**RWANDA BIOMEDICAL CENTER**
**INSTITUTE OF HIV/AIDS, DISEASES PREVENTION AND CONTROL**
**TUBERCULOSIS AND OTHER RESPIRATORY COMMUNICABLE DISEASES DIVISION**

# *2013-2014 ANNUAL REPORT*

## Tuberculosis, other respiratory communicable diseases and Leprosy control in Rwanda

TB&ORD Division

2014

KIGALI, AUGUST 2014

## ABOUT CONTROL OF TUBERCULOSIS, OTHER RESPIRATORY COMMUNICABLE DISEASES AND LEPROSY IN RWANDA

The mission of control of Tuberculosis (TB) and other respiratory communicable diseases in Rwanda is:

- To reduce the global TB epidemic, by promoting universal and equitable access to quality diagnosis and appropriate treatment of TB, MDR-TB, and TB/HIV patients and by enhancing prevention of the disease.
- Objectively, we aim to:
    - Provide early TB detection in general population and intensify case-finding in prioritized high-risk groups so that the proportion of presumptive cases identified among HRG increases from 11% to at least 30% by mid-2018.
    - Increase treatment success rate from 85% to 87% for bacteriological confirmed TB cases and maintain it at 87% for MDR-TB.
    - Improve TB prevention (TB infection control in health facilities, behavioral change in the general population and prevention by medication) so that the percentage of population with adequate knowledge on TB increase from 56% to 75% by 2018.
    - Improve managerial capacities of the TB program; enhance the monitoring, evaluation system and operational research, by implementing and make functional* an electronic TB register in all CDTs.

We are also in charge of combating Leprosy in Rwanda. Our 2014-2018 objectives against Leprosy are to:

- Improve the early detection of leprosy and reduce the percentage of new cases with grade 2 of disabilities at less than 10%.
- Improve the completion rate of treatment to 90% for MB cases and 95% for PB cases and handle properly disabilities related to leprosy.
- Strengthen the quality Leprosy control services and the improve capacity of healthcare workers as well as community health workers.
- Facilitate socio-economic reintegration of leprosy-affected people.
- Increase outreach efforts, information and communication, to reduce the stigma and discrimination of people and families affected by leprosy.

The TB & other respiratory communicable disease (TB & ORD) Division is in charge of coordinating development of related strategies, policies and guidelines, their dissemination, provides oversight of implementation at peripheral level and ensure national reporting. Implementation involves national public and private partners as well as international partners.

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## FOREWORD

I am pleased to introduce the 2013-2014 Annual Report of Tuberculosis, other respiratory communicable diseases and Leprosy in Rwanda.

This report has been developed, based on data provided by the TB & ORD surveillance system from across Rwanda.

It provides a comprehensive picture of the occurrence and management of TB & ORD and Leprosy in Rwanda.

It is structured based on the 2013-2018 Rwanda TB national strategic plan (2013-2018 TB NSP) and on the 2014-2018 Rwanda Leprosy national strategic plan (2014-2018 Leprosy NSP).

Actions needed toward elimination of TB & ORD and Leprosy in Rwanda will require strengthened and more integrated national and peripheral health services which ensure 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.

I trust that we can all work together to ensure that this vision is achieved.

This report was prepared by The TB & other respiratory communicable disease (TB & ORD) Division and was made possible through the collaboration with its technical partners.

We grateful acknowledge all those who contributed information at central, intermediate and peripheral levels of the TB & ORD and Leprosy control in Rwanda.

Finally, the M&E team of our Division is kindly thanked for his coordination and leadership at the beginning and at the end of this assignment.

We thank you all for open discussions and contributions.

**Michel GASANA, MD, MPH**

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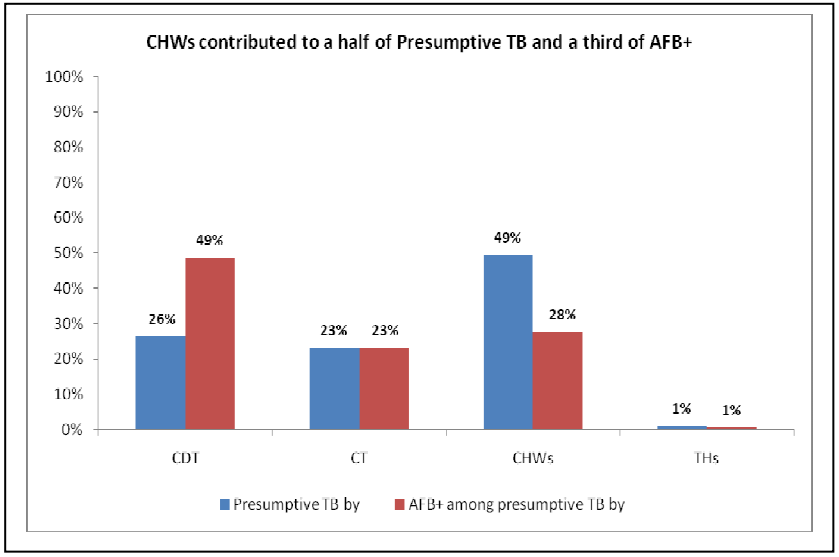
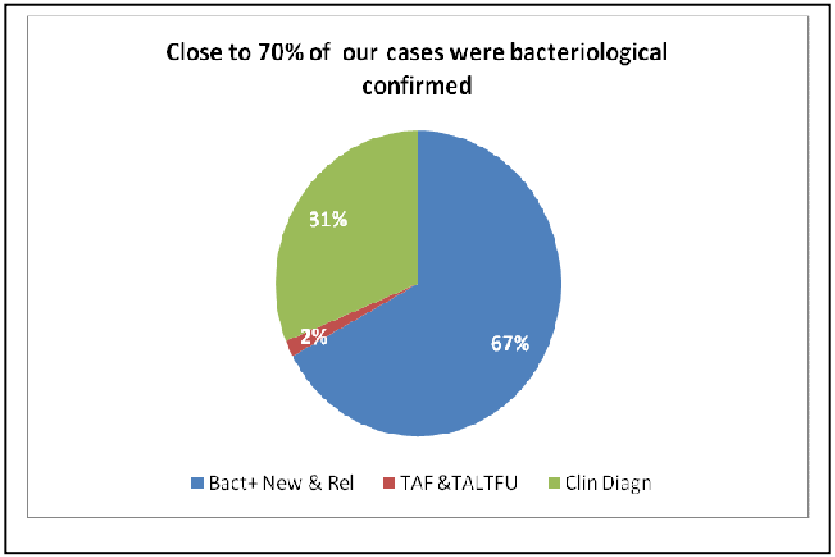
## ABBREVIATIONS

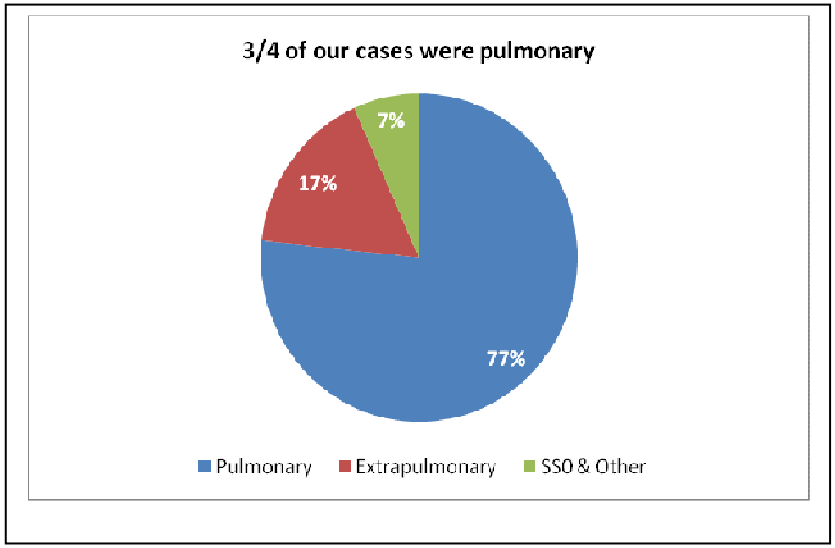
| | |
|---|---|
| ART | Antiretroviral Therapy |
| CDT | Centre for Diagnosis and Treatment of Tuberculosis |
| CHW | Community health worker |
| CPT | Cotrimoxazole Preventive treatment |
| CT | Centre for Treatment of Tuberculosis |
| DOT | Directly Observed Treatment |
| DST | Drug Susceptibility Testing |
| EPTB | Extra Pulmonary TB |
| E-TB | electronic Tuberculosis surveillance system |
| FY | Fiscal year |
| HIV + | Human Immune Virus |
| HMIS | health Management Information System |
| HRG | High Risk Group |
| IC | Infection control |
| JANS | Joint Assessment National Strategic |
| LTFU | Lost to follow up |
| MDR-TB | Multidrug Resistant Tuberculosis |
| M&E | Monitoring and Evaluation |
| MPPD | medical production and procurement division |
| NRL | National reference laboratory |
| NSP | National Strategic Plan |
| NTPB+ | New pulmonary bacteriological confirmed |
| PAL | Practical Approach for Lung diseases |
| PBF | Performance-based Financing |
| PF | Performance framework (of the Global Fund consolidated project) |
| RBC | Rwanda Biomedical Center |
| RDQA | Routine Data Quality Audit |
| SPIU | Single Project Implementation Unit (MOH) |
| SS+ | Sputum Smears Positif |
| SS- | Sputum Smear negative |
| SS0 | Sputum Smear not done |
| SSF | Single source of Funding |
| SOPs | Standard Procedures |
| TAF | treatment after failure |
| TB & ORD | Tuberculosis and Other Respiratory Communicable Diseases |
| TH | Traditional healer |
| TSR | Treatment Success rate |
| WHO | World Health Organization |

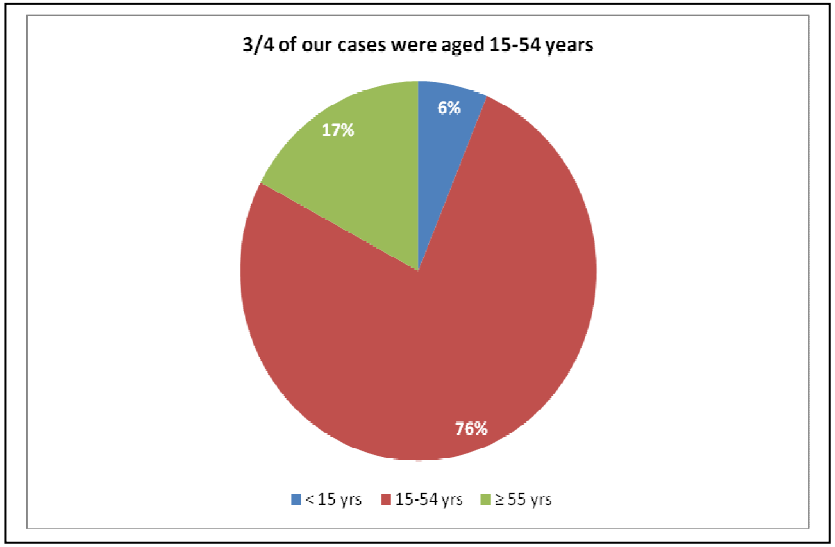
## KEY ACHIEVEMENTS AND FINDINGS DURING JULY 2013 – JUNE 2014 IN FIGURES

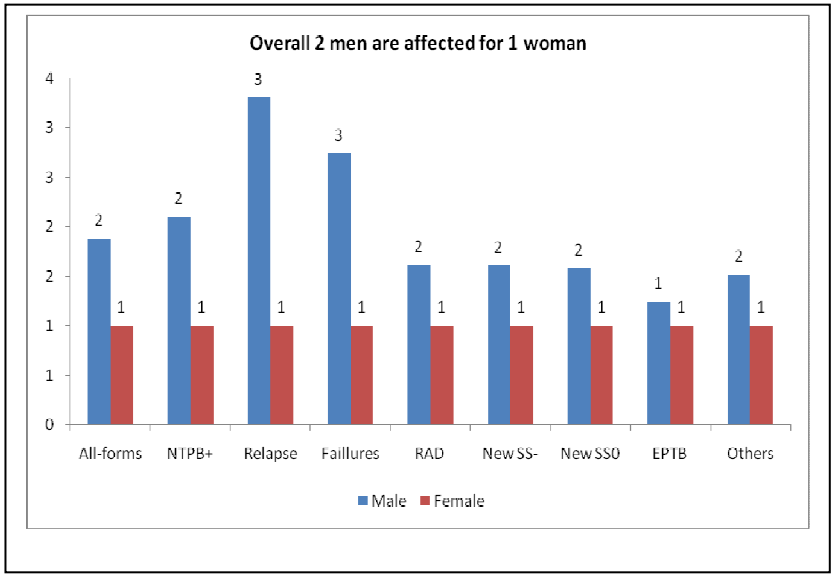
TB screening and diagnosis

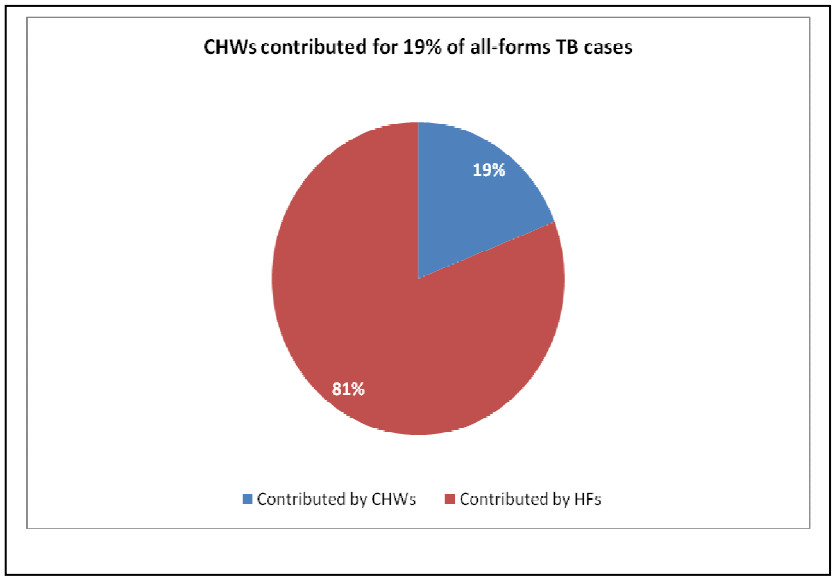


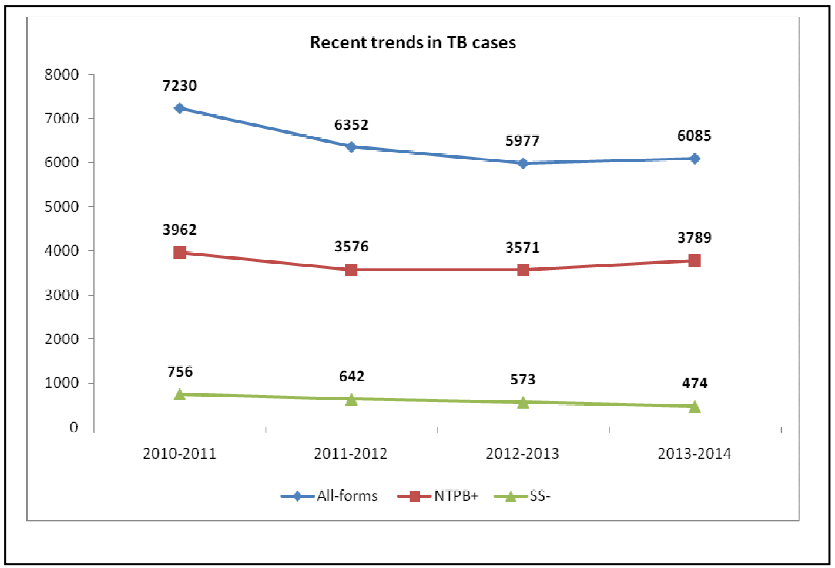



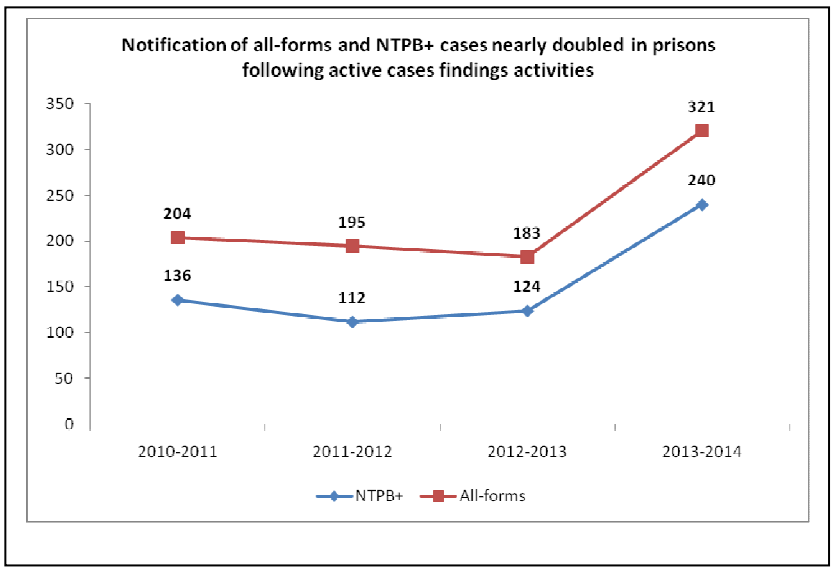



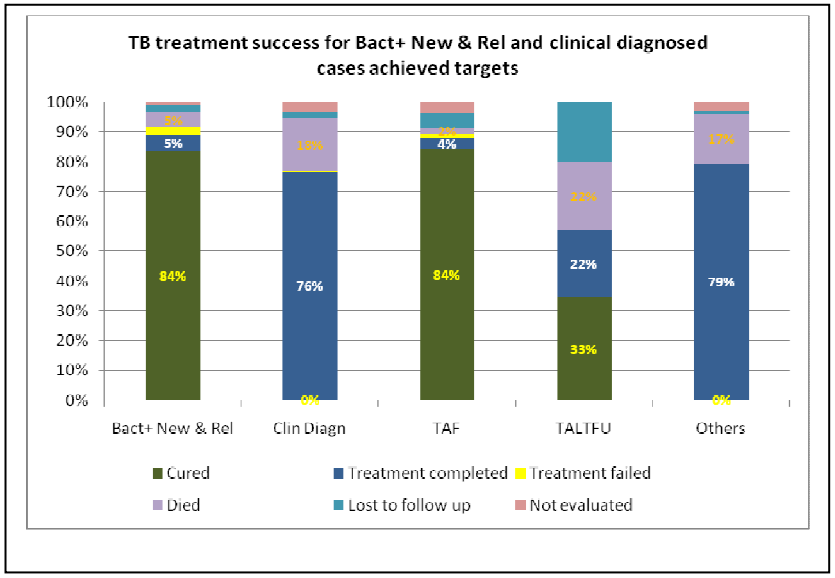

Overall 2 men are affected for 1 woman
All-forms
NTPB+
Relapse
Faillures
RAD
New SS-
New SS0
EPTB
Others
Male
Female

