NATIONAL TUBERCULOSIS AND LEPROSY 2013 ANNUAL REPORT

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List of abbreviation
ACSM Advocacy Communication and Social Mobilization
AFB Acid-Fast Bacilli
AIDS Acquired Immuno-Deficiency Syndrome
CDC Centres for Disease Control (America)
CTRL Central Tuberculosis Reference Laboratory
DDH District Designated Hospital
DHMT District Health Management Team
DMO District Medical officer
DOTS Directly Observed Treatment Short Course
DTLC District Tuberculosis and Leprosy Coordinator
E Ethambutol
EH Ethambutol and Isoniazid
EP (TB) Extra-pulmonary (Tuberculosis)
ETR Electronic Tuberculosis Register
FDC Fixed – Dose Combination
GFATM Global Fund to fight AIDS/HIV Tuberculosis and Malaria
GLRA German Leprosy and TB Relief Association
H Isoniazid
HAART Highly Active Antiretroviral Therapy
HIV Human Immunodeficiency Virus
HMIS Health Management Information System
ICAP International Centre for AIDS Care and Treatment Program
IDA International Development Agency
IEC Information Education and Communication
IUATLD International Union Against TB and Lung Disease
KNCV Royal Netherlands Tuberculosis Foundation
LEC Leprosy Elimination Campaign
MB Multi bacillary (leprosy)
MDR-TB Multi-Drug Resistant Tuberculosis
MNH Muhimbili National Hospital
MOHSW Ministry of Health and Social Welfare
ACKNOWLEDGEMENT

This report is a summary description of activities implemented by the National Tuberculosis and Leprosy Programme (NTLP) for the year 2013. The purpose of this document is to share with other stakeholders what transpired during the year and the progress made in the control of Tuberculosis, TB/HIV and Leprosy country wide.

Firstly, on behalf of the National Tuberculosis and Leprosy Programme, I would like to express our sincere gratitude to the management of the Ministry of Health and Social Welfare at large, for the support and encouragement extended to us during this period. We would like particularly to thank the Permanent Secretary, the Chief Medical Officer and all the directors at different departments, without whom our efforts alone could not have accomplished what we have achieved so far.

We are also grateful to our partners and stakeholders for their collaboration and guidance on various issues during the execution of NTLP activities.

We are indebted to many NTLP staff for their tireless routine work to attain the programme objectives. Regional TB and Leprosy Coordinators, District TB and Leprosy Coordinators, TB/HIV officers, DOT nurses and all health workers at periphery to name few, who also compiled and generated data used in this report.

Special thanks to all the TLCU-staff for their insightful and detailed reviews which made the writing of this report possible. Their teamwork, experience and input were invaluable and greatly sharpened the content of this report.

Finally, I wish to recognize and appreciate the financial and technical support extended to the NTLP by the different development partners. These include:-

- Germany TB and Leprosy Relief Association (GLRA)
- The Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria (GFATM)
- Centres for Disease Control and Prevention (CDC)
- International Union Against TB and Lung Disease (IUATLD)
- United States Agency for International Development (USAID)
- Foundation for Innovative New Diagnostics (UNITAID/FIND)
- World Health Organization (WHO)
- Novartis Foundation for Sustainable Development (NFSSD)
- Programme for Appropriate Technology in Health (PATH)
- Management Science for Health (MSH)
- Global Drug Facility (GDF)
- The Netherlands Tuberculosis Foundation (KNCV)
Your contributions were immensely important and we are very proud to be working with you against TB, TB/HIV and Leprosy.

Dr Beatrice K. Mutayoba
PROGRAMME MANAGER
National Tuberculosis and Leprosy Programme
Ministry of Health and Social Welfare
October 2014
1 GENERAL BACKGROUND

1.1 Demographic and socio-economic profile
Tanzania population was projected to be 46,162,814 based on 2012 census with 51% of the population being female while male were 49%. The sex ratio was 95 in Tanzania and Tanzania Mainland while was 94 in Zanzibar. The population of urban inhabitants was 29.6% of total population. About 52% of the population are the working age (15 – 64); 44% are young (0 – 14 years) while 4% are elderly (65+ years). The annual growth rate is estimated at 2.7% from 2002 to 2012 census. The population of Zanzibar is at 1,341,713 with a projected annual growth rate of 2.8%. Agriculture is still the major source of livelihood for majority of the population in Tanzania.

