness conducted in community are:

- Integration of leprosy IEC sessions in the planned IEC in the Health Facilities as requested by RBC TB & ORD division;
- Sensitization of around 800 people during HIV outreach in 3 sites of Bugesera district (Mujwiri, Muyoboro, Batima market), 43 people with patches were been screened;
- Sensitization on leprosy for 202 youth students ending the secondary schools grouped in camp called Urugerero camping in Rusizi;

Nine live talks show were aired on the RTV and Isango star radios and television on leprosy prevention and ending discrimination, stigma and prejudice during the world leprosy day 2019.

CHAPTER : III FINANCING THE NSP TB

III.1. Introduction

The TB National Strategic Plan (NSP) is a key instrument to guide TB control work in Rwanda in accordance with the most recent World Health Organization (WHO) international guidance. The major funding sources for the Rwanda TB programs are:

- Government Revenues
- Development Partners contributions through General and Sector Budget Support and Donor funds, partially on budget as seen in the development budget, and partially earmarked and project related. These include the Global Fund for HIV & AIDS, TB and Malaria, Damian Foundation and CDC – COAG.

III.2. Funding Sources for TB Expenditures in Rwanda FY 2018-2019

The Ministry of Health and the Rwanda Biomedical Center in collaboration with its partners worked on the design and development of the Health Resource Tracking Tool (HRTT), where all health sector actors (Government institutions and development partners) report on a periodic basis. The system is designed to collect expenditures and budgets on a quarterly and annual basis.

To facilitate the collection of financial information for this year's report, a separate data collection process was adopted using SMART IFMIS (Integrated Financial Management Information System) for Global Fund grant and Government contribution.

III.3. Public and external funding sources for TB NSF

The Global Fund for AIDS, TB and Malaria (GFATM) contributed USD 4,634,363 the GoR contributed USD 2,429,165; Damian Foundation contributed USD 68,409 and WHO contributed USD 297,000 to give a total budget of USD 7,428,937 for fiscal year 2018/2019.

The TB/NSP total spending amounted to USD 6,979,270 (94%) as follows: Global Fund spent USD 4,430,000; GoR expenditures were USD 2,195,609; Damian Foundation USD 56,661 and WHO expenditures were USD 297,000.

Table 23: Contribution of Different Funding Sources for the year ended 30 June 2019

Donor	Budget in USD	Expenditures in USD	Budget execution rate in%
Damian Foundation	68,409	56,661	83%
Global Fund	4,634,363	4,430,000	96%
GoR (Recurrent budget)	2,429,165	2,195,609	90%
WHO	297,000	297,000	100%
Grand Total	**7,428,937**	**6,979,270**	**94%**

Table 24: Damian Foundation expenditures per budget category for the year ended 30 June 2019

BUDGET CATEGORY	BUDGET IN USD	EXPENDITURES IN USD	VARIANCE IN USD	PERFORMANCE IN %
Leprosy active case finding in endemic area by central level	5,093.42	4620.621373	473	91%
Active case finding and contact examination by health center (Transfer to Health center)	2,913.21	959.4994131	1,954	33%
Ensure socio support for leprosy patients	21,830.17	24243.71265	(2,414)	111%
Train Health care workers on leprosy management	10,920.99	4977.688324	5,943	46%
Pay salaries and PBF for RBC contractual staff on Fondation Damien	15,386.93	15387.46136	(1)	100%
Pay Bank charges	79.67	82.08557316	(2)	103%
Maintain and repair RBC vehicles	3,183.13	864.3052341	2,319	27%
Maintain and repair RBC vehicles (Insurance)	6,548.05	3274.022564	3,274	50%
Communication fees	1,160.96	1024.376598	137	88%
Logistic support to RBC Staff	1,292.48	1227.408039	65	95%
TOTAL	**68,409**	**56,661**	**11,748**	**83%**

As the table shows, for FY 2018-2019 Damian Foundation is contributing to TB expenditures the total amount of USD 68,409 with TB Expenditures by budget category of USD 56,661 representing 83 % of total budget planned for Fiscal year 2018-2019.