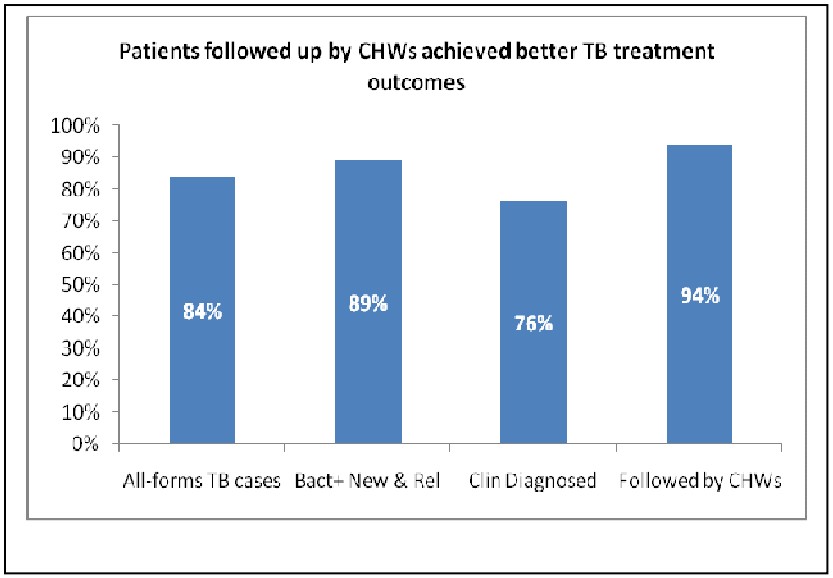

CHWs contributed for 19% of all-forms TB cases
19%
81%
Contributed by CHWs
Contributed by HFs


Recent trends in TB cases
7230
6352
5977
6085
3962
3576
3571
3789
756
642
573
474
2010-2011
2011-2012
2012-2013
2013-2014
All-forms
NTPB+
SS-

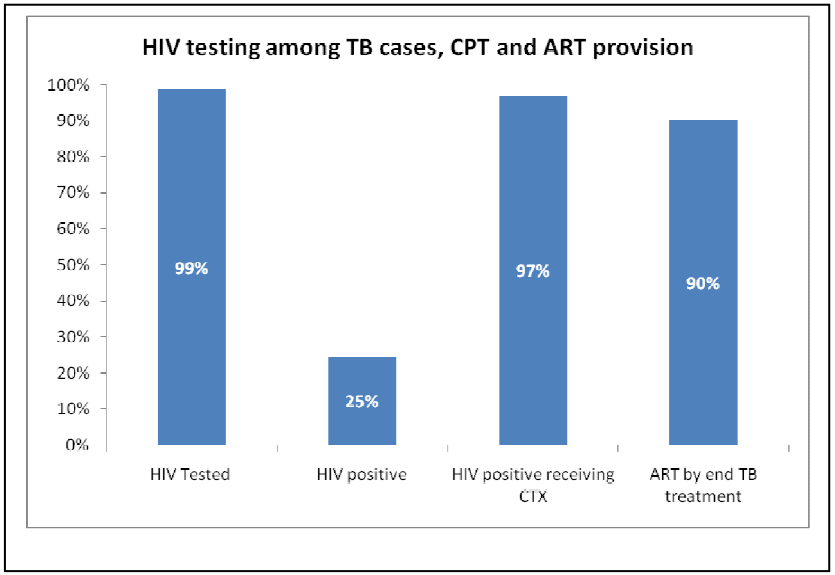

Notification of all-forms and NTPB+ cases nearly doubled in prisons following active cases findings activities
204
195
183
321
136
112
124
240
2010-2011
2011-2012
2012-2013
2013-2014
NTPB+
All-forms

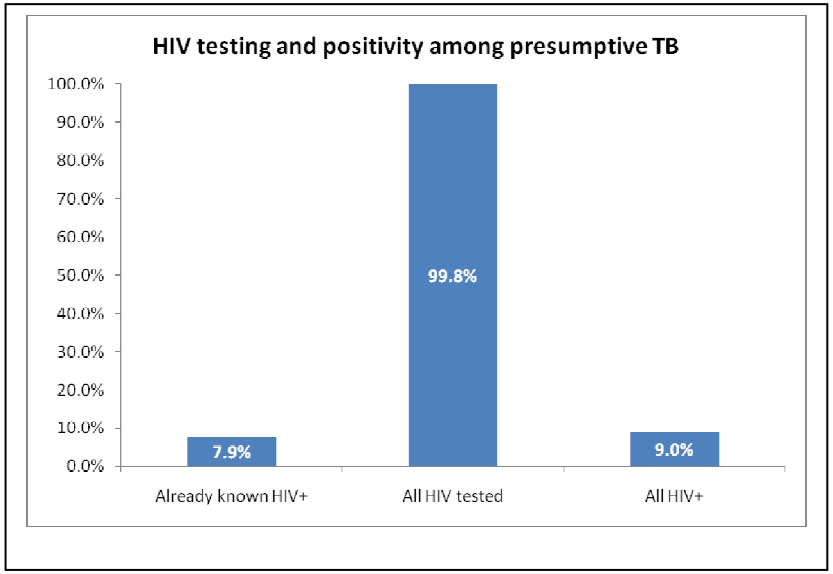
## TB treatment outcomes



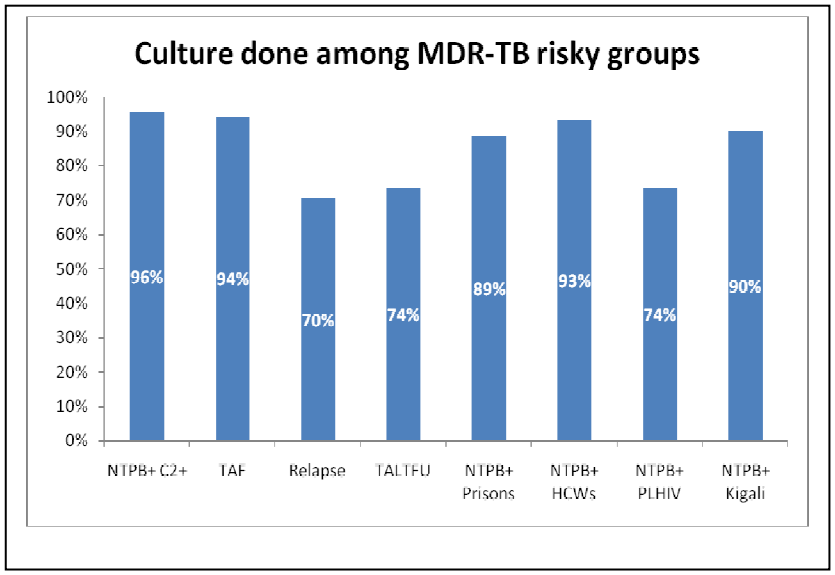



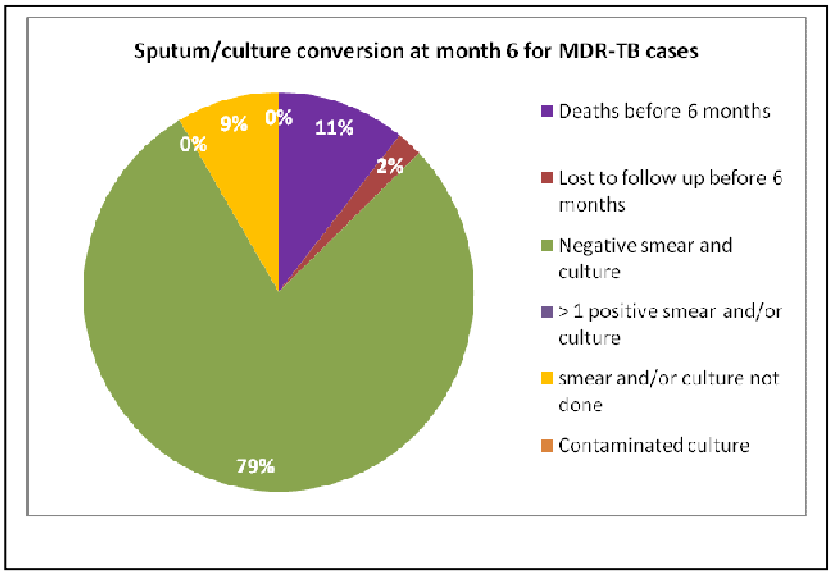

## TB/HIV integration

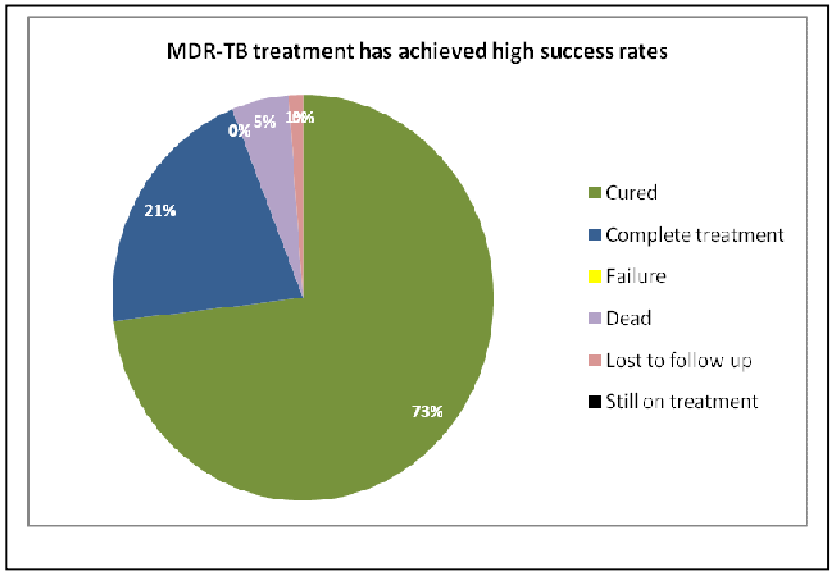


## Drug resistant TB



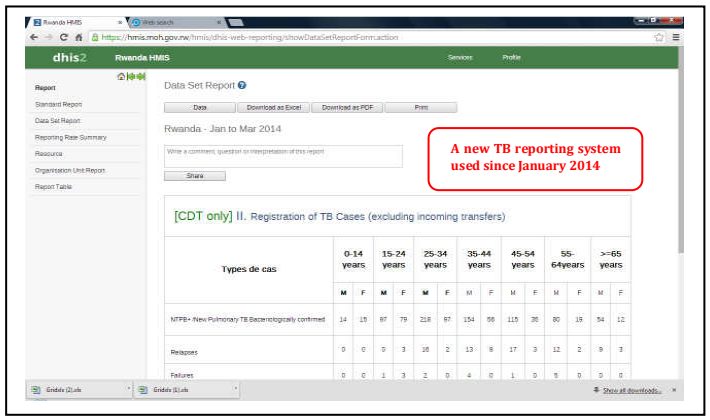



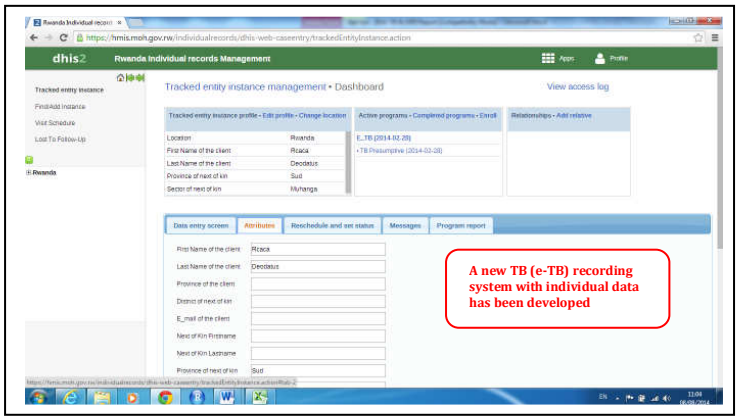



TB prevention: Celebrate the 2014 World TB day, awarding best performing stakeholders, increase community TB awareness



TB program management, strategic planning, monitoring and evaluation

# CHAPTER I: TUBERCULOSIS AND OTHER RESPIRATORY COMMUNICABLE DISEASES CONTROL

## I.1. Objective 1: Provide early TB detection in general population and intensify case-finding in prioritized high-risk groups (HRG) so that the proportion of TB cases all forms identified among HRG increases from 14% to at least 24% by mid-2018

The first objective focuses on intensifying and improving early Tuberculosis (TB) cases finding to detect as many cases of TB as possible, as early as possible. This requires a comprehensive set of activities that begin with improving the quality of screening at peripheral level, ensuring the availability of basic quality TB diagnosis services, expanding access to rapid and sensitive tests and intensify case finding in high risk groups and key affected populations.

### I.1.1. Provide early rapid and quality diagnosis for TB, MDR-TB, and TB/HIV

#### I.1.1.1. Tuberculosis screening

TB screening in general population is based on 5 questions (cough of ≥ 2weeks, fever, night sweats, weight loss, and contact history). However, for early screening and for to bring TB services close to community, community health workers (CHWs) play a big role in identification and referring potential presumptive TB cases to health centres. This activity is remunerated through the performance based financing (PBF) scheme.

The number of presumptive TB cases increased by **12%** (19,616) as compared to 2012-2013 fiscal year (FY). The objective of screening 1.6% of the national population was achieved. In fact 187,692 (**1.7%**) persons were presumptive TB among 10,789,388 national inhabitants in 2013 (based on 2012 census with a 2.6 annual population growth).

Levels of contribution of different TB screening systems (CDTs, CTs, CHWs and THs) remained stable compared to the 2012-2013 FY, with **49%** of all presumptive TB cases being brought by CHWs, compared to 51.6% during the 2012-2013 FY.

As outcome of those screening efforts, the number of SS+ detected increase by **8%** SS+ TB cases (302 cases) compared to the 2012-2013 FY. The sputum smear positivity rate remained stable at **2%** of all presumptive TB cases examined. CHWs contributed up to **28%** of all SS+ TB cases detected.

**Table 1 : TB detection and contribution of each screening level in Rwanda, from July 2013 to June 2014**

| DETECTION | CDT | CT | CHWs | THs | Total |
|---|---|---|---|---|---|
| **Presumptive TB cases** | 49,483 | 43,492 | 92,641 | 2,076 | **187,692** |
| | **26%** | **23%** | **49%** | **1%** | |
| **AFB+ among presumptive TB cases** | 2,047 | 979 | 1,161 | 25 | **4,212** |
| | **49%** | **23%** | **28%** | **1%** | |
| **Positivity rate** | **4%** | **2%** | **1%** | **1%** | **2%** |

AFB: acid fast bacilli. CDT: centers for TB diagnosis and treatment. CT: centers for TB treatment. THs: traditional healers.

### I.1.1.2. Tuberculosis notification

Notification of both bacteriological and all-forms TB cases reached targets fixed for the year. Overall, for the 2013-2014 FY, the TB surveillance system in Rwanda reported **6,085** TB cases, with **62%** being New SS+, **17%** extra pulmonary and **7%** being retreatment cases. Overall pulmonary localisations represented **77%**.

Even if proportions of different TB cases categories remained similar compared to the previous FY, the total number of all-forms TB cases increased by **108** cases. Important findings related to this increase include increase in number of new bacteriological confirmed cases coupled with decrease of new SS-/0, probably linked with the expansion of use of sensitive and active screening and diagnosis strategies (Xpert in health facilities and X-ray screening in prisons).

**Table 2 : Notification of TB cases by categories in Rwanda during Jul 2013 - Jun 2014**

| | **Sputum Smear-positive TB (SS+)** | | | | **Sputum Smear-negative TB (SS-)** | **Sputum Smear-not done (SS0)** | **Extra Pulmonary (EP)** | **Other** | **Total** |
|---|---|---|---|---|---|---|---|---|---|
| | New | Relapse | Treatment after Failure | Treatment after LTFU | | | | | |
| **Jul – Sep 2013** | 828 | 51 | 19 | 4 | 145 | 50 | 240 | 40 | 1,377 |
| **Oct – Dec 2013** | 964 | 71 | 12 | 9 | 126 | 73 | 315 | 37 | 1,607 |
| **Jan – Mar 2014** | 1,044 | 89 | 16 | 13 | 120 | 83 | 232 | 72 | 1,669 |
| **Apr – Jun 2014** | 953 | 86 | 24 | 8 | 83 | 26 | 225 | 27 | 1,432 |
| **Jul 2013 – Jun 2014** | 3,789 | 297 | 71 | 34 | 474 | 232 | 1,012 | 176 | 6,085 |
| **% of total TB cases** | 62% | 5% | 1% | 1% | 8% | 4% | 17% | 3% | |
| **Bacteriological confirmed** | 3,789¶ **(62%)** | 402* **(7%)** | | | NA | NA | NA | NA | 6,085 |
| **Clinically diagnosed** | NA | NA | NA | NA | 1,894 **(31%)** | | | | 6,085 |
| **Pulmonary TB** | 4,665 (**77%**) | | | | | NA | NA | NA | 6,085 |
| **Extra pulmonary TB** | NA | NA | NA | NA | NA | NA | 1,012 (**17%**) | NA | 6,085 |
| **All forms contributed by CHWs** | 1,161 **(19%)** | | | | | | | | 6,085 |

¶: new pulmonary bacteriological confirmed. *: previously treated bacteriological confirmed. LTFU: lost to follow up

Compared to 2012-2013 FY, NTPB+ and relapse cases increased by 270 and 104 cases respectively, while New SS- decreased by 99 cases.

Overall, and as during previous years, the TB was more diagnosed among men, with a male: female ratio for all-forms TB cases was **1.9**. The male predominance was more observed among SS+ (new or previously treated) and TB cases of age of ≥15 years, but it seems that male and female were equally reported among extra pulmonary forms and among cases aged less than 15 years, with a male: female ratio of respectively 1.2 and 1.0 only.