According to World Bank report, 2013 per capita income (GDP per capita) is US $ 694.77 categorizing Tanzania as a low income country. However, in the past five years the country has enjoyed good progress in economic growth averaging above 6%.

1.2 Summary of Health Services
Health care delivery system in the country is well established with more than 6,214 health facilities. The major provider of health services is the government, which own or run 69% of all the health facilities including the DDH. Tanzania is classified as one of the least developed countries, with total expenditure on health per capita of US$ 109 (WHO).

Data from Health Information Management System (HMIS) of the Ministry of Health and Social Welfare shows that communicable diseases are still the major cause of morbidity and mortality in the country driven by HIV epidemic with national prevalence of 5.1% in the population aged 15-49 years. TB has continued to be among the top ten cause of death and is ranked 6th among admissions for those aged five years and above in the country.

1.3 Summary of NTLP activities
In 2013 NTLP implemented its annual plan in line with NSP IV (2009-2015). All activities conducted focused on addressing six NSP strategic objectives i.e. (i) Achieve universal access to quality DOTS and MDT services in both public and private sectors. (ii) Reduce the burden of TB/HIV and drug resistant TB with special emphasis on vulnerable populations. (iii) contribute to health system strengthening based on primary health care (iv) scaling up involvement of more private health care providers (v) empowering patients and community members to take active participation in TB prevention and care (vi) collaborating with internal and external partners in conducting relevant operational research.
On leprosy, the programme concentrated on leprosy elimination by actively conducting targeted leprosy elimination campaigns in districts with high prevalence of the diseases and strengthening among people affected by leprosy (PALs).

During this period, a number of NTLP staff attended international and national workshops, training courses, meetings and conferences including the 44th IUATLD and TSRU meetings. At these events, the country had an opportunity to share their best practices with other countries.

1.4 Financial Support

**NTLP Financing and Partner Contributions**

The Ministry of Health and Social Welfare through National Tuberculosis and leprosy programme (NTLP) received US$ 10,229,949 through government consolidated funds, external grants and loans. The programme also received in-kind US$ 3,387,981 for various TB, TB/HIV and Leprosy activities. Government resources channeled through the programme for programme management and at lower levels to support the health system and infrastructure maintenance as well as staff remuneration for staff working (nurses, clinicians and lab staff a lower levels we made a full time equivalent approximation) for TB amounted about US$ 2,083,440 (Data collected for 2012 NHA) excluding contribution from health insurance schemes.

Direct cash was received from Centers for Disease Control and Prevention (CDC) grant, The Global Fund (GFR6-TFM) grant, The world Bank (IDA) loan, European and Developing Countries Clinical Trials Partnership (EDCTP) grant, German TB and Leprosy Relief Association (GLRA) grant and World Health Organization (WHO) grant as detailed in Table 1 below.

Table 2 shows known monetary value of in-kind support from PATH/USAID grant who supported NTLP through field operations by directly administering TB and TH/HIV interventions on behalf of the programme within 29 districts in Mwanza, Arusha, Kilimanjaro and Pwani, Dar es Salaam and Zanzibar. Others in the list are resources that came from Global Drug Facility (GDF/WHO) in form of Pediatric First line anti-TB drugs; UNITAID/FIND who provided laboratory equipment, supplies and Technical Assistance to Central TB Reference Laboratory (CTRL).

The programme also worked in close collaboration with several other international and local institutions and agencies whose contribution was very significant. Even though the programme could not establish exact monetary value of the support from these organizations but were potential partners in TB and TB/HIV control such as ICAP on Pediatric TB, CRS and TB-REACH supporting Laboratory and community TB, MSH on Programme Management and strategic planning and JSI supporting Logistics and Supply chain management to mention but a few.
Many other local research institutions, academia, private sector organizations and community based Civil Society Organizations (CSSOs) not herein mentioned were also active partners/collaborators in various interventions.