III.4. Government contribution to TB National Strategic Plan

Methodology used to estimate the GOR allocations to various health programs

The GoR funds are allocated to different health programs during the annual planning and budgeting process, which entails prioritization process by the Ministry, RBC and decentralized levels basing on HSSP III and different disease program strategic plans serve as guiding documents.

A part from program specific financing, the estimation of GoR contribution takes into consideration all other health related programs costs, categorized as health systems strengthening costs in the MTEF Chapter of (i) Compensation of employees (ii) Use of Goods & Services (iii) Acquisition of fixed assets (iv) Other expenditures.

Table 25: GoR TB NSP budget and expenditure per MTEF chapter for the year ended 30 June 2019

MTEF Chapter	Budget (USD)	Expenditures Budget (USD)	Variance	Budget Execution rate (%)
21 Compensation of Employees	645,346	623,298	22,048	97%
22 Use of Goods & Services	183,190	169,577	13,613	93%
23 Acquisition of fixed assets	53,070	43,968	9,103	83%
28 Other Expenditures	1,547,559	1,358,766	188,793	88%
Grand Total	**2,429,165**	**2,195,609**	**233,556**	**90%**

As the table shows, for FY 2018-2019 GoR is contributing to TB expenditures the total amount of USD 2,429,165 with TB Expenditures by budget category of USD 2,195,609 representing 90 % of total budget planned for Fiscal year 2018-2019.

III.5. The Global Fund contribution

For the Global Fund contribution, the budget for the year 2018–2019 was USD 4,634,363. Out of this budget, a total of USD 4,430,000 have been effectively spent by the sub-recipients representing 96% of total budget for TB NSF GF grant.

Table 26: GF TB NSP budget and expenditure per NSP cost category for the period of July 2018 to June 2019

Budget categories	Budget in USD	Expenditures in USD	Variance in USD	Budget execution rate in %
1.0 Human Resources (HR)	895,701	885,368	10,333	99%
10.0 Communication Material and Publications (CMP)	28,269	26,605	1,664	94%
11.0 Program Administration costs (PA)	1,450,428	1,430,048	20,380	99%
12.0 Living support to client/ target population (LSCTP)	94,782	104,677	(9,895)	110%
2.0 Travel related costs (TRC)	688,505	527,372	161,133	77%
4.0 Health Products - Pharmaceutical Products (HPPP)	299,225	168,617	130,608	56%
5.0 Health Products - Non-Pharmaceuticals (HPNP)	979,684	1,237,818	(258,134)	126%
7.0 Procurement and Supply-Chain Management costs (PSM)	104,679	21,794	82,885	21%
8.0 Infrastructure (INF)	68,179	27,700	40,479	41%
9.0 Non-health equipment (NHP)	24,910		24,910	0%
Total	**4,634,363**	**4,430,000**	**204,363**	**96%**

The table above shows the TB NSP budget execution per NSP cost category for the period of July 2018 to June 2019 representing a total rate of 96%. The unused budget of USD 204,363 is subject of carry-over for next Fiscal year 2019-2020.

ACHIEVEMENTS FROM JULY 2016 – JUNE 2017 BY TB NSP AND TB RBF INDICATORS

Annex 1: TB Indicators in Monitoring and evaluation framework, Rwanda from July 2018 to June 2019.

	Indicators	Purpose	Calculation	Target Jul 2018/ June 2019	Results for July 2018-June 2019
	GOALS for 2020 as compared to 2015: □ 20% reduction of TB incidence rate from 56.0/100,000 to 45/100,000 population □ 35% reduction of TB deaths □ 0% TB-affected families facing catastrophic costs due to TB				
Goal	1.Incidence rate (per 100,000 hab)	**Impact**	Measured by WHO estimations by modeling		
Goal	2. Percentage of reduction in number of TB Deaths	**Impact**	Measured by WHO estimations by modeling		
Goal	3. Percentage of TB-affected families facing catastrophic costs due to TB ***(End TB Top-ten indicator N°3)***	**Impact**	Numerator: Proportion of TB patients (and their households) who incur catastrophic costs Denominator: all patient s treated	Survey	NA
	Objective 1: Improve early and accurate diagnosis of TB including universal DST through progressive adoption of WHO-recommended rapid tests for all presumptive cases so that the treatment coverage increase from 84% in 2015 to 89 % by mid-2021.				
1	4. TB notification rate new and relapses (per 100,000)	Outcome	Numerator: Number of TB cases notified (new and relapses). Denominator: Population/100,000	5434 44.3	5812/ Pop: 12,374,398 47.0
	5. Notification rate of new pulmonary bacteriologically confirmed TB cases	Outcome	Numerator: Number of new bacteriologically confirmed TB cases notified (new and relapses) Denominator: population/100,000	3,696 30.1	4,196/ Pop: 12,374,398 33.9