76% (4,652) of all-forms TB cases were reported among 15-54 years, while children <15 years and elderly of ≥55 years represented respectively 6% (383) and 17% (1,050); CHWs contributed up to 19% (1,161) of all-forms TB cases diagnosed.

**Table 3 : Notification of TB cases by categories, age group and by sex, from July 2013 to June 2014**

| | **0-14 years** | | **15-24 years** | | **25-34 years** | | **35-44 years** | | **45-54 years** | | **55-64 years** | | **≥ 65 years** | | **Sub-Total** | | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Types | M | F | M | F | M | F | M | F | M | F | M | F | M | F | **M** | **F** | |
| NTPB+ | 32 | 53 | 379 | 315 | 815 | 380 | 509 | 192 | 404 | 138 | 276 | 80 | 151 | 65 | 2,566 | 1,223 | **3,789** |
| Relapse | 1 | 0 | 8 | 12 | 51 | 12 | 49 | 17 | 54 | 16 | 39 | 7 | 26 | 5 | 228 | 69 | **297** |
| TAF | 0 | 0 | 6 | 4 | 9 | 6 | 9 | 5 | 14 | 1 | 11 | 1 | 3 | 2 | 52 | 19 | **71** |
| TALTFU | 0 | 1 | 1 | 1 | 10 | 6 | 5 | 1 | 0 | 0 | 4 | 1 | 1 | 3 | 21 | 13 | **34** |
| New SS- | 30 | 19 | 26 | 19 | 51 | 34 | 46 | 36 | 50 | 37 | 48 | 17 | 41 | 20 | 292 | 182 | **474** |
| New SS0 | 67 | 47 | 8 | 6 | 25 | 11 | 14 | 9 | 11 | 12 | 9 | 2 | 8 | 3 | 142 | 90 | **232** |
| EPTB | 61 | 62 | 90 | 75 | 126 | 118 | 95 | 80 | 74 | 52 | 62 | 39 | 52 | 26 | 560 | 452 | **1,012** |
| Others | 3 | 7 | 8 | 9 | 13 | 11 | 25 | 12 | 25 | 15 | 20 | 8 | 12 | 8 | 106 | 70 | **176** |
| **TOTAL** | **194** | **189** | **526** | **441** | **1,100** | **578** | **752** | **352** | **632** | **271** | **469** | **155** | **294** | **132** | **3,967** | **2,118** | **6,085** |

NTPB+ = new pulmonary TB case bacteriological confirmed. SS-: sputum smear negative.
SS0: sputum smear not done. TAF: Treatment after Failures.
TALTFU: Treatment after lost to follow up. EPTB=Extra pulmonary TB.
M: male. F: female.

### I.1.1.3. Sputum smears microscopy and quality control

From July 2013 to June 2014, 77% of all CDTs were controlled and didn't shows any major errors.

**Table 4 : Quality control of sputum**

| | Nb CDTs controlled | Nb slides controlled | | | | Errors | | | | | Nb CDT with major error |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total | Pos | Scanty | Neg | HFP | LFP | HFN | LFN | QE | |
| CDT - DH | 33/35 (**94%**) | 2,629 | 312 | 44 | 2,273 | 4 | 3 | 5 | 12 | 2 | 1 |
| CDT - HC | 115/140 (**78%**) | 7,595 | 582 | 80 | 6,833 | 6 | 1 | 1 | 3 | 2 | 6 |
| LED | 19/25 (**76%**) | 2,296 | 275 | 45 | 1,976 | 4 | 0 | 3 | 5 | 1 | 6 |
| TOTAL | 167/200 (**84%**) | 12,520 | 1,169 | 169 | 11,082 | 14 | 4 | 9 | 20 | 5 | 13 |

### I.1.1.4. Access to sensitive TB diagnosis tests

In December 2012 in collaboration with CDC, World Bank and WHO, Rwanda started to use Genexpert machines for detection of mycobacterium tuberculosis and RIF resistance. This is done in health facilities where samples are sent to 16 operational Genexpert sites country wide.

These sites were chosen on the basis of their high levels of TB presumption of TB and MDR-TB, high workload, and high TB/HIV co-infection rate.

X-pert test has been incorporated into the routine national diagnostic algorithm the same period and reviewed in February 2014 in order to increase the number of TB presumptive eligible to Genexpert specially the High risk group of TB and maximize the use of X-pert test in those sites.

During 2013-2014 FY a total of 12,486 samples were examined for GeneXpert countrywide. 1,419 (11.4%) among them were *Mycobacterium Tuberculosis* (MTB) detected. 49 (3.5%) of all persons Xpert tested were found Rifampicin resistant. The remaining 10,754 (86.1%) cases were MTB not detected, 236 (1.9 %) were errors and 77 (0.6%) were invalid.

In addition, in February 2014 we trained 510 health providers on Genexpert algorithm, Xpert data collection tools and the discussed integration of X-pert sputum samples transportation in route sample transportation system.

**Table 5 : GeneXpert technology implementation and results during Jul 2013-Jun 2014 in Rwanda**

| GeneXpert site | # samples examined | Results | | | | |
|---|---|---|---|---|---|---|
| | Total of samples examined | MTB not detected | Invalid | Errors | MTB Detected | RIF. RES |
| NRL | 784 | 610 | 15 | 45 | 114 | 13 |
| Others GXP sites | 11,702 | 10,144 | 62 | 191 | 1,305 | 36 |
| Total | 12,486 | 10,754 | 77 | 236 | 1,419 | 49 |
| Percentage | | 86.1% | 0.6% | 1.9% | 11.4% | 3.5 |

### I.1.2. Drug resistant Tuberculosis notification

Overall, from July 2013 to June 2014, sputum culture was done for 85% of all TB cases eligible for. More performances were observed for NSS+ at M2 (96%) and Treatment after failure (94%). More improvements are needed for other cases, where we achieved 70%, 74% and 74% respectively for relapse, treatment after lost to follow up and for NSS+ from PLHIV.

Among those for which the drug susceptibility test was done during Jul 2013 – Jun 2014, **74** multi-drugs resistant TB cases were detected and all of them (**100%**) initiated the second line TB treatment.

**Table 6 : Coverage in sputum culture, for people at high risk of MDR-TB, Jul 2013 - Jun 2014**

| Type of case | Jul-Sep 2013 | | Oct-Dec 2013 | | Jan-Mar 2014 | | Apr-Jun 2014 | | Jul 2013-Jun 2014 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Regist | Culture done | Regist | Culture done | Regist | Culture done | Regist | Culture done | Regist | Culture done | % Culture done |
| New SS+ at M2 | 114 | 111 | 108 | 105 | 141 | 134 | 142 | 133 | 505 | 483 | 96% |
| TAF | 19 | 16 | 12 | 15 | 16 | 15 | 24 | 21 | 71 | 67 | 94% |
| Relapse | 51 | 39 | 71 | 64 | 89 | 50 | 86 | 56 | 297 | 209 | 70% |
| TALTFU | 4 | 4 | 9 | 10 | 13 | 5 | 8 | 6 | 34 | 25 | 74% |
| NSS+ in prisons | 33 | 33 | 29 | 17 | 91 | 89 | 87 | 74 | 240 | 213 | 89% |
| NSS+ among HCWs | 4 | 4 | 4 | 3 | 5 | 5 | 2 | 2 | 15 | 14 | 93% |
| NSS+ among PLHIV | 166 | 89 | 135 | 123 | 158 | 137 | 199 | 135 | 658 | 484 | 74% |
| NSS+ in high risk area | 242 | 230 | 218 | 188 | 240 | 232 | 243 | 198 | 943 | 848 | 90% |
| **Total** | **633** | **526** | **586** | **525** | **753** | **667** | **791** | **625** | **2,763** | **2,343** | **85%** |

TAF: Treatment after Failures. TALTFU: Treatment after lost to follow up.

Regist: registered

**Table 7 : Drug resistant Tuberculosis notification and treatment initiation in Rwanda Jul 2013 - Jun 2014**

| | Nb of MDR-TB patients enrolled | | | | Site of treatment initiation | | | |
|---|---|---|---|---|---|---|---|---|
| | Confirmed | Empiric | Total | | Kabutare | Kibaga-baga | Kibungo | Other site |
| Q1(Jul-Sept 2013) | 10 | 0 | 10 | | 6 | 0 | 4 | 0 |
| Q2(Oct-dec 2013) | 10 | 0 | 10 | | 4 | 0 | 6 | 0 |
| Q3(Jan- Mar 2014 | 27 | 0 | 27 | | 17 | 0 | 10 | 0 |
| Q2 (Apr-June 20 14 | 27 | 0 | 27 | | 13 | 0 | 14 | 0 |
| **Total** | **74** | **0** | **74** | | **40** | **0** | **34** | **0** |

### I.1.3. Enhance TB case finding in selected and prioritized high risk group

High risk group of TB is a group of people in the community with a higher than expected risk for developing TB Diseases .One of the basic strategy for prevention and control is screening population at high risk for TB, to locate person with TB active and giving complete therapy and prevent contagious diseases. Based on Strategic Plan 2013-2018 will emphasize on five identified TB high risk groups. These include:

1. People living with HIV: TB risk increased 18 times compared to the general population
2. TB contacts: The risk of getting TB is 17 times compared to the general population
3. Prisoners: TB risk increased 6 times compared to the general population
4. People >55 years: The risk is 1.8 times compared to the general population
5. Children 0-14 years: the risk is 0.2 times compared to the general population. This risk seems low probably because of the missed diagnosis.

### I.1.3.1. TB notification in Prisons

The risk of development of TB disease is high in prisons due the overcrowding and high risk of transmission due to close contact with TB smear positive cases in prisons.

During the Jul 2013-Jun 2014 period, we have increased our efforts toward TB screening and detection in this TB high risky group.

For that purpose, two kinds of activities were conducted. Health facilities of prisons continued to screen new prisoners at their entry in prison, and the central level team conducted active TB cases finding (ACFs) interventions, including X-ray screening and Xpert TB diagnosis. This last ACFs activity started with December 2013.

**Tuberculosis cases active finding activities using mobile digital chest X-ray machines**

During the reported period, 23,484 of 25,094 (**94%**) prisoners were screened for TB using mobile digital x-ray machine. The prisoners who did not undergo CXR was due to different reasons; working outside the prison, admitted in hospitals, paralyzed, mental cases, religious beliefs.

Among those screened, 2,794 (**12%**) had an abnormal CXR therefore were presumptive TB cases on CXR. 2,655 (**95%**) of presumptive TB cases on CXR managed to give sputum for microscopy examination. In total 108 new TB+ positive cases were detected during that period, giving a notification rate of **430 per 100,000**.

100% of all presumptive TB cases had HIV status known, either before or during TB presumption, and 7% of them were HIV positive.

**Table 8 : Tuberculosis cases active finding activities using mobile digital chest X-ray machines**

| Period | Population | X-ray screened | | X-ray screened positive | | Sputum examined | | Confirmed TB | | HIV status known among Screened positive | | HIV+ among Screened positive | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | N | % | N | % | N | % | N | Notification rate per 100,000 | N | % | N | % |
| Jul-Sep 2013 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Oct-Dec 2013 | 5,868 | 5,799 | 99% | 701 | 12% | 567 | 81% | 38 | 648 | 701 | 100% | 47 | 7% |
| Jan-Mar 2014 | 8,000 | 7,906 | 99% | 1,297 | 16% | 1,292 | 100% | 31 | 388 | 1,292 | 100% | 66 | 5% |
| Apr-Jun 2014 | 11,226 | 9,779 | 87% | 796 | 8% | 796 | 100% | 39 | 347 | 796 | 100% | 85 | 11% |
| **TOTAL** | 25,094 | 23,484 | 94% | 2,794 | 12% | 2,655 | 95% | 108 | 430 | 2,789 | 100% | 198 | 7% |

Overall, combining both strategies, TB screening by health facilities for new prisoners at their entry in prison, and TB X-ray screening by the central level team, during July 2013 to June 2014, we have detected and reported 321 all-forms TB cases, including 276 (86%) bacteriological confirmed new and relapse.

**Table 9 : Notification of Tuberculosis in prisons in Rwanda during July 2013-June 2014**

| Period | NTPB+ | Relapse | TAF | TALTFU | New SS- | New SS0 | EPTB | Others | Total | Bacteriological confirmed new and relapse | Clinically diagnosed |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jul-Sep 2013 | 36 | 3 | 0 | 0 | 4 | 0 | 0 | 4 | 47 | 39 | 8 |
| Oct-Dec 2013 | 28 | 3 | 0 | 0 | 16 | 0 | 4 | 4 | 55 | 31 | 24 |
| Jan-Mar 2014 | 89 | 15 | 1 | 0 | 1 | 1 | 3 | 1 | 111 | 104 | 6 |
| Apr-Jun 2014 | 87 | 15 | 0 | 0 | 0 | 0 | 4 | 2 | 108 | 102 | 6 |
| TOTAL | **240** | **36** | **1** | **0** | **21** | **1** | **11** | **11** | **321** | **276** | **44** |
| | **75%** | **11%** | **0%** | **0%** | **7%** | **0%** | **3%** | **3%** | **100%** | **86%** | **14%** |

NTPB+ = new pulmonary TB case bacteriological confirmed. SS-: sputum smear negative.
SS0: sputum smear not done. TAF: Treatment after Failures.
TALTFU: Treatment after lost to follow up. EPTB=Extra pulmonary TB.

### I.1.3.2. Tracing and investigations of contacts among SS+ index cases registered during 2011 – 2012, in high burdened zones, in Kigali City

Contact tracing in high risk group has been conducted in Kigali City, especially to the person who had been in contact with SS+ TB cases registered during 2011 – 2012. This activity was organized March and April 2014 in 19 villages of Kigali City (including 5 villages in Gasabo District, 7 villages in Kicukiro District and 7 villages in Nyarugenge District). This activity involved community level, health facilities level and central level and clinical screening strategy only (no X-ray screening).

During the exercise, we detected 23 cases of TB, representing 4.8% (23/476) as positivity rate among all presumptive TB identified, which is double of the general population. The 23 TB cases detected represent 1,234/100,000 as notification rate (23/1,864). In addition, among those 23 TB cases detected, 21 cases were MTB detected Rif negative and 2 cases with MTB detected Rif positive (MDRTB).

**Table 10 : Tracing and investigations of contacts of SS+ TB cases diagnosed during 2011 and 2012 in Kigali City, Rwanda**

| Contact tracing | Expected | Findings | % | TB presumptive HIV test | | | |
|---|---|---|---|---|---|---|---|
| | | | | PLHIV | Newly HIV+ | No tested | Negative |
| # of households (HH) of former TB patients *(Recorded in 2011-2012)* | 453 | 418 | **92.3%** | | | | |
| # of TB contacts (*5 persons per HH*) | 1,812 | 1,864 | **102.9%** | | | | |
| # of TB presumptive (*20% of contacts*) | 362 | 476 | | | | | |
| TB cases diagnosed (*10% of presumptive*) | 36 | 23 | | | | | |
| # of TB presumptive among TB contacts performed and tested for HIV | | | | 49 **(10%)** | 35 **(8%)** | 0 **(0%)** | 392 **(82%)** |

### I.1.3.3. Development of the childhood TB guideline

Childhood TB often goes undiagnosed as health care workers are unprepared to recognize the signs and symptoms of TB in this age group and they are difficulties in establishing a definitive diagnosis (no gold standard). This year In order to improve the detection and management of tuberculosis among children in Rwanda and in line with the Stop-TB strategy, TB &ORD Division developed a national Pediatric TB guideline in collaboration with Rwanda pediatric association.

The content of this childhood TB management is summarized in two main objectives:

- To improve the quality of TB childhood care management; and
- To improve the efficiency of TB childhood care service delivery within health systems and optimize the cost-effectiveness of health service delivery.

In March 2014, a workshop held in Karongi District, to discuss on childhood TB management in the country. 20 Medical Doctors from Rwanda Pediatric Association, District Hospitals, TB &ORD Division and partners (CDC) attended the workshop. Specific objectives were to provide inputs on the draft Childhood TB guideline, to develop a term of reference of Childhood TB technical Working Group and to develop Training materials for Childhood TB. By the end the workshop all specifics objectives were achieved.

## 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 six strategic interventions which are:

2.1 Ensure that at least 97% of CDTS have no stock out in TB medicines
2.2 Improve treatment success rate for all forms of TB, specifically to 90% for bacteriological confirmed TB cases
2.3 Increase ART coverage among co- infected patients from 81% to 90%.
2.4 Increase to 95% the treatment success rate for patients managed in the community.
2.5 Maintain treatment success rate at 87% for MDR-TB patients.
2.6 Provide support to MDR-TB patients.

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

The main activity planned during July 2013 June 2014 was the follow up of TB medicines availability in health facilities. We have conducted a close stock monitoring at all levels and regular follow up of shipment of medicine in pipeline via MPPD Division. All TB medicines were available and, not any CDT reported a stock out in first line drugs.

All requests of medicines from districts pharmacies were regularly validated and an electronic logistic information management system was launched in all district pharmacies in March 2014 with a rollout plan in all health facilities and will help to have stock visibility and alert risk of stock out and expiries for improvement of stock management in all health facilities.

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

For the 2013-2014 reporting period, treatment results presented are for the cohort of TB cases registered from 1st July 2012 to 30 June 2013.

Among new pulmonary bacteriological confirmed cases overall the treatment success rate was **89%**, including **84%** of this cohort cured.

Together, for bacteriological confirmed cases new and relapse, the treatment success rate was **89%**, including **84%** of this cohort cured. For clinically diagnosed cases, the treatment success rate was **76%**. For these indicators, the 2013-2018 TB NSP targets for the 2013-2014 period were respectively 86%, 80% and 76%. Compared to the 2012-2013 FY, the same indicators were respectively 85%, 84% and 76%.

The main unfavourable TB treatment outcome was “died” which represented **5%** of bacteriological confirmed cases new and relapse and **18%** of clinically diagnosed cases. Compared to the 2012-2013 FY, the same indicators were respectively 7% and 17%.