Table 1: Cash received through NTLP

<table>
<thead>
<tr>
<th>Sn</th>
<th>Source of Funds</th>
<th>Amount in US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Government of Tanzania GOT form consolidated fund</td>
<td>2,083,440</td>
</tr>
<tr>
<td>2</td>
<td>German TB and Leprosy Relief Association GLRA</td>
<td>453,004</td>
</tr>
<tr>
<td>3</td>
<td>Centre for Disease Control and Prevention CDC</td>
<td>1,762,430</td>
</tr>
<tr>
<td>4</td>
<td>European &amp; Developing Countries Clinical Trials Partnership DCTP</td>
<td>100,145</td>
</tr>
<tr>
<td>5</td>
<td>World Health Organization Country Office - WR</td>
<td>30,785</td>
</tr>
<tr>
<td>6</td>
<td>World Bank WB – loan under PHLNP</td>
<td>89,155</td>
</tr>
<tr>
<td>7</td>
<td>Global Fund Round Six TB Grant</td>
<td>5,710,990</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>10,229,949</strong></td>
</tr>
</tbody>
</table>

Table 2: Approximate value of goods and services provided in kind

<table>
<thead>
<tr>
<th>SN</th>
<th>Source of Funds</th>
<th>Value in US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GDF/WHO : Anti-TB Drugs (Pediatric - First Line)</td>
<td>127,690</td>
</tr>
<tr>
<td>2</td>
<td>Program for Appropriate Technology in Health (PATH)</td>
<td>2,990,751</td>
</tr>
<tr>
<td>3</td>
<td>UNITAID/FIND : Lab Equipment &amp; TA</td>
<td>269,540</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>3,387,981</strong></td>
</tr>
</tbody>
</table>
2 HUMAN RESOURCE DEVELOPMENT

The National Tuberculosis and Leprosy Programme is composed of both government and contract employees at central unit (TLCU) and councils with focus on strengthening TB, TB/HIV and Leprosy services in the country. Contract employees have been recruited through various grant support including GFATM, CDC/PEPFAR and GLRA.

During this reporting year, the programme has embarked on building capacity of staff on TB, TB/HIV, Paediatric TB, ACSM, community TB and Laboratory through various trainings with funding sources from diverse partners namely PATH, MSH and CDC PEPFAR in accordance to the national guidelines.

2.1 Staff establishment

In this reporting year there were 31 staffs at central level and 26 staffs at regional level identified as Regional Tuberculosis and Leprosy Programme Coordinators (RTLC) as well as 166 District Tuberculosis and Leprosy Coordinators (DTLC). New RTLCs were recruited for Njombe and Simiyu regions. The process for deploying RTLCs for Geita and Katavi were underway during this reporting period. The same applied for the DTLCs in the respective district councils. For those regions and councils which were not fully established, RTLCS and DTLCS from the mother regions and councils had the responsibility to oversee and coordinate TB and leprosy control activities in the newly established regions and councils respectively until when they were fully fledged to own their coordinators.

During this period, the Programme Manager Dr S. Egwaga, Dr F. Lwilla and Dr B. Njako retired from public service. In this reporting period two staff left the Programme to other institutions namely Dr S. Matiku and Dr M. Rugola. Dr D. Kamara was appointed an Acting Programme Manager.

2.1.1 Tuberculosis and Leprosy Central Unit (TLCU)

The list of TLCU by December 2013 was as follows:
1. Dr D. Kamara - Programme Officer
2. Dr M. Nyamkara – TB/HIV Coordinator
3. Mr B. Msuya – Head Accountant
4. Mr L. Ross – Accounts Assistant
5. Mr J. Ngowi – Programme Pharmacist
6. Dr J. Lyimo - MDR Coordinator
7. Mr D. Kayumba – Administrator
8. Ms D. Semu – Prevention of Disabilities Coordinator
9. Mr P. Shunda - Orthopaedic Technologist
10. Ms D. Kasembe – Training Coordinator
11. Ms B. Doula – Head, National TB Reference Laboratory
12. Ms L. Ghasia – Health Secretary
13. Mr S. Bossy – Senior Laboratory Technician
14. Ms D. Mtunga – Laboratory Technician
15. Dr A. Tarimo – Public Private Partnership Coordinator
16. Ms L. Ishengoma – Community TB care Coordinator
17. Ms A. Mshanga – Advocacy Communication and Social Mobilization Coordinator
18. Mr E. Nkiligi – Data Manager
19. Mr N. Mwangaba – Data analyst
20. Ms K. Kadege – Assistant Accountant
21. Ms E. Mapunda – Assistant Accountant
22. Ms C. Chipaga – Data entry clerk
23. Ms J. Goodluck – Data entry clerk
24. Ms G. Tairo – Data entry clerk
25. Ms K. Kassim – Data entry clerk
26. Mr M. Penza – Data entry clerk
27. Ms A. Ponera – Secretary
28. Mr F. Kalombora – Office Attendant
29. Mr E. Mdika – Driver
30. Mr A. Shabani – Driver
31. Mr D. Kanyandeko – Driver