	Indicators	Purpose	Calculation	Target Jul 2018/ June 2019	Results for July 2018-June 2019
	6. TB treatment coverage ***(End TB Top-ten indicator N° 1)***	Outcome	Numerator: Number of new and relapses cases that were notified and treated Denominator: estimated number of incident cases in the same year (%)	87%	83.7% (5,904/7,053)*
	1.1. Improve active case finding in prioritized HRGs so that at least 90% of contacts of TB bacteriologically confirmed cases are investigated for TB.				
1.1.	7. Contact investigation coverage ***(End TB Top-Ten N°6)***	Coverage	Numerator: Number of contacts of bacteriologically confirmed TB cases who were investigated for TB. Denominator: Number of contacts of bacteriologically confirmed TB cases	87%	97.7% (13,920/14,245)
1.1.	8. Proportion of TB cases notified among high-risk groups (HRGs (Number and Percentage)	Process	Numerator: Number of TB cases (new & relapses) notified in HRGs Denominator: Total number of TB cases notified during the period of assessment	≥ 40%	53.4% (3,174/5,949)
	1.2. Strengthen diagnosis capacities for childhood TB so that the proportion of TB cases among children increase from 5% in 2015 to 10% by mid-2021				
1.2.	9. Proportion of TB cases among children 0-14	Output	Numerator: Number of TB cases aged 0-14 (new & relapses) Denominator: Total number of TB cases notified (new and relapses)	7%	7.6% (454/5,949)
	1.3. Improve TB diagnosis across the laboratory network and ensure universal DST coverage for all bacteriologically confirmed TB patients.				
1.3.	10. Percentage of newly notified TB+ patients	Output	Numerator: Number of new and relapses cases diagnosed using WHO recommended rapid tests	37%	51.1% (2,967/5,811)

	Indicators	Purpose	Calculation	Target Jul 2018/ June 2019	Results for July 2018-June 2019
	diagnosed using WHO recommended rapid tests ***(End TB Top-Ten N°4)***		Denominator: Number of new and relapses case notified		
1.3.	11. DST Coverage for TB patients ***(End TB Top-Ten indicator N° 7)***	Coverage	Numerator: Number of TB patients with a drug susceptibility result for at least Rifampicin (Xpert MTB/RIF or phenotypic DST) Denominator: Number of bacteriologically confirmed notified cases in the same year. Disaggregation for New TPB+ and previously treated cases	All (83%) New B+ (82%) All previously treated (95%)	90.3% (4,011/4,443) 90.2% (3,609/4,000) 90.7% (402/443)
	1.4. Strengthen the implementation of quality management system in the TB lab network				
1.4	12. Laboratories showing adequate performance in external quality assurance for smear microscopy	Output	Numerator: Laboratories showing adequate performance in external quality assurance for smear microscopy (No major error in at least 3 controls) Denominator: Total number of TB microscopy laboratories that undertake smear microscopy during the reporting period (number and percentage)	96%	91.0% (182/200)
1.4.	13. Xpert laboratories showing adequate performance in EQA	Output	Numerator: Laboratories showing adequate performance on panel testing for Xpert (once per year) Denominator: Total number of Xpert laboratories (number and percentage)	98%	93.3%