**Table 11 : TB Treatment outcomes for the TB cohort registered during July 2012 to June 2013 in Rwanda**

| Categories | New Pulmonary bacteriological confirmed | | Relapses | | Treatment after failure | | Treatment after lost to follow up | | New SS- | | New SS0 | | Extra pulmonary | | Others | | Bacteriological confirmed new and relapse | | Clinically diagnosed | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % |
| Cases registered | 3,537 | | 195 | | 83 | | 36 | | 572 | | 258 | | 1,139 | | 179 | | 3,732 | | 2,148 | |
| Cured | 2,982 | 84% | 141 | 72% | 70 | 84% | 12 | 33% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 3,123 | 84% | 0 | 0% |
| Treatment completed | 182 | 5% | 15 | 8% | 3 | 4% | 8 | 22% | 432 | 76% | 215 | 83% | 850 | 75% | 142 | 79% | 197 | 5% | 1,639 | 76% |
| Treatment failed | 94 | 3% | 8 | 4% | 1 | 1% | 0 | 0% | 0 | 0% | 1 | 0% | 5 | 0% | 0 | 0% | 102 | 3% | 6 | 0% |
| Died | 161 | 5% | 18 | 9% | 2 | 2% | 8 | 22% | 119 | 21% | 25 | 10% | 208 | 18% | 30 | 17% | 179 | 5% | 382 | 18% |
| Lost to follow up | 83 | 2% | 12 | 6% | 4 | 5% | 7 | 19% | 8 | 1% | 7 | 3% | 26 | 2% | 2 | 1% | 95 | 3% | 43 | 2% |
| Not evaluated | 35 | 1% | 1 | 1% | 3 | 4% | 0 | 0% | 12 | 2% | 15 | 6% | 37 | 3% | 5 | 3% | 36 | 1% | 69 | 3% |
| Treatment success | 89% | | 80% | | 88% | | 56% | | 76% | | 83% | | 75% | | 79% | | 89% | | 76% | |

### I.2.3. Increase ART coverage among co- infected patients from 81% to 90%

From July 2013 to June 2014, 98.6% of all TB patients were tested for HIV infection. 24.6 % of those tested were found to be HIV infected and 96.8 % of those HIV infected were receiving Cotrimoxazole preventive treatment.

For the cohort of HIV+ TB patients registered Jul 2012-Jun 2013, the proportion of TB/HIV patients on antiretroviral therapy (ART) by the end of TB treatment showed a consistent increase as per previous years, and reached **90%** (1,299/1,439).

From 187,692 presumptive TB recorded during Jul 2013-Jun 2014, 8% had an already known HIV+ status and 99.8% of those with unknown HIV status were tested for HIV infection. In total 9% of all presumptive TB were HIV infected.

**Table 12 : HIV infection testing, HIV positivity and CPT during Jul 2013-Jun 2014**

| All forms TB Registered | HIV Tested | HIV+ | Receiving CTX |
|---|---|---|---|
| 6,085 | 5,999 | 1,475 | 1,428 |
| | **98.6%** | **24.6%** | **96.8%** |

**Table 13 : ART provision among HIV+ TB patients registered during Jul 2012-Jun 2013**

| Nb of TB/HIV patients evaluated | Nb of TB/HIV patients on ART | % on ART |
|---|---|---|
| N | N | % |
| 1,439 | 1,299 | **90.3%** |

**Table 14 : Detection of HIV among Presumptive TB cases registered during Jul 2013 - Jun 2014**

| 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+ | | |
| 187,692 | 14,743 | 172,949 | 172,665 | 2,118 | 187,408 | 16,861 |
| | 8% | | 99.8% | 1.2% | **99.8%** | **9.0%** |

### I.2.4. The treatment success rate for patients managed in the community

The mission of CHWs in TB control activities is to sensitize communities on clinical features of TB, identify potentials presumptive TB and follow up (giving TB treatment) of some TB patients identified by health facilities.

During this year reported, out of the 5,999 TB cases notified from July 2012 to June 2013, 2,853 (48%) were entrusted to CHWs for administration and observation of the TB treatment. This strategy is highly appreciated by the patients because they receive DOT close to their home. The TB treatment success rate among TB patients followed up through the community-DOT (by CHWs) was excellent and, reached **94%** against 89%, 76% and 84% respectively for bacteriological confirmed cases (new and relapse), clinically diagnosed cases and all-forms TB cases. This result reached the 94% target of the 2013-2018 TB NSP for the period of 2013-2014.

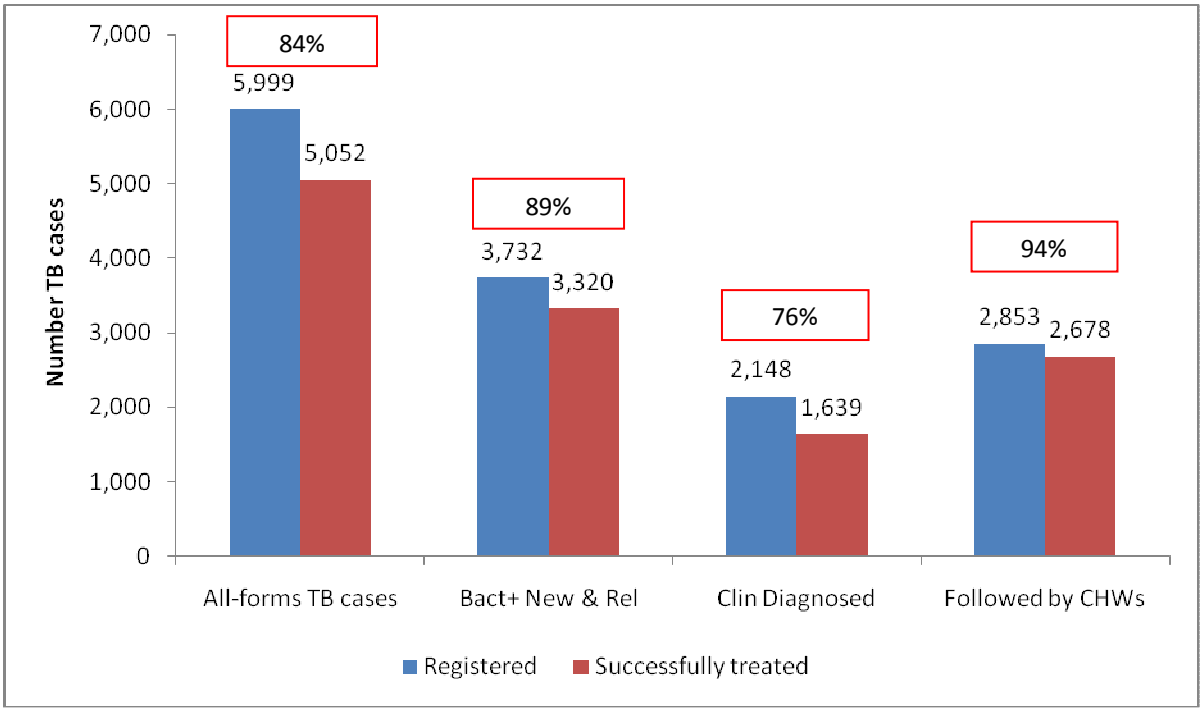



**Figure 1 : TB Treatment success rate for TB patients of the 2012-2013 cohort managed in the community**

### I.2.5. Treatment outcomes for MDR-TB patients enrolled from July 2011 to June 2012

Out of the 47 confirmed patients enrolled during Oct 2011 – Sep 2013, 37 (79%) had both negative culture and smear at month 6 of second line treatment. 13% of patients were not evaluated at month 6 because of died (11%) or lost to follow up (2%) before 6 months.

Out of 82 MDR-TB cases confirmed by laboratory during Jul 2011 – Jun 2012, the treatment success rate was 94%, with 73% cured and 21% who treatment completed.

**Table 15 : Interim results – culture conversion at six months: MDR-TB cases with negative culture at the end of six months of treatment**

| Treatment start | Month of evaluation | Nb confirmed MDR-TB | Deaths before 6 months | Lost to follow up before 6 months | Negative smear and culture | ≥ 1 positive smear and/or culture | Smear and/or culture not done | Contaminated culture |
|---|---|---|---|---|---|---|---|---|
| Oct 12-Sep 13 | 6 months | 47 | 5 | 1 | 37 | 0 | 4 | 0 |
| | | | 11% | 2% | 79% | 0% | 9% | 0% |

**Table 16 : Treatment success rate among MDR TB cases enrolled on second-line anti-TB during Jul 2011-Jun 2012**

| Nb registered MDR-TB cases | Nb registered MDR-TB cases who initiated the treatment | Cured | Treatment completed | Treatment failed | Died | Lost to follow up | Still on treatment | Not evaluated | Treatment success rate |
|---|---|---|---|---|---|---|---|---|---|
| 82 | 82 | 60 | 17 | 0 | 4 | 1 | 0 | 0 | **94%** |
| | | 73% | 21% | 0% | 5% | 1% | 0% | 0% | |

## I.3. Objective 3: Improve TB prevention (TB infection control in health facilities, behavioral change in the general population and prevention by medication) so that the percentage of population with adequate knowledge on TB increases from 56% to 75% by 2018

### I.3.1. Prevent TB by ensuring that a revised package of infection control measures is applied in at least 85% of all Health Facilities

The minimum package of IC measures was scaled up in all health facilities including centers for TB treatment (CTs). The process of TB IC evaluation was reviewed, with auto evaluation replaced by evaluation. The District Hospital evaluates all health centers in its catchment area and the central level evaluated district hospitals. We introduced in HMIS indicators which collected every quarter, the number of health facilities staff who developed TB in order to measure the effectiveness of TB IC measures in health facilities.

Regarding trainings on TB IC, two staffs from CTs including heads of Health centers were trained on basic measures of TB infection control. As well, training of trainers was conducted toward TB supervisors and environmental health officer from each District Hospital, with the aim of to build capacity of decentralize level.

At the end of 2013-2014 FY, 253 out of 504 health facilities (50%) applied the six minimum packages measures of TB IC.

5,080 Respiratory masks were distributed in health facilities to improve personal protection in TB infection control. 200 Exhaust fans were distributed and installed in health facilities to ventilation in outpatient department and some inpatient rooms. 200 extractors fans were installed in health facilities to increase ventilation system in OPD and inpatient.

Two laboratories in Rusizi District (Mibilizi DH and Mushaka HC) and one TB ward in Rwanda Military Hospital (RMH) were renovated to meet TB infection control standards.

Posters on administrative and environmental control measures were developed, printed and distributed in district pharmacies.

The final result of prevalence and risk of latent TB infection among health care workers in Kigali was available in April 2014. This assessment was conducted in 2010 and found that the Health care workers (HCWs) had 2.7 risk of latent TB infection compare to the school workers(SWs) and also history of TB disease was higher among HCWs than SWs but HIV infection prevalence's were similar between both populations.

Despite all those achievements, we have observed that:

- The validation of application of infection control package need to be strengthened as some health facilities were not evaluated by District Hospital as recommended in the instruction.
- The utilization of respirators mask was not used efficiently by health facilities staff and more sensitization are needed to improve their utilization.

### I.3.2. Increase awareness and commitment in TB fighting

Mass media campaign using spots and program radio were broadcasted each week covering different TB topics (TB diagnosis, TB Treatment, DRS, Leprosy and prevention) to increase awareness of Rwandan population to fight TB.

For the first time in Rwanda TB knowledge, attitudes and practices questions were included in the Demographic health survey (DHS) to be implemented during 2015. These questions are about TB transmission, TB prevention, person at risk to develop TB and questions about health seeking behavior. The result of 2015 DHS will be used to monitor the knowledge and behavior of population about TB.

As per previous years, Rwanda joined the international community to celebrate the World TB day (WTD) on March 24, 2014 and event was hosted by Dr Agnes BINAGWAYO the Minister of Health. Campaign was conducted country wide to build public awareness about tuberculosis. The slogan was "reach the three million find, treat and cure TB to all" (in Kinyarwanda: "kwisuzumisha no kwivuza neza indwaray'igituntu bigere kuri buri wese"). Different activities were organized using creative channels to increase awareness of Tuberculosis. Live talk show radio program for one hour were broadcasted on radio Rwanda, Contacts FM (Kigali), KFM (Kigali),, Flash FM (Kigali),, Isango star (Kigali),Salus (Huye) and all community radios(Ruzizi, Musanze, Huye, Rubavu and Nyagatare )in order to increase the knowledge of population. Some articles on TB were published in the newtimes, igihe.com, umuseke.com, umuganga.com related TB world day event.

**Picture 1 : During the 2014 WTD in Nyanza District: the Deputy Director General of RBC awarding the winning Sector (Busasamana) in a football tournament**

In Nyanza District during the TB World day, Community outreach and tournament of soccer in different sectors were done to increase awareness of young population.

This sensitization was conducted by a most popular group called URUNANA enhancing message on how to prevent TB and importance of early diagnosis.

**Picture 2 : During the 2014 WTD in Nyanza District: the Minister of Health awarding the CHW who reported best TB treatment success (Left) and the Head of Ruyenzi Health Center who performed best in TB control activities (Right)**

Sensitization were done in all prisons in collaboration of MININTER staff in charge of health and Rwanda Correctional service to increase knowledge of prisoners and staff working in prison about TB.

### I.3.3. Prevent TB through medication (Isoniazide and ART)

The prevention of tuberculosis among sputum smear positive contact was done systematically in children under five years. 1,412 contact were screened for TB among then 6 were TB cases and 1,194 (85%) were given isoniazide preventive therapy (IPT) after excluding tuberculosis.

We improved monitoring of IPT in children by updating reporting tools in HMIS which will help us to make more comprehensive analysis of this activity. These improvements specify total number of contacts under 5 years, total number of contacts under 5 years investigated for TB and those screened positive, so that wer are able to understand the whole cascade, from TB screening to TB confirmation or IPT initiation.

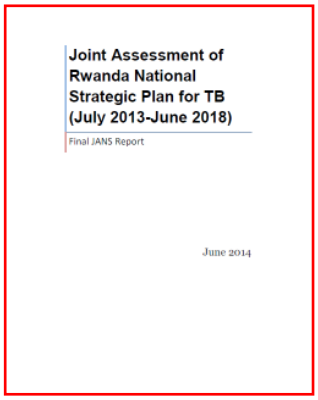
Regarding IPT among HIV people, this is being implemented in three pilot selected sites (Kabgayi DH, Kimironko and Kivumu health centers). The TB/HIV technical working group had meeting and discussed on the experience from the 3 site for IPT implementation and way to scale up IPT countrywide. The recommendation was to sstrengthen screening of TB among PLHIV by using the very sensitive tools like Xpert and x-ray before scale up IPT. In addition, the meeting recommended a more strengthened monitoring system so that the decision for scale up may be based on facts.

## I.4. Objective 4: Improve managerial capacities of the TB program; enhance the monitoring, evaluation system and operational research by implementing and make functional an electronic TB register in all CDTs.

### I.4.1. Strengthen Political commitment and advocate for domestic and external commitment

During the 2013-2014 FY, we have worked, through workshops and meetings to develop the 2013-2018 tuberculosis national strategic plan (TB NSP), in collaboration with our national and international partners, including NGOs, Health facilities, Ministry of Health departments, WHO, CDC, etc. The NSP document developed includes the epidemiological and programmatic situation analysis and current challenges, new objectives of the NSP, a narrative part of key strategic interventions and activities for the 2013-2018 period, its monitoring and evaluation part including indicators for follow up and the NSP costing and its operational plan as well.

To make sure this NSP is aligned with the international plan to fight against TB, from 17 February 2014 to 27 February 2014, the TB & ORD Division participated in a workshop in Divonne-France, organized by the WHO-Geneva, on national TB strategic planning processes. Participants were national TB programmes of Bangladesh, Botswana, Eritrea, Gambia, Kenya, Moldova, Nepal, Rwanda, Sri Lanka, Sudan and Timor Leste. The meeting was also attended by WHO staff from Regional Offices (AFRO and EMRO) and civil society representatives and potential consultants who can technically assist countries to develop and finalize their NSPs. The workshop was facilitated by staff from WHO/GTB. The workshop focused on the methodology to develop a NSP for TB control that follows a stepwise process. Countries' worked on the five components are: strategic interventions and activities, data estimates and projections, M&E Plan, the operation and technical plan, and the budget plan.


In addition, in June 2014, a Joint Assessment of the 2013-2018 Rwanda National Strategic Plan (JANS) for TB was conducted by external reviews. The JANS team examined the draft NSP based on the strengths and weaknesses of the attributes considered the foundation of any 'good' and comprehensive national strategy as proposed by the International Health Partnership (IHP+) in Geneva. The JANS Team on the ground consisted of the following members: Jarl Chabot, Independent Consultant, Team Leader;

Estifanos Shargie, M&E Systems, Global Fund, Geneva; Jean de Dieu Iragena, Laboratory Specialist, WHO Geneva; Eveline Klinkenberg, Epidemiologist, KNCV Tuberculosis Foundation, Ethiopia; Etienne Declercq, Care and Treatment TB, Damien Foundation, Belgium; Jules Mugabo, HIV / AIDS specialist, WHO Rwanda; Paolo Reggio d'Aci, Health Economist, Rwanda. Findings on strengths and weaknesses and proposed recommendations as well guided our Division during the revision and final version of the NSP.

## I.4.2. Develop human resources and build capacities

### I.4.2.1. Capacity building for the central level staff

#### I.4.2.1.1. Training on operational research methodology

In order to provide basis to operational research within TB control activities, a training on operational research methodology was organized towards TB & ORD Division technical staff and other Institutions staff involved in TB surveillance control. The rationale was that Research is among the 6 strategies of the World Health Organization (WHO) Stop TB Strategy for 2006-2015; and this strategy soon ending in 2015 and, will be replaced by the post 2015 WHO TB control strategy, in which there will remain only 3 strategies, among which research, that will involve operational research rather than trials (as previously).

With facilitators from the Rwanda College of Public Health and US CDC, in total 21 persons were trained; they were coming from TB & ORD Division (11 persons), HIV Division (1), Prisons Health Service (2 persons), SPIU (1 person), TB District Coordinators (4 persons), IHDPC (1 person) and Kibuye District Hospital (2 persons).

Courses covered included:

1. Theoretical courses were given on the following topics:
    a. Define an evaluation/research question;
    b. How to justify an evaluation/research ;
    c. How to formulate objectives/hypotheses ;
    d. How to write an evaluation/research methodology
    e. Select an evaluation/research design
    f. Define an evaluation/research population
    g. Define evaluation/research variables
    h. Determine an evaluation/research data collection process
    i. Present and discuss an evaluation/research Concept paper
2. For the same courses, practical sessions were done to develop concept papers, on some topics as suggested in the currently being developed 2013-2018 TB NSP. Below are topics and groups work.