2.1.2 Regional Tuberculosis and Leprosy Coordinators (RTLCs)
At the reporting period, there were 24 RTLCs who coordinated TB and Leprosy control services at regional level in Tanzania mainland and 2 RTLCs from Zanzibar. Their names and respective regions are listed below:

1. Dr E. Ntulwe – Arusha
2. Dr J. Msangi – Kinondoni
3. Dr N. Kapalata – Temeke
4. Dr S. Mbarouk – Ilala I
5. Dr I. Mteza – Ilala II (Muhimbili & Private Hospital Dar es Salaam)
6. Dr M. Masimba – Dodoma
7. Dr F. Mhomisoli /Dr. T. Urioe – Iringa
8. Dr M. Ndyeshobora – Kagera
9. Dr D. Leonard – Kigoma
10. Dr M. Chelangwa – Kilimanjaro
11. Dr A. Pegwa – Lindi
12. Dr M. Khan – Mara
13. Dr Q. Qawoga – Manyara
14. Dr Y. Mwasubila – Mbeya
15. Dr E. Tenga – Morogoro
16. Dr W. Byemelwa – Mwanza
17. Dr R. Mnandowa /Dr. M. Kodi - Mtwara
18. Dr A. Mpangile – Pwani
19. Dr P. Yamsebo - Rukwa
20. Dr W. Mtumbuka – Ruvuma
21. Dr J. Majigwa – Shinyanga
22. Dr M. Kimala – Singida
23. Dr R. Hussein Tabora
24. Dr S. Kiluwa – Tanga
25. Dr J. Mshana – Unguja
26. Dr H. Said – Pemba

2.1.3 District Tuberculosis and Leprosy Coordinators and TB/HIV Officers
By December 2013, there were 166 DTLCs and 136 TB/HIV Officers at district level. The list of DTLCs and TB/HIV Officers with their respective districts is not attached following inappropriate information from the districts councils on their deployment during this reporting period as a result of transfers, retirement, turnover and phasing out of PATH which was the main source of fund for salaries and other incentives to most of them respectively.

2.2 Training activities, meetings and conferences

2.2.1 Trainings
During this year, various but few trainings were conducted among health care workers as a result of insufficient funds. The trainings covered mostly TB/HIV collaborative activities, Paediatric TB management including TOT training, MDR TB, Data Management (ETR.Net) and DTLC course to empower district coordinators with skills and knowledge on management of TB and Leprosy control activities. The purpose of these trainings was to build capacity of health care workers towards improving quality of care in those areas. These trainings were supported by CDC/PEPFAR, WHO, USAID/PATH and GLRA. In total over 913 healthcare workers were trained during this year on the stipulated areas at regional, district and health facility level as summarised in the table below
Table 3: Health workers trained on different courses in 2013

<table>
<thead>
<tr>
<th>Region</th>
<th>Type of training</th>
<th>DTLC course (WHO, GLRA support)</th>
<th>Total No. trained</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>ToTs training for management of TB in children (CDC</td>
<td>Management of TB in Children</td>
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<td></td>
<td>support)</td>
<td>(CDC support)</td>
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<td></td>
<td></td>
<td>Collaborative TB/HIV activities</td>
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<td></td>
<td></td>
<td>(CDC support)</td>
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<td></td>
<td>MDR (PATH support)</td>
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<td>ETR. Net (CDC support)</td>
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<td>Mtwara</td>
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<tr>
<td>Shinyanga</td>
<td>35</td>
<td></td>
<td>35</td>
</tr>
<tr>
<td>Ruvuma</td>
<td>68</td>
<td></td>
<td>68</td>
</tr>
<tr>
<td>Others</td>
<td>24</td>
<td>48</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>654</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>109</td>
</tr>
</tbody>
</table>