	Indicators	Purpose	Calculation	Target Jul 2018/ June 2019	Results for July 2018-June 2019
1.4	14. Culture laboratories showing acceptable performance in culture DST proficiency testing	Output	Numerator: Total number of laboratories showing acceptable performance results on culture DST panel (once per year) Denominator: Total number of functional culture laboratories	90	95%
	1.6. Intensify communication and social mobilization for early TB detection				
1.6.	15. Percentage of population with adequate knowledge* on TB symptoms, transmission and prevention	Outcome	Numerator: Number of people with adequate knowledge* on TB symptoms, transmission and prevention Denominator: Number of people interviewed through the survey.	75%	NA
1.6.	16. Proportion of TB cases (all forms) referred by CHW during the evaluated year.	Output	Numerator Number of TB cases (all forms) referred by CHW during the evaluated period Denominator: The total number of notified TB cases (all forms).	≥21%	25.2% (1,502/5,949)
	Objective 2: Provide patient-centered treatment for all forms of TB so that the treatment success rate be maintained at least at 90% for bacteriologically confirmed tuberculosis and at least at 87% for drug resistant tuberculosis.				
2	17. Treatment success rate (TSR) for all forms of TB cases (DS & DR-TB cases) ***(End TB Top-ten 2)***	Outcome	Numerator: TB cases (DS- and DR-TB cases) successfully treated (cured plus completed treatment) Denominator: total number of TB cases (DS- and DR-TB cases) registered during the year	≥ 87%	85.4% (4,907/5,744)
	2.1. Ensure no stock out of first-line and second-line drugs in all CDT				
2.1.	18. Percentage of CDT with no stock out of FSL of experienced in the last 12 months	coverage	Numerator: Percentage of CDT with no stock out of First-Line TB drugs (R150H75ZE&R150H75)	100%	99.5% (199/200)

	Indicators	Purpose	Calculation	Target Jul 2018/ June 2019	Results for July 2018-June 2019
			Denominator Total number of CDT		
2.1.	19. Percentage of RR/MDR TB patients with no interruption of treatment due to stock out of SLD in the last 12 months	coverage	Numerator: Percentage of RR/MDR TB patients with no interruption of treatment due to stock out of SLD in the last 12 months Denominator Total number of RR/MDR TB patients under second-line treatment during the last 12 months	100%	100%
	2.2. Improve treatment success rate for all forms of TB, specifically maintain it at least at 90% for bacteriologically confirmed TB cases				
2.2.	20. Treatment success rate for bacteriologically confirmed new and relapse TB cases	Outcome	Numerator: Bacteriologically confirmed new and relapse TB cases successfully treated (cured plus completed treatment) Denominator: total number of bacteriologically confirmed new and relapse TB cases registered during the year of assessment	> 90%	86.4% (3,528/4,083)
2.2	21. Treatment success rate for clinically diagnosed TB cases (SS-, SS0, EPTB and others)	Outcome	Numerator: number of clinically diagnosed TB case with completed treatment during the year of assessment Denominator: number of clinically diagnosed TB case during the year of assessment	80%	82.7% (1,278/1,545)
2.2.3.	22.Cure rate bacteriologically confirmed new and relapse TB cases	Outcome	Numerator: Bacteriologically confirmed pulmonary TB cases who were smear- or culture-negative in the last month of treatment and on at least one previous occasion	84%	77.0% (3,144/4,083)

	Indicators	Purpose	Calculation	Target Jul 2018/ June 2019	Results for July 2018-June 2019
			Denominator: All pulmonary bacteriologically confirmed TB patients registered the evaluated period of time.		
	2.3. Maintain treatment success rate at ≥ 87% for MDR-TB patients				
2.3	23. Proportion of confirmed RR/MDR-TB cases enrolled on second-line treatment (number and percentage)	Output	Numerator: Number of bacteriologically confirmed RR/MDR-TB cases enrolled on second-line anti-TB treatment Denominator: Number of bacteriologically confirmed RR/MDR-TB cases during the period of assessment	100%	98.1% (106/108)
2.3	24. Treatment success rate, confirmed RR/MDR-TB	Outcome	Numerator: Rifampicin resistant (RR)/MDR-TB cases successfully treated (cured plus completed treatment) Denominator: RR/MDR-TB cases enrolled on second-line anti-TB treatment (shorter regimen: patients enrolled in the previous 12 to 24 months; conventional regimen; patients enrolled in the previous 24 to 36 months)	≥ 87%	86.1% (68/79)
2.3	25. Interim results: culture conversion at six months	Output	Numerator: Bacteriologically confirmed RR/MDR-TB cases who have a negative culture at the end of six month Denominator: Total number of RR/MDR-TB cases initiated on a second-line anti-TB treatment during the period of assessment.	82%	70.3% (64/91)
2.3	26. Treatment coverage new drugs ***(End TB Top-ten indicator N°8)***	Coverage	Numerator: Number of TB patients treated with regimens that include new TB drugs Denominator: Number of notified TB patients eligible for treatment with new drugs	≥85%	NA