### I.4.2.1.2. Training on DHIS 2 level 2&3

Furthermore, the program planned to strengthen the data management by sponsoring one person in the DHIS 2 Academy training of level 2 & 3 which was organized by the Ministry of Health - Rwanda in collaboration with the University of Oslo – Norway at Rubavu – Western Province (Lake Kivu Serena Hotel Gisenyi) on May 27th – 5th June 2014. The following were the participated countries:

Kenya, Zambia, Uganda, Namibia, Nigeria, Mozambique, Madagascar, Tanzania, Zimbabwe, Malawi, South Africa, Rwanda, USA, Norway, Switzerland, Spain, Mexico and Guatemala.

The main content of the training was to build countries' capacities to own their country systems, data use and exploitation in general.

### I.4.2.3. Capacity building for the decentralized level staff

During the Jul 2013-Jun 2014 period, the TB & ORD Division staff trained in total 1,945 on different TB control activities, including TB , TB/HIV and leprosy diagnosis and management, TB among high risk groups (childhood TB), chest X-ray pictures reading, TB infection control, MDR-TB diagnosis and management and on TB monitoring and evaluation standards operating procedures.

**Table 17 : Trainings of health facilities staff on different on different aspects of TB control in Rwanda, Jul 2013-Jun 2014**

| Type of training | TB program | Type of participants | Number of participants |
|---|---|---|---|
| CXR reading | TB care and treatment | MDs | 149 |
| TB, TB/VIH and leprosy diagnosis and management | TB care and treatment | MDs | 79 |
| | TB care and treatment | Nurses | 302 |
| | TB care and treatment | MDs Private | 30 |
| | TB care and treatment | Nuses students | 116 |
| | TB care and treatment | MDs students | 24 |
| | TB care and treatment | Nurses GXP | 491 |
| Childhood TB | TB care and treatment | MDs | 46 |
| | TB care and treatment | Nurses | 141 |
| TB infection control | TB prevention and infection control | Nurses | 196 |
| | TB prevention and infection control | Nurses TOT | 100 |
| | TB prevention and infection control | Nurses HC HEADs | 109 |
| MDR-TB | MDR-TB | MDs | 51 |
| TB M&E SOPS | M&E | M&E Officers | 111 |
| **TOTAL** | | | **1,945** |

## I.4.3. Enhance monitoring and evaluation system

### I.4.3.1. On site TB data verification (OSDV) and rapid TB services quality assessment (RSQA) Process

In collaboration with the Planning, Monitoring and Evaluation Coordination Division of RBC, the TB & ORD Division conducted visits for on sites data verification coupled with rapid TB service quality assessment (OSDV-RSQA), during July-August 2013 period. In order to assess and improve the quality of services and quality of Data at health facility (HF), and to continuously build capacity in establishing and using quality improvement as an integral part of program implementation. Western, Southern and Kigali City Provinces were visited. Below are Health Facilities visited.

**Table 18 : Health Facilities visited, for the on sites data verification coupled with rapid TB service quality assessment (OSDV-RSQA), Jul - Sep 2013**

| PROVINCE | DISTRICT | DISTRICT HOSPITALS | HEALTH CENTERS |
|---|---|---|---|
| **West** | Ngororero | KABAYA DH | MURAMBA HC |
| | | MUHORORO DH | NYANGE A HC |
| | Rubavu | GISENYI DH | NYUNDO HC |
| | Nyabihu | SHYIRA DH | NYAKIGEZI HC |
| | Karongi | KIBUYE DH | RUBENGERA HC |
| | | KIRINDA DH | MUNZANGA HC |
| | | MUGONERO DH | MUBUGA HC |
| | Nyamasheke | KIBOGORA DH | NYAMASHEKE HC |
| | Nyamasheke | BUSHENGE DH | MUYANGE HC |
| | Rusizi | MIBILIZI DH | BUGARAMA HC |
| | | GIHUNDWE DH | NKANKA HC |
| | Rutsiro | MURUNDA DH | CONGO NIL HC |
| **South** | Gisagara | KIBIRIZI DH | GISAGARA HC |
| | | GAKOMA DH | SAVE HC |
| | Huye | KABUTARE DH | RANGO HC |
| | Nyanza | NYANZA DH | GATAGARA HC |
| | Ruhango | GITWE DH | BYIMANA HC |
| | Kamonyi | REMERA RUKOMA DH | KAYENZI HC |
| | Nyamagabe | KADUHA DH | MUSHUBI HC |
| | | KIGEME DH | CYANIKA HC |
| | Nyaruguru | MUNINI DH | CYAHINDA HC |
| **Kigali City** | Nyarugenge | MUHIMA DH | GITEGA HC |
| | Kicukiro | MASAKA DH | KICUKIRO HC |
| | Gasabo | Kibagabaga DH | KIMIRONKO HC |

Four indicators were assessed, for the period of 1st January 2013 to 30th June 2013:

- Number of New Sputum Smear positive cases detected among all TB suspects examined with microscopy
- Number and Percentage of TB patients (all forms) tested for HIV (numerator) of all TB patients (all forms) registered (denominator)

- Number and percentage of SS+ TB cases referred by CHW of all SS+ diagnosed countrywide
- Number and percentage of New Sputum smear Positive TB cases successfully treated (Jan-June 2012)

During the exercise, some following strengths, weaknesses and recommendations were issued.

**Strengths**

- All reports were available, Reporting tools were available; timeliness and completeness of reports; availability of SOPs for drugs stock management, TB SOPs were also available.

**Some identified Weaknesses**

- Inconsistency in filling registers and hard copy reports
- Some Lab technicians reported not be trained on TB;
- Some discrepancies in reported data, like for indicator on HIV testing among TB Patients, and for TB suspects;

**Recommendations**

- Filling registers according to TB SOPs
- The Hospital and partners should ensure all staff involved in TB activities are adequately trained;
- Adequate data entry to avoid discrepancies,
- Data manager should cross check data before reporting

### I.4.3.1. Establishment of the electronic recording and reporting system for TB surveillance

#### I.4.3.1.1. Electronic TB reporting with aggregated data

For the improvement of TB surveillance system, TB & ORD Division in collaboration with Ministry of Health / HMIS department included customized TB quarterly reporting form for aggregated data. The process started with 2013 whereby we trained data managers on the data entry and reporting system as well as data analysis. This has facilitated a lot in the reporting system and is expected to minimize errors in the TB quarterly reports. Starting January 2014, TB quarterly reporting is no longer paper-based, rather directly done through R-HMIS system, available through: https://hmis.moh.gov.rw/hmis.

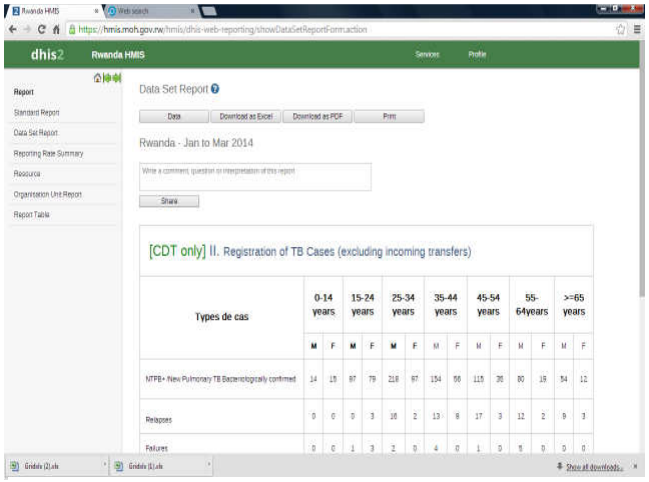



**Figure 2 : Tuberculosis data reporting system into R-HMIS since January 2014**

### I.4.3.1.2. Electronic TB recording system with individual data

During a one week workshop we drafted the policy document of the new electronic TB surveillance system, also called e-TB. This document provides details on system objectives, people covered by the system, beneficiaries and users, system requirement, system monitoring and evaluation plan and system operational plan. The document has been developed based on the WHO model of the WHO TB Impact Measurement Task Force.

In September 2013, the TB & ORD Division in collaboration with HMIS of MoH initiated practical exercise to develop the system. We performed the following activities:

- Development of Wireframe / page schematic of selected variables from TB patients & lab registers and reporting format to be recorded in this e-TB system.
- Grouping of variables / data elements for this new tool based on TB patient clinical channel and coming up with a draft report format to be digitalized.
- System architecture.
- System development / customization in Rwanda HMIS Individual Records database.
- Query build and reports
- General Testing of the system using dummy data
- System documentation and guidelines development
- Training curriculum and agenda development
- Discuss on the system launching & implementation strategy.

In April 2014, the TB & ORD Division received visit of the KNCV TB Dutch Foundation Data manager (Nico Kaalisvart), to review and provide advises for further improvement of the above electronic register. During the mission, the policy of this register was reviewed and the data dictionary (wireframe) as well.

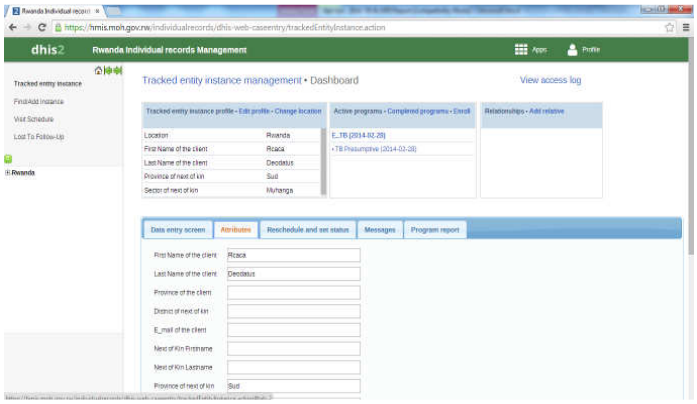



**Figure 3 : Entry form interface for the electronic TB recording system with individual data**

In May 2014 a training of 16 technical staff from central level (TB & ORD Division), on e-TB has been conducted in Rubavu District on 19th – 23th May 2014, those staffs were trained as trainers.

Topics covered were to let know all end users interface system and be able to login into e-TB instance, patients enrollment within the system, know all data fields to be filled, and know how to manage, report and analyze data.

### I.4.3.2. Evaluation of the Rwanda TB surveillance system by the WHO TB Impact measurement task force

This exercise is part of the World Health Organization (WHO) TB impact measurement strategy (to estimate TB prevalence, incidences and mortality rates) and was implemented following the April-May 2013 Accra workshop organized by the WHO TB Impact measurement task force on TB surveillance systems review. With a WHO Consultant (KNCV: Eveline Klinkenberg), in October 2013 we conducted this exercise aimed at to assess a national surveillance system's ability to accurately measure TB cases and deaths through a number of indicators (Data acquisition/ data flows/ data quality checks/ case-based vs aggregated data at the central & lower administrative level, etc); And to identify gaps in national surveillance systems that need to be addressed in order to improve TB surveillance.

The **description** of the Rwanda TB surveillance system showed that:

- All CTs & CDTs report online using standard set of indicators
- Data aggregated from HF level upwards (CTs & CDTs, DH, national);
- Quarterly reporting;
- Patient-based management system being finalized (scale-up 2014);
- Conduct of DQA twice a year, covering each DH;
- 5 fulltime M&E staff at central level;
- MEST tool assessment done in 2010 and 2013 (June)

The **analysis of the quality** of the Rwanda TB surveillance system demonstrated results below. :

**Table 19 : Results of analysis of the quality of the Rwanda TB surveillance system by the WHO/KNCV**

| Standard | Main finding | Result |
|---|---|---|
| B1.1 Case definitions consistent with WHO | Required benchmarks met, latest revision incorporated in register, TB manual being updated | **MET** |
| B1.2 TB surveillance system designed to capture minimum set variables reported TB cases | Basic data collected for each case, aggregated from HF upwards | **MET** |
| B1.3 All scheduled periodic data submissions received and processed at the national level | Paper-based complete in 2012 but no quick overview; New HMIS will track submissions.<br>(Check exact numbers) | **MET** |
| B1.4 Data in quarterly reports (or equivalent) are accurate, complete, and internally consistent (For paper-based systems only) | 4/34 reporting units (11%) the totals of sub aggregated data did not fully match (9/3571 cases).<br>SDQA report (Jul 2013) shows 75% C(D)Ts have issues with recording & reporting | **PARTIALLY MET** |
| B1.5 Data in national database are accurate, complete, internally | Not applicable | **NOT APPLICABLE** |

| | | |
|---|---|---|
| consistent, and free of duplicates (For electronic case-based or patient-based systems only) | | |
| B1.6 TB surveillance data are externally consistent | New TB cases among children over the last 5 years is between 6.3 – 9.3% (cutoff <10%) | **MET** |
| B1.7 TB surveillance data are internally consistent over time | 4/6 benchmarks met;<br>% change case notification rate (CNR) inconsistent in 2010- no explanation (yet) | **PARTIALLY MET** |
| B1.8 All diagnosed cases of TB are reported | General consensus that TB reporting is a legal requirement. The exact legal status must be confirmed.<br>No inventory study ever done | **PARTIALLY MET** |
| B1.9 Population has good access to health care | 55 per 1000 live births under-5 mortality rate (cutoff: <10/1000 live births)<br>21.4% total health expenditure is out-of-pocket<25% : | **PARTIALLY MET** |
| B1.10 Vital registration system has high national coverage and quality | System of birth/death registration exists, but cause of death not documented. Development is under discussion | **NOT MET** |
| B2.1 Surveillance data provide a direct measure of drug resistant TB in new cases | 1st DRS in 2004/2005. 2nd one planned for Nov 2013.<br>Rif susceptibility status for MDR risk groups | **MET** |
| B2.2 Surveillance data provide a direct measure of the prevalence of HIV infection in TB cases | In 2012 99% of all TB cases had an HIV test done. Programme tests all TB suspects not only cases from 2009. | **MET** |
| B2.3 Surveillance data TB children reliable and accurate or all diagnosed child TB cases are reported | Ratio cases in children age 0-4 to 5-15 yrs is at 0.7 for all forms combined (Cutoff: 1.5-3.0) | **NOT MET** |

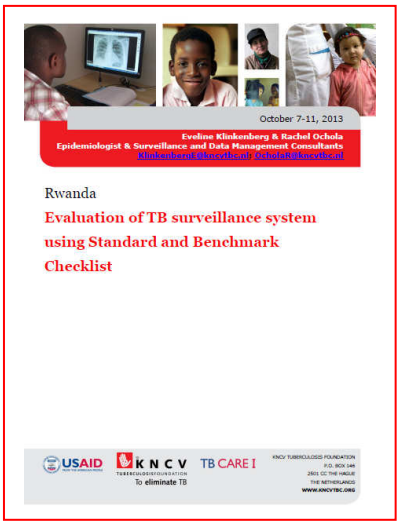
**Table 20 : Key recommendations of the assessment of the Rwanda TB surveillance system**

| Topic | Recommendation |
|---|---|
| Data auditing | Enhance supervision and record verification to avoid data discrepancies |
| Quality assurance procedures | Consider having a rating (scoring) system for the supervision checklist that allows easier follow up and see if there is improvement or not over time |
| Analysis of surveillance data | Develop OR plan for NSP for many opportunities for more in depth analysis (prisoners, contact tracing, suspect identification etc) that available data allow |
| Trends in surveillance data | Continue further investigations by quarter and wider time span to see if can explain changes in trend (The sharp drop in proportion of childhood TB cases/all TB cases; Case notification rates all forms and new SS+) |
| NTP staff structure | A fully functioning patient-based system will generate great amounts of data. Risk of not having in-house statistician could mean analysis not carried out consistently. |
| Vital registration system | Discuss need for mortality study – lessons from Loss tool, as no cause of death is recorded |

| | |
|---|---|
| Electronic surveillance system | Develop phased roll out plan Patient-based system<br>Ensure sufficient in-built checks for each step (replacement of paper-based checks/stamps)<br>After 1 year, total evaluation- decide on indicators that need to be met<br>Develop OR plan for key RQ to be answered (initial analysis, prospective studies to be integrated etc.)<br>Develop Analysis Plan to use richer database<br>Re-evaluate roles all M & E staff for new system- task shifting<br>Develop OR plan for key research questions to be answered (initial analysis, prospective studies to be integrated etc.)<br>Scale-up plan for patient-based system |

Other recommendations:

- Consider aligning period of report to WHO with country's annual report
- Conduct epi-assessment
- Update M&E plan to include task-shifting
- Consider conducting inventory study
- Every 5 years, surveillance system should be evaluated and an in-depth analysis eg Epi-assessment carried out and linked to Programme Review




## I.4.4. Enhance operational research

### I.4.4.1. Participation of Rwanda in the 44th World Conference of the UNION

The following abstracts were presented during the 44th Union World Conference on Lung Health, which will be held at the Palais des Congrés in Paris, France on 30 October–3 November 2013.

1. Financing the introduction of new TB diagnostics and treatment: reflections from Rwanda and Uganda – Alaine Umubyeyi Nyaruhirira (Rwanda)
2. PC-713-02 Rwanda National Tuberculosis Prevalence Survey. M Gasana,1 P Migambi,1 CM Muvunyi,2 E Klinkenberg,3 V Ndahindwa4. 1TB & ORD Division, Rwanda Biomedical Center, Kigali, 2NRL Division, Rwanda Biomedical Center, Kigali, Rwanda; 3Tuberculosis, KNCV, The Hague, Netherlands; 4MRC, Rwanda Biomedical Center, Kigali, Rwanda.
3. OP-178-02 MDR-TB treatment success rate in a low-income country: Rwanda's PMDT experience, 2005-2012. Y Habimana-mucyo,1 E Kamanzi,2 Fr Birungi,3 M Gasana1. 1Tuberculosis and Other Respiratory Communicable Diseases Division, Rwanda Biomedical Center (RBC), Kigali, 2National Reference Laboratory (NRL), Rwanda Biomedical Center (RBC), Kigali, 3Center of Excellence on Programmatic Management of Drug Resistant Tuberculosis, National University of Rwanda School of Public Health, Kigali, Rwanda.

4. OP-195-02 Evidence of a successful TB-HIV integration in Rwanda: 2005-2012 trends of case TB-HIV care and treatment G Mutembayire,1 M Gasana,1 J Mugabekazi2. 1Tuberculosis and Other Respiratory Communicables Diseases Division, Rwanda Biomedical Center (RBC), Kigali, 2Rwanda country office, World Health Organisation (WHO), Kigali, Rwanda.

### I.4.4.2. Implementation of operational studies and surveys

#### I.4.4.2.1. The National Tuberculosis Prevalence Survey (TPS)

In collaboration with the KNCV Senior Epidemiologist, we conducted analysis for the primary objective and tables were generated. We started drafting the report. As well results of key finding were presented to RBC senior management meeting and to general senior management meeting of Ministry of health.