2.2.2 Meetings

Neither programme meetings such as annual meetings or coordinating meetings nor conferences were attended due to limited funds. Regional quarterly meetings for RTLCs and DTLCs were conducted locally at regional level.
3 TUBERCULOSIS CONTROL SERVICES

3.1 Tuberculosis case notification 2013
A total of 65,732 cases of all forms were notified in 2013, which shows an increase of 1,840 cases or 2.9% compared to the year 2012. Very interestingly the proportional increase looks the same for both Mainland and Zanzibar. Among the cases notified, new cases were 62,952 (95.8%) and the retreatment cases were 2,780 (4.2%) which is almost same proportions for the past three years. Among the new TB cases, 24,565 (39%) were smear-positives, 21,393 (37%) were smear negatives and 14,595 (23%) were extra-pulmonary TB with 10.6% being children under 15 years old. Both the number and proportions of new smear positive cases detected shows a 2% decrease compared to the previous year 2012. Table 3 below shows the comparison of TB notification in 2012 and 2013 by TB category groups.

Table 4: Tuberculosis cases notified in Tanzania 2012 – 2013

<table>
<thead>
<tr>
<th>Indicators</th>
<th>2012 Cases</th>
<th>2013 Cases</th>
<th>Change num.</th>
<th>%</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>All forms</td>
<td>63,892</td>
<td>65,732</td>
<td>1,840</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td>New forms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Pulmonary smear positive</td>
<td>25,138</td>
<td>24,565</td>
<td>-373</td>
<td>-2.3</td>
<td></td>
</tr>
<tr>
<td>- Pulmonary smear negative</td>
<td>21,393</td>
<td>23,371</td>
<td>1,978</td>
<td>9.2</td>
<td></td>
</tr>
<tr>
<td>- Extra-pulmonary</td>
<td>14,595</td>
<td>15,016</td>
<td>421</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>61,126</td>
<td>62,952</td>
<td>1,826</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Re-treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Relapse</td>
<td>1,052</td>
<td>1,101</td>
<td>49</td>
<td>4.7</td>
<td></td>
</tr>
<tr>
<td>- Failure</td>
<td>154</td>
<td>133</td>
<td>-21</td>
<td>-13.6</td>
<td></td>
</tr>
<tr>
<td>- Return to control</td>
<td>201</td>
<td>251</td>
<td>50</td>
<td>24.9</td>
<td></td>
</tr>
<tr>
<td>- others</td>
<td>1,359</td>
<td>1,295</td>
<td>(64)</td>
<td>-4.7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2,766</td>
<td>2,780</td>
<td>14</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Notification rates (all forms) 100,000popn /yr</td>
<td>142</td>
<td>142</td>
<td>0</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Notification rates (new sm+ / 100,000popn/yr)</td>
<td>56</td>
<td>53</td>
<td>(3)</td>
<td>-4.9</td>
<td></td>
</tr>
<tr>
<td>Children (&lt;=14 yrs)</td>
<td>5,283</td>
<td>6,658</td>
<td>1,375</td>
<td>26.0</td>
<td></td>
</tr>
</tbody>
</table>

3.1.1 Tuberculosis notification by regions
Although the proportion of cases notified in Dar es Salaam city is progressively declining, it is still the major contributor with 21.8%, followed by Mwanza region with 9.8% and Shinyanga region with 6.5%. A list of regions which contributed more than 4% remained the same as for the past three year with some other major cities increasing their contribution. Figure 1 below
shows individual regions contribution by percentage and it indicates that over 70% of cases notified during the reporting year came from only 10 regions in the united republic of Tanzania. The remaining 20 regions contributed only a third of all TB cases notified in 2013. The reasons for such huge variations in among the regions need to be explored and investigated.

Figure 1: Distribution of TB cases notified by regions in 2013

From the 2013 data, TB case notification changes of most regions improved positively compared to those of 2012 except in Iringa, Kigoma, Mbeya and Lindi as shown in figure 2 below.

Figure 2: Percentage of change of notification by region between years 2012 – 2013.

3.1.2 Tuberculosis case notifications disaggregated by sex and age
The age-sex distribution of the new TB cases notified in 2013 shows that 36,946 (58.7%) cases were males and 26,006 (41.3%) females with a sex ratio of over 1.4. The number of children
aged 0–14 years old notified among new cases were 6,658 (10.6%) which is a 2% increase compared to 2012 notification.