	Indicators	Purpose	Calculation	Target Jul 2018/ June 2019	Results for July 2018-June 2019
	2.4. Implement active drug safety monitoring and management (aDSM)				
2.5.	27. Proportion of TB treatment cards where ADSM section is completed	Output	Numerator: Number of TB patients whose TB treatment card section on AE was completed adequately (every month for MDR-TB and at least 3 times for DS-TB) Denominator: Total number of registered TB cases during the period of assessment.	40%	NA
	2.5. Maintain ART coverage among co-infected patients at least at 90%.				
2.5.	28. Proportion of diagnosed TB cases tested for HIV infection ***(End TB Top-ten indicator N°9)***	Output	Numerator: Number of TB patients who had an HIV test result recorded in the TB register Denominator: Total number of registered TB cases during the period of assessment.	99%	99.6% (5,924/5,949)
2.5.	29. Proportion of HIV-positive TB cases given antiretroviral therapy during TB treatment	Output	Numerator: number of HIV-positive TB cases given antiretroviral therapy during TB treatment Denominator: number of HIV-positive TB cases registered during the evaluated period	> 90%	94.7% (1,173/1,238)
	2.6. Maintain at ≥ 95% the treatment success rate for patients managed in the community.				
2.6.	30. Treatment success rate for TB patients (all forms) receiving DOT through community health workers (CHW)	Outcome	Numerator: TB patients receiving DOT by CHW who were successfully treated Denominator: all TB patients receiving DOT by CHW during the evaluated period	≥ 95%	94.5% (2,364/2,501)
	Objective 3: Improve TB prevention (TB IC and prevention by medication) so that LTBI treatment coverage among contacts < 5 years increases from 78 % to 90 % by mid-2021.				
	3.1. Ensure that basic infection control measures are applied in at least 85% of all HF and that at least 70% of the health providers undergo annual TB screening				

	Indicators	Purpose	Calculation	Target Jul 2018/ June 2019	Results for July 2018-June 2019
3.1.	31. Percentage of Health providers screened for TB at least once during the year.	Coverage	Numerator: number of Health providers screened for TB at least once during the year. Denominator: number of health providers	66%	78.9% (18,601/23,568)
3.1.	32. Percentage of CHWs screened for TB at least once during the year.	Coverage	Numerator: number of CHWs screened for TB at least once during the year. Denominator: number of CHWs	30%	84.5% (42,465/50,276)
	3.2. Increase LTBI treatment coverage among TB contacts < 5 years of age from 78 % to 90 % by mid-2021.				
3.2	33. LTBI treatment coverage among contacts < 5 ***(End TB Top-ten indicator N°5)***	Coverage	Numerator: number of children who are contacts of TB cases started on LTBI treatment Denominator: number of children eligible for LTBI treatment	85%	97.7% (1,383/1,415)
	Objective 4: Improve managerial capacities of the TB program; enhance the performance of the TB surveillance to achieve concordance between aggregate and case-based systems; and develop research.				
	4.1. Improve the implementation of TB individual record (e-TB) so that by June 2020 TB aggregated electronic reports are generated from e-TB system.				
4.1.	34. Percentage of HF reporting concordant data in e-TB and RHMIS	outcome	Numerator: Reporting units (CDT and CT) submitting timely reports to RHMIS by the 5th day following the end of the evaluated quarter Denominator: Total number of reporting units (CDT and CT)	90%	30.7% (1,829/5,949) For TB case
4.1.	35. Timeliness of routine aggregated reports RHMIS	Process	Numerator: Reporting units (CDT and CT) submitting timely aggregated reports to RHMIS by the 5th day following the end of the evaluated quarter Denominator: Total number of reporting units (CDT and CT)	98%	86.5%
	4.2. Collaborate to the establishment of a national vital registration system that includes TB death data				