In summary: a total of 84,147 individuals were enumerated, 45,062 were eligible and 43,128 participated in the survey. Participation rate was 95.7%. Among those participating, 99.9% had symptom screening interview and 99.8% performed chest x-ray. Of 4,747 (11%) TB presumptive 4,700 (99%) provided sputum for microscopy and culture and 4,585 (96%) offered HIV testing. Presence of Mycobacterium was detected in 54 individuals; out of them 38 had mycobacterium tuberculosis and 16 had other species of mycobacterium. The estimated tuberculosis prevalence was **74/100,000** and **119/100,000** respectively for sputum smear and bacteriological confirmed TB among adult population in Rwanda.

**Table 21 : Adult TB prevalence by age and by sex for smear positive and bacteriological confirmed TB in Rwanda**

| Characteristic | Prevalence of smear positive TB per 100,000 adult population | | Prevalence of bacteriological confirmed MTB per 100,000 adult population | |
|---|---|---|---|---|
| | Estimate | 95% CI | Estimate | 95% CI |
| **Overall** | 74.1 | 48.3 – 99.3 | 119.3 | 78.8 – 159.9 |
| **By sex** | | | | |
| Male | 141.9 | 87.5 – 196.2 | 208.2 | 138.7 – 277.8 |
| Female | 23.7 | 4.7 – 42.6 | 53.0 | 19.9 – 86.1 |
| **By age group** | | | | |
| 15-34 yrs | 56.8 | 27.4 – 86.2 | 85.5 | 46.1 – 124.9 |
| 35-54 yrs | 65.6 | 21.1 – 110.2 | 113.8 | 35.0 – 192.6 |
| 54+ yrs | 158.8 | 54.1 – 263.0 | 262.4 | 104.4 – 420.5 |

#### I.4.4.2.2. The "risk of latent tuberculosis infection among health care workers in Kigali, Rwanda

We have finalized the report of this study. This was a cross sectional study conducted in 2010 to determine the prevalence and risk factors of Latent TB infection-(LTBI) associated with work as Healthcare Workers-(HCWs) in Kigali-Rwanda, compared to communities members working outside healthcare facility-(HCF) (represented by schools workers-SWs). For HCWs, we purposively selected the public referral hospital, both District hospitals, and randomly selected 7 of 17 health centers. For SWs, in the catchment area of each HCF, one school was selected. We tested for LTBI using tuberculin skin testing-(TST).

Of 1,131 HCWs and 381 SWs enrolled, LTBI prevalence was respectively 62.1% and 38.8% [adjusted odds ratio-(aOR) of **2.71** (95% CI; 2.01, 3.67)]. For HCWs, LTBI prevalences were always ≥60.0% for all categories of HCFs work-related factors, except for inpatient work setting (57.2%) and auxiliary job assignment (57.0%), without any significant statistical difference between previously anticipated high and low risky categories of HCFs work-related factors. Similarly, history of TB disease was higher among HCWs than SWs. HIV infection prevalences were similar between both populations. Results of this study shows that TB transmission may be occurring in HCFs areas not previously considered to be high-risk; And recommend us to scale up TB infection control practices in all Rwandan HCFs, targeting the entire health workforce. Even if lower than for HCWs, the fact that more than one third of community controls was TB infected calls us for strengthened TB infection control measures in community. Further research should be done to determine real TB infection control practices in Health Facilities and Communities, to determine whether rural health facilities experience greater heterogeneity in TB infection risk across health service delivery settings and staff roles compared with Kigali, and to examine whether HCWs in Rwanda face higher risk of multi- and/or extremely-drug resistant TB as has been reported in other countries in the region.

**Table 22 : TST positivity for health facility workers and school workers from Kigali, Rwanda 2010**

| Work Environment | Valid TST results | Number (%) TST-positive | Adjusted odds ratio [95% CI] |
|---|---|---|---|
| Health Facility | 1,023 | 635 | **2.71** |
| | | (62.1) | [2.01, 3.67] |
| School | 348 | 135 | Reference |
| | | (38.8) | |

**Table 23 : Associations between LTBI, as identified by TST results and anticipated risk factors for health facility workers from Kigali, Rwanda 2010.**

| LTBI Risk Factor | LTBI (TST results) | | |
|---|---|---|---|
| | Valid TST results | Number (%) TST positive | Adjusted odds ratio [95% CI] |
| HIV Status | | | |
| Positive | 29 | 17 | 0.89 |
| | | 58.6 | [0.40, 1.99] |
| Negative | 753 | 473 | Reference |
| | | 62.8 | |
| Unknown | 241 | 145 | 0.87 |
| | | 60.2 | [0.63, 1.19] |
| Facility Type | | | |
| District Hospital | 225 | 144 | 1.38 |
| | | 64 | [0.91, 2.10] |
| Referral Hospital | 597 | 369 | 1.13 |
| | | 61.8 | [0.78, 1.64] |
| Health Center | 201 | 122 | Reference |
| | | 60.7 | |
| Years Worked in | | | 1.03 |
| | | | [1.01, 1.06] |

| LTBI Risk Factor | LTBI (TST results) | | |
|---|---|---|---|
| | Valid TST results | Number (%) TST positive | Adjusted odds ratio [95% CI] |
| Work Setting | | | |
| Inpatient | 262 | 150 | 0.64 |
| | | 57.2 | [0.41, 1.01] |
| Outpatient | 162 | 107 | Reference |
| | | 66 | |
| Both | 542 | 338 | 0.87 |
| | | 62.3 | [0.59, 1.27] |
| Neither | 53 | 38 | 1.26 |
| | | 71.7 | [0.62, 2.58] |
| Unknown | 4 | 2 | 0.57 |
| | | 50 | [0.08, 4.30] |
| Occupation | | | |
| Clinical | 418 | 270 | 1.05 |
| | | 64.6 | [0.66, 1.67] |
| Clinical Support | 146 | 92 | 0.92 |
| | | 63 | [0.54, 1.57] |

| Health Care[1] | | | |
|---|---|---|---|
| Department | | | |
| High Risk | 287 | 183 | 1.09 |
| | | 63.8 | [0.80, 1.48] |
| Standard Risk | 736 | 452 | Reference |
| | | 61.4 | |
| | | | |

| | | | |
|---|---|---|---|
| Auxiliary | 286 | 163 | 0.83 |
| | | 57 | [0.53, 1.31] |
| Administrative | 126 | 81 | Reference |
| | | 64.3 | |
| Unknown | 47 | 29 | 0.98 |
| | | 61.7 | [0.48, 1.99] |

### I.4.4.2.3. The second drug resistance survey implementation

TB & ORD Division is conducting the second drug resistance survey to estimate the current prevalence of drug resistant tuberculosis (to 1st and 2nd line TB drugs) among newly and previously diagnosed TB cases. By June 2014, we have achieved the following activities:

- Research protocol has been elaborated and presented to both National Health Research Committee (NHRC) and Rwanda National Ethics Committee (RNEC);
- The drug resistance survey Coordinator has been appointed;
- Sensitization and launching meetings with all centers of diagnosis and treatment of TB (CDTs) have been held from 18th to 21st March 2014. Each CDT was represented by three people (Head of the CDT, TB nurse and TB Lab Technician) and all CDTs representatives are committed to the survey.
- All materials (questionnaires, lab forms, sputum sample shipment forms, communication cards, etc.) to be used during this study were distributed to health facilities during the launching meetings.
- The sputum sample collection was kicked off on April 1st 2014.

### I.4.4.2.4. Other key Research and program reviews activities

- Design of the TB questionnaire that was incorporated in the overall questionnaire of the Rwanda Demographic Health Survey of 2014-2015;
- Participation in the "cases studies" exercise by the Ministry of Health, to report on best practices that conducted to successes in Rwanda health programs;
- MDR-TB short regimen protocol:
    - Protocol review and submitted to NHRC for approval;
    - Study tour in Benin where the 9 months MDR-TB regimen is being used
- Development of the 2013-2018 operation research agenda for TB, included in the 2013-2018 TB NSP
- Preparations for the implementation of the "National health sector and national TB programme reviews, and "Epidemiological stage"" or "TB EPI-ASSESSMENT"

## I.4.5. Provide training and technical assistance with capacity building focus

In September 2013, The TB & ORD Division received the 14th technical assistance from KNCV Senior epidemiologist (Eveline Klinkenberg) for finishing the cleaning of data base and analysis of the national TB prevalence survey.

In October 2013, we received visit of KNCV Senior epidemiologist (Eveline Klinkenberg) for conducting the assessment of the Rwanda TB surveillance system using the "WHO Standard and Benchmark Checklist".

In November 2013, the WHO organized a workshop on TB prevalence surveys in order to promote standardization of analytical approach and reporting. Rwanda participated in this workshop, this helped the Rwanda team to finalize and standardize analytical approach of the result to be compared to other countries.

In December 2013 and in February 2014, we received technical assistances from WHO/Damian Foundation Expert (Martine Toussaint) for development of the 2013-2018 Rwanda TB NSP.

In April 2014, we received visit from WHO/KNCV Data manager (Nico Kaalisvart) for technical assistance during development of the electronic TB surveillance system.

In June 2014, a team of external reviewers (Jarl Chabot, Estifanos Shargie, Jean de Dieu Iragena, Eveline Klinkenberg, Etienne Declercq, Jules Mugabo and Paolo Reggio d'Aci) provided technical assistance during review of the draft 2013-2018 Rwanda TB NSP, through the "Joint Assessment of the 2013-2018 Rwanda National Strategic Plan (JANS)".

### I.4.6. Ensure logistics for TB control activities

**Table 24 : Procurement status of health equipments**

| Item line No | Item description | Pack size | Quantity | Procured status |
|---|---|---|---|---|
| 1 | Audiometers | 1 | 11 | Arrived in country. 10 are stored in MPPD warehouse and 1 is being used at Kabutare Hospital |
| 2 | Béquille axillaire BIG 160 Rebotec (Axillary crutch Big 160) | 1 | 3 | Arrived in country and stored in MPPD warehouse |
| 3 | Cannes canadiennes | 1 | 4 | Arrived in country and stored in MPPD warehouse |
| 4 | ECG & Spirometer | 1 | 9 | Arrived in country and stored in MPPD warehouse |
| 5 | Fauteuil roulant Avec essieu à double position | 1 | 3 | Arrived in country and stored in MPPD warehouse |
| 6 | Lunettes solaires de protection: | 1 | 10 | Arrived in country and stored in MPPD warehouse |
| 7 | Peak flow meters | 1 | 848 | Arrived in country and stored in MPPD warehouse |
| 8 | Oxygen saturation readers | 1 | 20 | Arrived in country and stored in MPPD warehouse |
| 9 | Oxygen concetrating apparatus | 1 | 20 | Arrived in country and stored in MPPD warehouse |
| 10 | Spirometers | 1 | 42 | Tender failed and is being retendered |
| 11 | Bunsen Burner | 1 | 200 | Tender failed and was postponed for the next year due to the technical specification and unit cost which were not considering the accessories |
| 12 | Microscopes with LED for fluorescence microscopy | | 20 | Procurement under process |
| 13 | Radiography equipment | | 6 | 6 Digital Xray machines were purchased |

## Table 25 : TB tools printed and distributed in Health Facilities in Jul 2013-Jun 2014

| Design | Quantity requested | Quantity delivered | Observation |
|---|---|---|---|
| Posters for cough hygiene | 1,500 | 1,500 | Delivered in June 2014 and distributed in the Health Facilities |
| Posters for cough hygiene Community | 20,000 | 20,000 | Delivered in June 2014 and distributed in the Health Facilities |
| Posters for cough hygiene HF | 4,436 | 4,436 | Delivered in June 2014 and distributed in the Health Facilities |
| Registre for coughers triage | 2,750 | 2,750 | Delivered in June 2014 and distributed in the Health Facilities |
| TB identification cards | 10,000 | 10,000 | Delivered in June 2014 and distributed in the Health Facilities |
| TB treatment cards | 10,000 | 10,000 | Delivered in June 2014 and distributed in the Health Facilities |
| TB laboratory Register for CDT | 600 | 600 | Delivered in March 2014 and distributed in the Health Facilities |
| Register for TB screening in prisons | 50 | 50 | Delivered in February2014 and distributed in the Health Facilities |
| TB M&E SOPs Booklets | | | Distributed in the HF |

### I.4.7. Scale up PAL strategy

The approach practical approach to lung health or PAL has the following two main objectives:

- To improve the quality of respiratory care management; and
- To improve the efficiency of respiratory care service delivery within health systems and optimize the cost-effectiveness of health service delivery.

During Jul 2013-Jun 2014, 79 health providers practicing in different Centers of TB treatment (CTs) located in Kigali City and Southern province have been trained on management of Chronic Respiratory diseases according to PAL guidelines in collaboration with NCD Division. Health providers from CDT previously trained on PAL have been updated on the use of Chronic Respiratory Diseases drugs before distribution.
Distribution of Drugs for Chronic Respiratory Diseases (CRD) has conducted in District hospitals and 140 Health centers. In total, 12,900 vials of salbutamol and 12,900 vials of beclomethazone were distributed in those health facilities for better management of patients with CRD according to PAL guidelines.
By June 2014 37/43 (86%) of hospitals and 61/151 (40%) of health centers-CDTs were applying PAL approach.

# CHAPTER II: LEPROSY CONTROL

## II.1. Objective 1 : Reduce by 35%, the rate of 100,000 people for new cases with physical disabilities of 2nd degree, by 2015 in comparison with 2010.

### II.1.1. Strengthen the diagnosis of leprosy

From July 2013 up to June 2014, 28 new cases were diagnosed from endemic areas, with a detection rate between 0.02 and 0.04 per 10,000 inhabitants. Among them 61% were multibacillaries (MB), 82% were women, 4% children aged 0 -14 years old. Of new cases at the time of diagnosis 36% had physical disabilities of grade 2.

**Table 26 : Notification of leprosy cases in Rwanda from July 2013 – June 2014**

| | Multibacillary (MB) | | | | | Paucibacillary (PB) | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NEW CASES (NC)** | **Q3** | **Q4** | **Q1** | **Q2** | **Tot** | **Q3** | **Q4** | **Q1** | **Q2** | **Tot** | **Nb** | **%** |
| Number of new cases (NC) | 4 | 2 | 10 | 1 | 17 | 2 | 3 | 4 | 2 | 11 | **28** | |
| Proportion of children among new cases (0-14 years) | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | **1** | **4%** |
| Proportion of women among new cases | 2 | 2 | 7 | 1 | 12 | 2 | 3 | 4 | 2 | 11 | **23** | **82%** |
| Number of cases evaluated for their disability at diagnosis | 4 | 2 | 10 | 1 | 17 | 2 | 3 | 4 | 2 | 11 | **28** | **100 %** |
| Number with disabilities grade 1 | 2 | 1 | 0 | 1 | 4 | 1 | 0 | 0 | 0 | 1 | **5** | **18%** |
| Number with disabilities grade 2 | 4 | 1 | 5 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | **10** | **36%** |
| **RETREATMENT CASES** | | | | | | | | | | | | |
| Number of relapses | 2 | 1 | 1 | 0 | 4 | 0 | 1 | 0 | 1 | 2 | **6** | |
| Number of retreatment after default | 1 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | **3** | |
| **Total of cases under treatment** | **7** | **3** | **13** | **1** | **24** | **2** | **4** | **4** | **3** | **13** | **37** | |

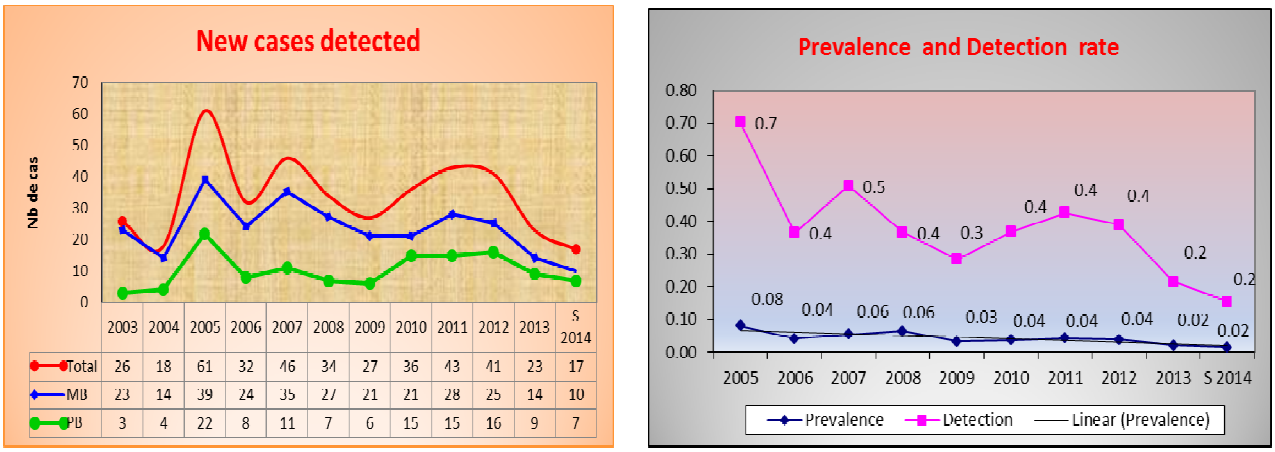



**Figure 4 : Trends in notification of new cases of leprosy (Left) and in leprosy prevalence and detection rates in Rwanda. 2003 up to June 2014 (Right)**

## II.1.2. Capacity building in Leprosy control

**Table 27 : Conference and training on preventive and control of leprosy : July, 2013 – June, 2014**

| Period | Place | # | Categories | Topic |
|---|---|---|---|---|
| 6th -7th September, 2013 | Rwamagana | - | Medical doctors/private sector | Control and management of leprosy |
| 16th- 19th September, 2013 | Belgium | | TB staff | International Leprosy congress" Hidden Challenges" |
| 22nd November 2013, | Huye, School of Medicine, | - | Students in Medicine, Medical bodies and members of Rwanda Medical Associations | A scientific presentation, 17th Annual scientific Conference and General Assembly of the Rwanda Medical Association "Neglected tropical diseases" |
| 3rd- 6th February 2014 | Rwamagana | 15 | Head of HC, Leprosy Focal point, Supervisors and TB District Coordinator (Bugesera) | Workshop of refreshment on Leprosy cases management & Developing Leprosy NSP 2014-2018 |
| 5th – 6th March, 2014 | Rwamagana | 31 | LFP & Supervisors in Ngoma &Bugesera Districts | Leprosy cases management |
| May 5th, 2014 | Rwamagana | 40 | Medical doctors | |
| 21st -22nd April, 2014 | Byumba College | 116 | Students/ Health providers | |
| 18th - 22nd June 2014 | Belgium | 1 | TB staff | Leprosy project forum |
| 23rd -26th June, 2014 | | 94 | Health care providers | |

LFP: Leprosy Focal Point,

HoD of TB &ORD Division & DA Consultant

Refreshment on Leprosy Menegement and developing Leprosy NSP 2014 - 2018

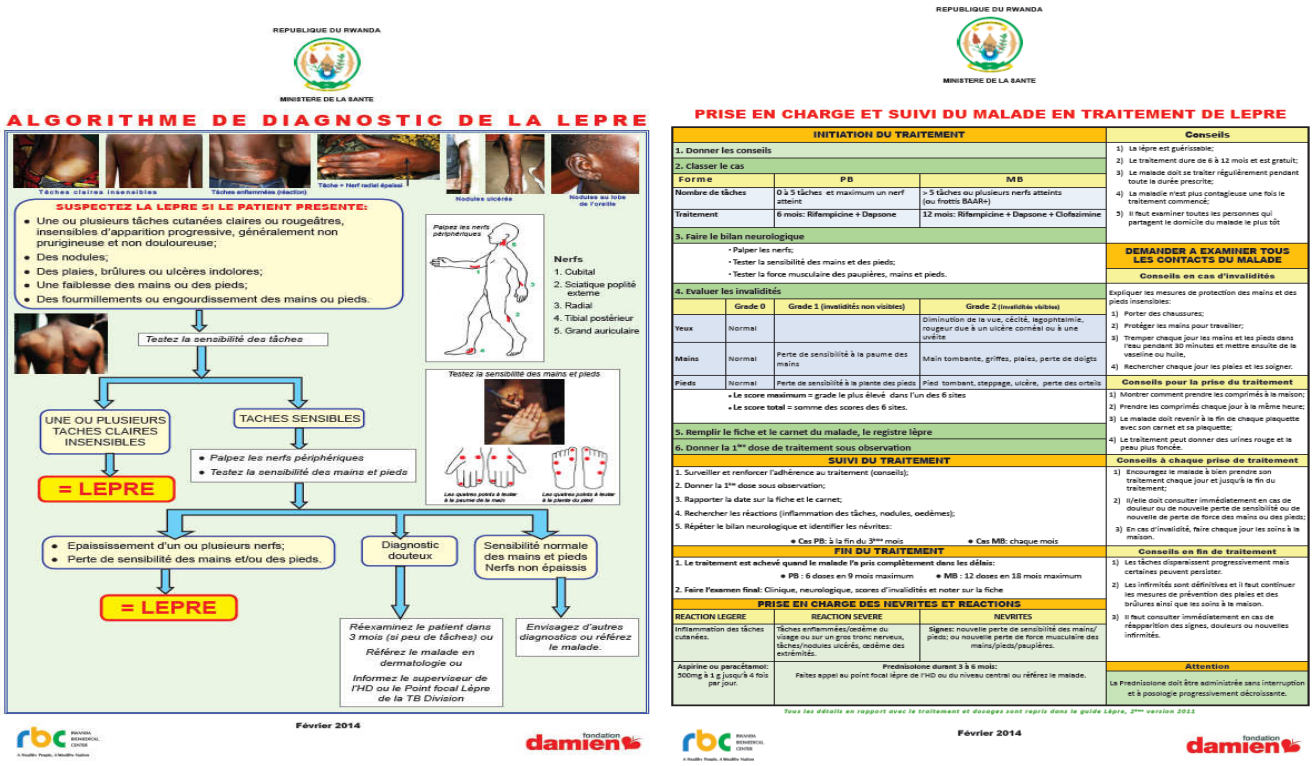



**Figure 5 : Posters developped for leprosy diagnosis and management at health facilities level**

## II.2. Objective 2 : Improving the quality of leprosy control activities, ensuring a compliance of patients to leprosy drugs

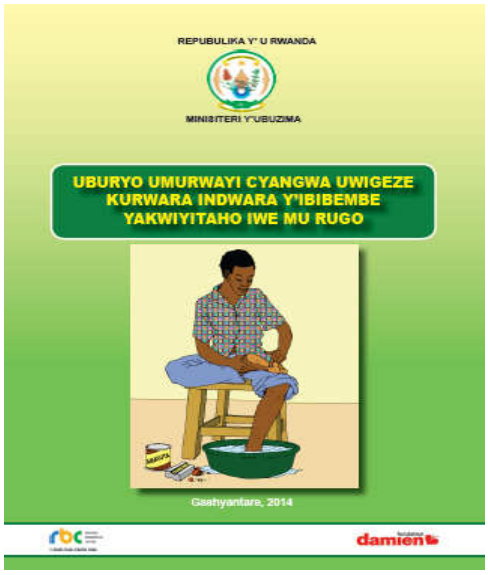
### II.2.1. Leprosy treatment outcomes

One of leprosy quality indicators for well conducted leprosy management is a completion treatment. For new patients registered since July 2013 to June 2014 we have an average of 91% of treatment success rate to all MB patients registered and 100% of success rate PB patients recorded.

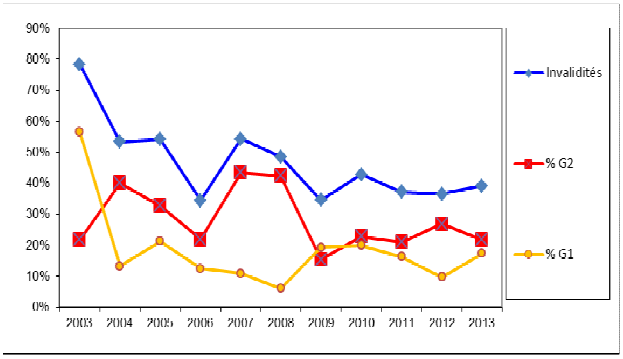
**Table 28 : Outcomes of Leprosy patients registered (MB &PB). Fiscal year, 2013-2014**

| | Multibacillary (MB) | | | | | Paucibacillary (PB) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Q1/14 | Q2/14 | Q3/13 | Q4/13 | Year | Q1/14 | Q2/14 | Q3/13 | Q4/13 | Year |
| Cohort | 2011 | 2011 | 2010 | 2010 | | 2013 | 2013 | 2012 | 2012 | |
| Registered | 5 | 9 | 4 | 14 | **32** | 1 | 3 | 5 | 8 | **17** |
| Treatment completed | 3 | 8 | 4 | 14 | **29** | 1 | 3 | 5 | 8 | **17** |
| Discontinuation of treatment | 0 | 1 | 0 | 0 | **1** | 0 | 0 | 0 | 0 | **0** |
| Died | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | **0** |
| Non evaluated | 2 | 0 | 0 | 0 | **2** | 0 | 0 | 0 | 0 | **0** |
| **Treatment success rate (%)** | **60%** | **89%** | **100%** | **100%** | **91%** | **100%** | **100%** | **100%** | **100%** | **100%** |

## II.2.2. Prevent disability due to the leprosy and aggravation




- The final evaluation of disability grade 2 at the end of treatment has been done for all cases registered. No aggravation or worsen disability when we compare the state at the time of diagnosis.
- 300 Patients booklets which educate how the patient can prevent himself any disability or aggravation due to the leprosy were printed out.
- The social support intends to the payment of Community based insurance to those who are not capable to pay it themselves was given in way to avoid always the disability. However 630 leprosy's patients including their families are beneficiaries.




The disabilities of grade 2 at the time of diagnostic are still high either 36%. But an earlier detection of contagious cases is one of measures to control and eliminate leprosy in endemic hot spot sites

**Figure 6 : Trends in rates of disabilities r at the time of leprosy diagnosis**

## II.2.3. Strengthen leprosy control activities in endemic area

### II.2.3.1. Leprosy active cases finding activities

During the period July 2013 to June 2014, active cases findings interventions notified 210 screened positive persons and 19 cases confirmed.

**Cases finding of leprosy and supervision activities in endemic areas: July 2013 – June 2014**

| DISTRICT | Health Facility | Period | # Former cases followed | # Person screened | # Diagnosed cases | Supervision |
|---|---|---|---|---|---|---|
| RUSIZI | Nyabitimbo | Q1/2014 | 5 | 23 | 0 | Q2/2014 |
| | Gasumo / PS | Q1/2014 | 8 | 2 | 0 | Q2/2014 |
| | Bugarama Islam | Q1/2014 | 0 | 16 | 0 | Q2/2014 |
| | Bugarama | Q1/2014 | 7 | 8 | 0 | Q2/2014 |
| | Kizura / PS | Q1/2014 | 12 | 17 | 2 | |
| NGOMA | Sangaza | Q4/2013 | 0 | 13 | 1 | |
| | Jarama | Q4/2013 | 2 | 23 | 5 | |
| BUGESERA | Nzangwa | Q4/2013 | 6 | 7 | 1 | Q4/2013 |
| | Mazane | Q4/2013 | 4 | 0 | 0 | |
| | Rilima | Q4/2013 | 12 | 8 | 0 | Q4/2013 |
| KARONGI | Karora | Q4/2013 | 3 | 0 | 1* | Q3/2013 |
| | Munzanga | Q4/2013 | 1 | 0 | 1** | Q3/2013 |
| RUBAVU | Nyundo | Q3/2013 | 21 | 0 | 0 | Q3/2013 |
| NYABIHU | Shyira | Q3/2013 | 1 | 0 | 0 | Q3/2013 |
| MUSANZE | Kimonyi | Q3/2013 | 1 | 0 | 0 | Q3/2013 |
| NYANZA | HVP Gatagara | - | - | 0 | 0 | Q4/2013 |
| GISAGARA | Gishubi / Sector | Q1/2014 | 0 | 36 | 6 | |
| | Kirarambogo | Q1/2014 | 18 | 1 | 0 | Q4/2013, Q2/2014 |
| NYARUGURU | Nyamyumba | Q1/2014 | 3 | 54 | 0 | |
| | Ruramba | Q1/2014 | 1 | 0 | 0 | |
| | Maraba | Q1/2014 | 0 | 1 | 1 | |
| | Kabilizi | Q1/2014 | 6 | 0 | 0 | |
| HUYE | Mbazi | Q1/2014 | 1 | 0 | 0 | |
| | Rwaniro | Q1/2014 | 0 | 1 | 1 | |
| **TOTAL** | | | **112** | **210** | **19** | |

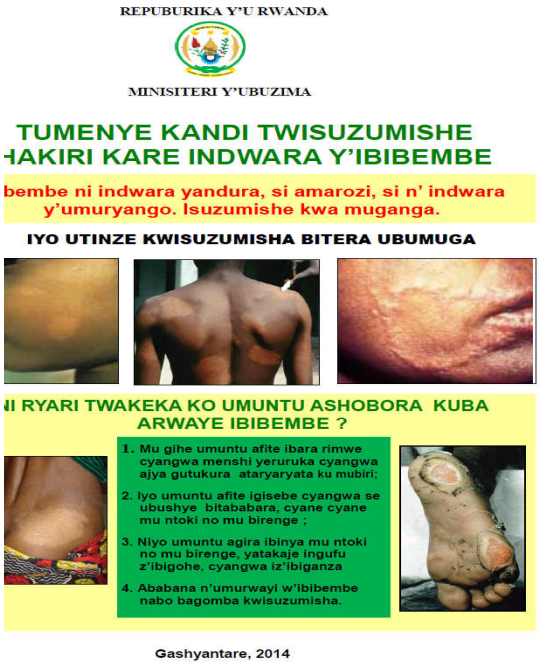
* Relapses at Karora, ** Defaulter cases restarted the treatment

* Aware the patient and her family to take the medicines without use those administered by traditional healers.

From 12 – 17 December 2013 we conducted together with the I/C of Project Management at HQ of Damian Foundation (Ms Isadora) field visits. We found that 5 houses in Jarama and Kareba were well renovated, and identified 2 new houses in need of being renovated. As well projects in Kirarambogo such as beekeeping; pineapple agriculture and purchase of animal's husbandry to be distributed to cooperative's member were also found to have been well executed.


## II.3. Objective 3 : Increase efforts for sensitization, information and communication, in order to reduce stigmatization among leprosy patients and their families

Community sensitization and messages about leprosy symptoms in the churches to aware the population and call upon all people with potential symptoms of TB, to be part of the screening process through active case finding activities had been aired in endemic zones like Nyabitimbo, Bugarama/ Kizura (Rusizi district), Kirarambogo_Gishubi (Gisagara district),Rilima, Kareba (Bugesera district) in Jarama, Nzangwa, and Sangaza Health centers. Ngoma.




Educational messages were broadcasted through IZUBA RIRASHE newspaper, published on 4th December 2013 and called upon to everyone who presents the hypo pigmented lesion skin to be aware that/she could be a leprosy case, so to early consult clinic for to early detect early leprosy in the community and prevent the disabilities often due to the delay of those who don't know the inconveniences.

Materials on symptoms of leprosy were produced and distributed including 500 posters and 1000 leaflets to be used during sensitization.

8 talks show via Rwanda Broadcasting Radio on the burden and importance of earlier detection of leprosy have been aired.

# CHAPTER III: CONCLUSION

## III.1. Key achievements during the 2013-2014 fiscal year

Efforts to strengthen TB screening in general population, especially the contribution of CHWs in that process and TB cases active findings activities organized both by the central and health facilities levels, especially in prisons, using chest X-ray TB screening, have contributed to detection and notification of cases undetected by routine diagnostic strategies, and to reach TB notification targets not previously achieved.

TB treatment success rate for bacteriological confirmed new and relapse, clinically diagnosed cases, patients followed in community and MDR-TB cases achieved targets, but deaths rates remained high among clinically diagnosed, extrapulmonary and others.

TB/HIV indicators remained one of our main successes where we have attained all related targets.

Increasing awareness of the Rwanda population on TB is one of our concerns, so that we joined the international community to celebrate the world TB day, which is the main channel for TB community awareness.

We have initiated the electronic TB reporting, through the R-HMIS (dhis2 platform), and developed the electronic TB register with individual data.

A new TB strategy was developed, based on the WHO stop TB partnership strategy and on the WHO post 2015 TB strategy.

## III.2. Key strategies for the 2014-2015 fiscal year

TB screening and diagnosis: in addition to our routine activities related to TB detection by health facilities, more efforts will continue to be undertaken to strengthen TB detection among high risk group, including mainly completing TB screening in remaining prisons using digital X-ray machines and initiate this activity in other selected risky groups.

TB treatment outcomes: We will continue to put more efforts in sites visits to health facilities and Community, ensure availability of TB drugs and monitor TB deaths through TB deaths audits.

MDR-TB : We will continue data collection for the 2$^{nd}$ drug resistance survey and begin the MDR-TB short course treatment program.

TB program management, strategic planning and monitoring and evaluation: We will finalize the development of the electronic surveillance system for TB with individual data (includes MDR-TB and Leprosy modules), begin trainings of health facilities level staff on it, and initiate use of this system by health facilities. We will also complete the assessment of the Rwanda TB surveillance system by implementing in collaboration with WHO, the "TB epi-assessment". For to prepare the implementation of the new 2013-2018 TB NSP, we will develop, submit and negotiate for the new TB/HIV concept note (grant) to the Global Fund for the period of Jul 2015-Dec 2017.

# CHAPTER IV: ANNEXES

## Annex 1 : TB detection outcome indicators in Rwanda, from July 2010 to June 2014.

| TB NSP detection outcome indicators | Baseline | 2010-2011 | | 2011-2012 | | 2012-2013 | | 2013-2014 | |
|---|---|---|---|---|---|---|---|---|---|
| | | Target | Result | Target | Result | Target | Result | Target | Result |
| Case notification rate of new smear positive TB cases (per 100.000 pop) [1] ***(Extended SSF TB PF outcome indicator 1)*** | 44 | 45 | 39 | 47* | 33¶ | 49‡ | 33† | 31.5 | 35 |
| Notification rate of new pulmonary bacteriologically confirmed TB cases ***(2013-2018 TB NSP indicator 2)*** | 3,571 (33.4/100,000) (baseline for 2012-2013) | NA | NA | NA | NA | NA | NA | 3,554 (32.9/100,000) | 3,789 (35.0/100,000) |
| Case notification rate of all TB cases (per 100.000 pop) ***(Extended SSF TB PF outcome indicator 2)*** | 80 | 86 | 72 | 88* | 59¶ | 90‡ | 57† | 56.3 | 56 |
| Notification rate of all TB cases (all forms) ***(2013-2018 TB NSP indicator 1)*** | 5,977 (56.8/100,000) (baseline for 2012-2013) | NA | NA | NA | NA | NA | NA | 5,979 (55.4/100,000) | 6,085 (56.3/100,000) |
| Case detection rate of new smear-positive TB cases | 4,183/15,270 **28%** | 4,428/15,270 **29%** | 3,962/15,270 **26%** | **31%*** | **64%**ᵝ¶† | **33%**‡ | 62%† | | |
| Number and percentage of TB suspects persons coughing for more than 15 days identified from the population ***(Extended SSF TB PF outcome indicator 5)l*** | 165,864/10,537,222 **1.6%** (baseline for 2012-2013) | | | | | | | 172,304/10,811,190 **1.6%** | 187,692/10,811,190 **1.7%** |
| Number and percentage of TB suspects persons referred by CHWs of all TB suspects countrywide ***(Extended SSF TB PF output indicator 14)*** | 91,286/176,741 51.6% (baseline for 2012-2013) | NA | NA | NA | NA | NA | NA | 68,922/172,304 (**40.0%**) | 92,641/187,692 (**49.4%**) |
| Proportion of TB cases (all forms) referred by CHW during the evaluated year. ***(2013-2018 TB NSP indicator 1)*** | 19.8% (1,182/5,977) (baseline for 2012-2013) | NA | NA | NA | NA | NA | NA | 19% | **19%** (1,161/6,085) |

*: targets for December 2011, for new SS+. ᵝ: WHO estimates for 2011 calendar year ¶: results for July 2011- June 2012. †: for all-forms TB.
‡: targets for December 2012. †: results for July 2012- June 2013.

[1] Population estimated at 10 537 222 habitants, as per the 2012 National Census Results.