	Indicators	Purpose	Calculation	Target Jul 2018/ June 2019	Results for July 2018-June 2019
	36. Case fatality ratio (CFR) ***(End TB Top-ten indicator N° 10)***	Outcome	Numerator: Number of TB deaths (from VR system) Denominator: estimated number of incident cases in the same year	NA	NA
	4.3. Conduct research to optimize implementation and impact of new strategies and tools				
4.3.	37. Number of completed operational researches	Output	Number of completed operational researches (report disseminated)		NA
	4.4. Strengthen the Practical approach for lung diseases (PAL)				
4.4	38. Percentage of health care facilities reporting integrated use of the PAL strategy for respiratory conditions	Output	Numerator: Number of health care facilities reporting full integration of the PAL strategy (have trained staff, PAL equipment and medicines available). Denominator: Number of health care facilities evaluated	84%	41.4% (75/181)
	Objective 5. Strengthen the coordination across MoH divisions and other government ministries as well as the collaboration with communities, civil society, private care providers and local administrations so that zero TB-affected families are facing catastrophic costs[1] due to TB.				
	5.5. Advocate for Universal health coverage for all TB patients				
Goal	39. Percentage of TB-affected families facing catastrophic costs due to TB ***(End TB Top-ten indicator N°3)***	**Impact**	Numerator: Proportion of TB patients (and their households) who incur catastrophic costs Denominator: all patients treated	NA	NA

*****Rwanda population estimated at 12,374,398, as per the National Institute of Statistics of Rwanda: http://www.statistics.gov.rw/statistical-publications/subject/population-size-and-population-characteristics. Accessed in August 2019

Annex 2: RBF achievment, from July 2018 to June 2019.

D. Modules and outcome/coverage indicators							
Module 1	**TB care and prevention**						
Coverage/Output indicator	**NSF Target (Jul 2018- June 2019)**			**Program Results (Jul 2018- June 2019)**			**Level of achievement**
	N# / **D#**	**%**	**Source**	**N#** / **D#**	**%**	**Source**	
TCP-Other 1: Case notification rate of all forms of TB per 100,000 population - bacteriologically confirmed plus clinically diagnosed, new and relapse cases	5,434	44.3	Grant agreement	5,812 / 12,374,398	47.0	Grant agreement	106.1%
TCP-2(M): Treatment success rate all forms: Percentage of TB cases, all forms, bacteriologically confirmed plus clinically diagnosed, successfully treated (cured plus treatment completed)		≥87%		4,907 / 5,744	85.4%	Grant agreement	98.2%
TCP-Other 3: Percentage of TB cases notified among high risk groups		≥ 40%	Grant agreement	3,174 / 5,949	53.4%	Grant agreement	133.5%*
TCP-Other 2: LTBI treatment coverage among contacts under 5		85%		1,383 / 1,415	97.7%	Grant agreement	114.9%
Module 2	**MDR-TB**						
MDR TB-6: Percentage of TB patients with DST result for at least Rifampicin among the total number of notified (new and retreatment) cases in the same year		83%	N/A	4.011 / 4,443	90.3%	Grant agreement	108.8%
		≥ 87%		68	86.1%		99.0%

MDR TB-other 1: Treatment success rate of RR TB and/or MDR-TB: Percentage of cases with RR TB and/or MDR-TB successfully treated.			Grant agreement	79		Grant agreement	
Module 3							
TB/HIV-6 (M): Percentage of HIV-positive new and relapse TB patients on ART during TB treatment		>90%	Grant agreement	1,173 1,238	94.7%	Grant agreement	105.2%

Annex 3: Participants who developed TB&ORD annual report July 2018-June2019 FY

AUTHORS

The following team participated in development of this report:

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