## Annex 2 : TB detection indicators in Rwanda, from July 2010 to June 2014.

| NSP result indicators related to TB diagnosis | Baseline | 2010-2011 | | 2011-2012 | | 2012-2013 | | 2013-2014 | |
|---|---|---|---|---|---|---|---|---|---|
| | | Target | Result | Target | Result | Target | Result | Target | Result |
| Percentage of TB suspects benefiting from a smear examination through fluorescent microscopy. | 6% | 20% | 10% | 30% (January to Dec 2011) | 9% | | | | |
| Number and percentage of laboratories performing regular quality assurance (at least 3 times per year) for microscopy (ZN and Fluorescence). (***SSF TB PF indicator 1)*** | 150/191 (79%) | 159 / 194 (82%) (January to Dec 2010) | 152 /194 (78%) | 161/194 (83%) (January to Dec 2011) | 181/194 (93%) | | | NA | NA |
| Percentage of laboratories showing adequate performance (no major error) among those that received EQA for smear microscopy | 92% | 93% | 93% | 94% (January to Dec 2011) | 98% | | | NA | NA |
| Number and percentage of laboratories showing adequate performance in external quality assurance for smear microscopy among the total number of laboratories that undertake smear microscopy during the reporting period ***(2013-2018 TB NSP indicator 1 and Extended SSF-TB PF output indicator 1)*** | 91.2% (baseline for 2012-2013) | NA | NA | NA | NA | NA | NA | 91.4% | |
| Number of new sputum smear-positive cases detected among all TB suspects examined with microscopy. (***SSF TB PF PF indicator 2)*** | 4 183/68 172 | 4 428 NS+ out of 88 051 TB suspects | 3 962 /134 536 | 4 885 out of 132 319 TB suspects (4%) | 3 910 out of 168 076 TB suspects (2%) | 5,120 out of 148,092 TB suspects (3.5%) | 3,798 out of 176,741 TB suspects (2%) | NA | NA |

## Annex 3 : MDR-TB related indicators Rwanda during July 2010 to June 2014

| NSP indicators related to MDR-TB | Baseline | 2010-2011 | | 2011-2012 | | 2012-2013 | | 2013-2014 | |
|---|---|---|---|---|---|---|---|---|---|
| | | Targets | Results | Targets | Target | Result | Results | Target | Result |
| 22. Number of DST done (1st line DST) | 247 | 430 | 771 | 610 | 999‡ | 830 | | NA | NA |
| 23. Number (%) of MDRTB (bacteriologic ally confirmed) detected of WHO estimate* (denominator) per year '*Global report 2007 | 79/1818 (4.3%) | 161/1818 (8.9%) | 71/1818 (3.9%) | 206/1818 (11.3%) | 82/1818 (5%) | 206/1818 (11.3%) | 47/1818 (2.6%) | NA | NA |
| 24. Proportion of new bacteriologically confirmed TB cases tested for TB drugs susceptibility (***RBF indicator***) | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 25. Proportion of previously treated TB cases with result of a test for detection of resistance to rifampicin or rifampicin and isoniazid (***RBF indicator***) | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 26. Number of MDR-TB patients enrolled for 2nd line treatment. (**PF indicator 9)** ***(Extended SSF-TB PF output indicator 7)*** | 77 | 161 | 73 | 101 | 88 | 101 | 47 | 100 | 74 |
| 27. Smear conversion rate of confirmed MDR-TB cases at 6 months (Nb and % with negative smear and culture at month 6). (**PF indicator 10)** ***(Extended SSF-TB PF output indicator 7)*** (***RBF indicator***) | 7/10 (70%) Cohort Q1 2009 | 20/26 (75%) Cohort Q1 2010 | 14/18 (78%) Cohort Q1 2010 | 80% | 27/31 (87%) | 80% | 9/11 (81.8%) | 90% | 79% |
| 28. Treatment success rate, confirmed RR/MDR-TB (***RBF indicator***) | NA | NA | NA | NA | NA | NA | NA | 87% | 94% |

## Annex 4 : Indicators related to Tuberculosis in prisons and other high risk groups in Rwanda during July 2010 to June 2014

| NSP indicators related to TB in prisons | Baseline | 2010-2011 | | 2011-2012 | | 2012-2013 | | 2013-2014 | |
|---|---|---|---|---|---|---|---|---|---|
| | | Targets | Results | Targets | Results | Targets | Results | Target | Results |
| Number of new SS+ TB cases detected in prisons. (***Extended SSF-TB PF output PF indicator 10)*** | 144 | 150 | 136 | 158 | 112 | 165 | 124 | 168 | 240 |
| Number of people from identified high-risk groups screened for TB (***Extended SSF-TB PF output PF indicator 9)*** | 45,204 (baseline for 2012-2013) | NA | NA | NA | NA | NA | NA | 50,602 | 68,326 |
| Proportion of TB cases notified among high-risk groups (Number and Percentage) ***(2013-2018 TB NSP indicator 7)*** | 843/5,977 (15%) (baseline for 2012-2013) | NA | NA | NA | NA | NA | NA | 895/5,979 (15%) | 219/6085 (4%) |
| Treatment success rate of new SS+ TB cases registered in prisons | 86% | >85% | 93% (Cohort registered Jul 2009-Jun 2010) | >85% | 93% (Cohort registered Jul 2010-Jun 2011) | >85% | 90% (Cohort registered Jul 2011-Jun 2012) | | |

## Annex 5 : TB/HIV indicators in Rwanda from July 2010 to June 2014

| NSP indicators on TB-HIV | Baseline | 2010-2011 | | 2011-2012 | | 2012-2013 | | 2013-2014 | |
|---|---|---|---|---|---|---|---|---|---|
| | | Target | Result | Target | Result | Target | Result | Target | Result |
| 17. Number & % of TB patients (all forms) tested for HIV of all TB patients (all forms) registered ***(Extended SSF-TB PF output PF indicator 5) (2013-2018 TB NSP indicator 11)*** | 7448/7664 (97%) | 8148/8400 (97%) | 7044/7230 (97.3%) | 8555/8820 (97%) | 6201/6352 (98%) | 8983/9261 (97%) | 5977/5880 (98.4%) | 98% for the Extended SSF TB 99% for 2013-2018 TB NSP | 5,999/6,085 (**98.6%**) |
| 18. Number & % of TB/HIV patients receiving Cotrimoxazole during TB treatment of all TB/HIV patients | 2329/2529 (92%) | 2604/2770 (94%) | 2048/2100 (98%) | 2763/2909 (95%) | 1695/1742 (97%) | 2902/2909 (95%) | 1405/1440 (97.6%) | NA | 1,428/1,475 (**98.6%**) |
| 19. Number & % of TB/HIV patients receiving ART by the end of TB treatment out of all TB/HIV patients. ***Extended SSF-TB PF output PF indicator 6) (2013-2018 TB NSP indicator 13) RBF indicator*** | 1534/2560 (60%) Cohort 2008 | 1644/2529 (65%) Cohort 2009 | 1482 / 2221 (68%) Cohort July 09-June 2010 | 1884/2770 (68%) | **1480/2119 (70%)** Cohort July 10-June 2011 | 2036/2909 (70%) | **1410/1737 (81.2%)** Cohort July 11-June 2012 | 84.9% for the Extended SSF TB 87% for 2013-2018 TB NSP and RBF | 1,299/1,439 **(90.3%)** |
| 20. Number & % of TB suspects tested for HIV among all suspects with unknown HIV status ***(2013-2018 TB NSP indicator 12)*** | 63% | 65% | 96% | 75% | 99% | 80% | 98.7% | 94% for 2013-2018 TB NSP | 187,408/187,692 (**99.8%**) |
| 21. Number (%) of CDT with a functional "one-stop TB-HIV" service out of all CDT. | 75% | 80% | 176/194 (90%) | 85% | 176/194 (90%) | 95% | 189/197 96% | NA | NA |

## Annex 6 : Indicators related to Communities and Civil Society Organizations involvement in TB control, in Rwanda during July 2010-June 2014

| NSP indicators related to community DOTS | Baseline | 2010-2011 | | 2011-2012 | | 2012-2013 | | 2013-2014 | |
|---|---|---|---|---|---|---|---|---|---|
| | | Target | Results | Target | Results | Target | Results | Target | Results |
| 37. Community DOTS coverage | 24/30 (80%) | 30/30 (100%) | 30/30 (100%) | 30/30 100% | 30/30 100% | 30/30 100% | 30/30 100% | 30/30 100% | 30/30 100% |
| 38. Number and percentage of TB suspects persons referred by CHWs of all TB suspects countrywide (***Extended SSF-TB PF output PF indicator 13***) | NA | NA | NA | NA | NA | NA | NA | 68,922/172,304 (40%) | 92,641/187,692 (49%) |
| 39. Number & % of SS+ TB cases referred by CHW of all SS+ detected countrywide. (**PF indicator 18)** | 275/4,445 (6%) | 466/4,663 (10%) | 843/5,007 (17%) | 398/2654 15% | 984/3910 25% | 548/2,738 20% | 1,182/3,798 31% | | 1,161/4,191 (28%) |
| 40. Percentage of notified TB cases (all forms) contributed by community referrals **(RBF indicator)** | NA | NA | NA | NA | NA | NA | NA | 19% | 1,161/6,085 (**19%**) |
| 41. Number & % of patients receiving DOT by CHW | 2,627/7,644 (34%) | 2,940/8,400 (35%) | 3,307/7,230 (45.7%) | 3,528/8,820 (40%) | 3,352/6,352 (53%) | 3,704/9,261 (40%) | 3,088/6,174 (52%) | | 2,853/5,999 (48%) |
| 42. Number & % of TB patients (all forms) successfully treated among all TB patients managed by CHW. (**PF indicator 19)** (***Extended SSF-TB PF output PF indicator 14***) | 1,566/1,630 (96%) | 2,522/2,627 (96%) | 2,123/2,251 (94.3%) | 1,693/1,764 (96%) | 2,573/2,782 (92%) | 1,778/1,852 (96%) | 2,885/3,088 (93%) | 2,225/2,368 (94%) | 2,678/2,853 (94%) |
| 43. Number of CHW trained/ refreshed on TB and MDR-TB issues. (**PF indicator 20)** | 5467 | 10000 | 10885 | 10000 | 6229 | 10000 | 17962 | NA | NA |
| 44. Number and % of supervisions conducted to districts with peer educators | 88 (100%) | 88 (100%) | 14/88 (16%) | 88 | 84/88 (95%) | 88 | 85/88 97% | | |
| 45. Number and % of schools sensitized on TB in collaboration with health facilities | 689 (100%) | 689 (100%) | 391 (56.7%) | 689 | 630 (91%) | 689 | 394 | | |
| 46. Number of women in charge of social affairs at sectors and cells who were sensitized on TB | 416 sectors (100%) | 416 (100%) | 217 (52%) | 416 | 287 | 416 sectors | 41 | | |
| | | | | | | 2250 cells | 229 | | |
| 47. Number and % cooperatives that received PBF for at least 80% of their indicators | 416 Sectors (100%) | Baseline established by March 2011 & targets set | 220/421 52% | 442 | 338 (76.5%) | | | | |

## Annex 7 : Indicators related to TB prevention and infection control, in Rwanda during July 2010-June 2014

| **NSP indicator related to infection control** | **Baseline** | **2010-2011** | | **2011-2012** | | **2012-2013** | | **2013-2014** | |
|---|---|---|---|---|---|---|---|---|---|
| | | **Target** | **Result** | **Target** | **Result** | **Target** | **Result** | **Target** | **Result** |
| 28.Number and percentage of CDTs meeting minimum infection control requirements (numerator) of all CDTs (denominator). (**PF indicator 12)** | NA | 116/194 60% | 125/194 64% | 155/194 (80%) | 170/194 (87.6%) | 191/197 (92%) | 180/197 (90.8%) | NA | NA |
| Number and percentage of health care facilities meeting minimum infection control requirements (numerator) of all health facilities (denominator) (***Extended SSF-TB PF output PF indicator 11***) | NA | NA | NA | NA | NA | NA | NA | 200/504 (40%) | 253/504 (50%) |

# Annex 8 : Abstracts presented by the Rwanda TB & ORD Division team during the 2013 World Union Conference

## Financing the introduction of new tuberculosis diagnostics and treatment: reflections from Rwanda and Uganda

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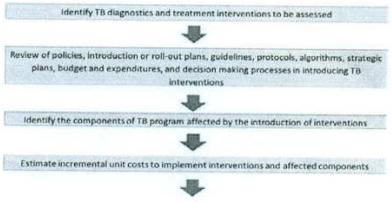
**Background:** Successful uptake of TB interventions will require viable financing strategies and mechanisms. The approach was developed to assess financing of new TB diagnosis and treatment interventions, and identify financing gaps and barriers to maintaining existing TB interventions and introducing new one.
**Methods:** We carried out case studies in Rwanda and Uganda from July to September 2012 to develop the assessment approach. A desk review of the National TB Program (NTP), MOH documents and budgets, and consultations with key stakeholders involved in TB control on decision-making and planning processes, resources requirements for diagnosis and treatment, introduction plans of new TB interventions, and challenges to TB financing were conducted.
**Results:** The Uganda national tuberculosis and leprosy program planned to roll out MDR-TB treatment and GeneXpert machines to reach 100 machines by financial year 2014. The incremental cost of implementing GeneXpert diagnostics is about US$29.65 per test and installing each GeneXpert machine is approximately US$45 400. The Rwanda national tuberculosis program planned to roll out the GeneXpert in 2 phases and reach 16 machines in the country by financial year 2014. The National technical working group develops criteria of placement of the machines and a budget for 2012–2017 was developed and submits for funding through the TB National strategic plan. The cost of implementing and installing each GeneXpert GX4 machine is approximately US$48 070.
**Conclusion:** Determining and ensuring adequate financing for TB diagnostics and treatment interventions will be a recurring challenge, as governments are increasingly expected to contribute financially to health care in an environment of competing needs and scarce resources. In both countries, GF represented a significant source of funding for their TB programs. Estimating financing requirements and financing gaps is not part of routine.




## OP-178-02 MDR-TB treatment success rate in a low-income country: Rwanda's PMDT experience, 2005–2012

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**Background:** Rwanda started managing multidrug-resistant tuberculosis (MDR-TB) in July 2005. This has been a quick response to the 2005 drug resistance survey done country wide which revealed that 3.9% and 9.4% of respectively newly diagnosed and re-treatment cases are MDR-TB.

**Methods:** Patients bacteriological diagnosed with MDR-TB or approved by Rwanda's national second-line selection committee were treated under directly observed therapy with a standardized 20-month regimen of Km-Lfx (Ofx) -Cs-Pto-Z. All patients were provided with close follow-up care and monthly nutrition and transport support for the duration of treatment.
**Results:** From July 2005 to December 2012, 557 MDR-TB cases were enrolled on second-line TB treatment, giving on average 70 new cases per year. In 2006, 15.6% of enrolled patients died before initiating treatment; by 2011, this proportion had dropped to 6.2% and to 0% in 2012. Mean turnaround time for drug susceptibility tests decreased from 86 days in 2006 to 13.5 days in 2009 and to 3 days in 2011. Over the same period, mean duration of hospital admission decreased from 6.8 months to 3.3 months. Treatment success rate of 88.3% was achieved in the 2005–2010 cohorts (83% in 2005 and 89% in 2010).
**Conclusion:** In Rwanda, MDR-TB program was successful. This was a result of a strong political commitment, to overcome the problem. Due to challenges in cases detection and follow-up in ambulatory phase, decentralized MDR-TB units at provincial level are installed and new diagnostic tests are introduced in the referral and peripheral laboratories. The second drug resistance survey is being conducted. Given the experience gained, Rwanda hosts the East African Regional Center of Excellence in the Programmatic Management of MDR-TB.

## OP-195-02 Evidence of a successful TB-HIV integration in Rwanda: 2005–2012 trends of case TB-HIV care and treatment

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**Background:** Rwanda has a high burden of HIV and tuberculosis (TB). In 2005, the Ministry of Health (MOH) in collaboration with key stakeholders drafted and approved a national policy on TB/HIV This policy was reviewed in 2011. We describe the Rwandan experience in scaling TB-HIV policy at the nationwide.
**Methods:** At the initiation in 2005, the MOH in collaboration with the International Centre for HIV Care and Treatment Programs in Rwanda establish two model centers were implemented TB-HIV integration activities included systematic HIV testing for all TB cases and enrollment of those with HIV infection, into HIV care within the TB service. They were also benefiting from a CD4 cells count, provision of cotrimoxazole preventive therapy (CPT) and antiretroviral therapy (ART) under direct observation. After completion of TB treatment, those HIV infected TB cases are transferred to the HIV clinic for further follow up. The 2 models centers functioned as practical trainings sites. Health care workers from TB services nationwide attended 2 days on the job training after receiving theoretical training on HIV care and treatment. The MOH in collaboration with partner institutions ensured regular supervision and site support to assure quality of the TB-HIV integrated services. In the last semester of 2009, HIV testing was extended to all persons with TB symptoms seeking for TB care at health.
**Results:** During the last three years (2008–2012), HIV testing in TB cases was always ⩾99% and >26.1% were HIV infected. CPT provision increased from 87% to 99%. The proportion of those under ART progressed from 39% to 74%. In 2012, 99% of TB suspects with unknown HIV status were tested for HIV infection, and 8% were found to be infected. By 2012, 188 of 198 TB diagnostic and treatment centers fully implemented the one-stop TB-HIV service.
**Conclusion:** The Rwandan experience demonstrates that it is feasible to achieve rapid and successful implementation of TB-HIV collaborative activities.

## PC-713-02 Rwanda National Tuberculosis Prevalence Survey

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**Background:** Rwanda conducted its first national TB prevalence survey to estimate the prevalence of bacteriologically confirmed pulmonary TB in Rwanda, describe health seeking behavior and investigate validity of different diagnostic algorithms and risk factors associated with the occurrence of TB.

**Methods:** The survey was designed following the international guidelines for conduct of TB prevalence surveys. Each eligible subject underwent screening by interviews and chest radiography. Those screening clinically and/or radiologically positive provided two sputum samples, which were examined both in the field by microscopy and at the National Referral Laboratory by microscopy and culture. Participants eligible for sputum examination were also offered HIV testing.
**Results:** Data were collected in 73 clusters all over the country. A total of 43 126 people were screened for TB, participation rate was very high at 95%. A total of 4709 participants were eligible for sputum examination with 4638 participants submitting samples. Less than 50 TB cases where detected, much lower than expected with 30% of cases being MOTT. HIV testing was readily accepted and 74% of observed HIV positive participants already knew their status.
**Conclusion:** The national burden of TB is lower than previously estimated. The survey will draw important lessons for the national TB program as input for the new strategic plan.

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