Age-sex distribution of the new smear positive cases as in previous years shows that, the highest number of TB cases notified was in the age groups of 25-34 years and 35-44 years for both males and females as summarized in Figure 3 below. Similar patterns were also observed among the new smear negatives and extra-pulmonary TB cases notified.

Figure 3: Age and Sex distribution of new smear positive TB cases notified in 2013

3.1.3 Tuberculosis notification rate
The notification rate of tuberculosis (all forms) in 2013 remained at 142 cases per 100,000 populations as for the year 2012. Notification rate of new smear positive tuberculosis cases decreased from 56 to 53 cases per 100,000. Dar es Salaam region had the highest TB notification rates in the country for both all forms and new smear positive cases at 311 and 152/100,000 people respectively. Kigoma and Rukwa regions and Pemba have the lowest notification rate (all forms) of below 45/100,000 population.

The trend of the notification rates for both new smear positive cases and all forms has progressively been declining since 2005 as shown in figure 4 below.
3.1.4 Tuberculosis re-treatment cases

TB treatment cases notified in 2013 were 2,780 cases which is 4.2% of all cases notified. This represented a gradual decline of previously treated patients notified for the past five years. Most of the re-treatment cases were in the categories of others – 1,295 and relapse – 1,100. The categories of loss to follow up and failure were 251 and 133 cases respectively. Relapses and other cases shows downward trends while return after lost to follow up and failure show a slender upward increase from years 2009. The figure 5 below shows the trend of re-treatment cases for the past ten years.

Figure 5: Trends of Re-treatment TB cases notified from 2003 to 2013
3.2 Tuberculosis treatment outcome for cohort notified in 2012

3.2.1 New and relapse cases
Analysis of the TB cohort notified in 2012 shows that the overall treatment success for new and relapse cases was 90%. 117 (0.2%) failed treatment, 3,539 (5%) died while still on treatment and 1,015 (2%) lost to follow up. A total of 2,062 (3%) of the cases were not evaluated for treatment outcomes, some due to being transferred out of their regions.

The treatment outcomes for individual groups of TB vary from 90% treatment success rate for new smear positive TB to 86% of TB relapses. The table below summarizes treatment outcomes for different groups.

Table 5: Tuberculosis treatment of all forms of TB new and relapses notified in 2012

<table>
<thead>
<tr>
<th>Treatment Outcomes</th>
<th>new smear</th>
<th>extrapulmonary</th>
<th>Relapse</th>
<th>All forms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>number %</td>
<td>number %</td>
<td>number %</td>
<td>number %</td>
</tr>
<tr>
<td>Cured</td>
<td>20,753 82</td>
<td></td>
<td>859 80</td>
<td>21,612 35</td>
</tr>
<tr>
<td>Treatment Completed</td>
<td>1,875 7</td>
<td>19,408 90</td>
<td>13,030 89</td>
<td>34,370 55</td>
</tr>
<tr>
<td>Treatment Success</td>
<td>22,628 90</td>
<td>19,408 90</td>
<td>13,030 89</td>
<td>55,982 90</td>
</tr>
<tr>
<td>Failure</td>
<td>82 0</td>
<td></td>
<td>0 0</td>
<td>96 0</td>
</tr>
<tr>
<td>Died</td>
<td>1,048 4</td>
<td>1,352 6</td>
<td>903 6</td>
<td>3,378 5</td>
</tr>
<tr>
<td>Out of Control</td>
<td>483 2</td>
<td>267 1</td>
<td>180 1</td>
<td>959 2</td>
</tr>
<tr>
<td>Transferred out</td>
<td>733 3</td>
<td>466 2</td>
<td>365 2</td>
<td>1,590 3</td>
</tr>
<tr>
<td>Total Evaluated</td>
<td>24,241 96</td>
<td>21,027 98</td>
<td>14,113 96</td>
<td>60,415 97</td>
</tr>
<tr>
<td>Reported/notified</td>
<td>25,232 100</td>
<td>21,520 100</td>
<td>14,657 100</td>
<td>62,477 100</td>
</tr>
</tbody>
</table>

Further analysis of the cohort revealed that only three regions of Ilala II in Dar es Salaam, Kilimanjaro and Tabora had treatment success rates of below 85% and half of the rest performing above 90% figure 6 below.
The trend of treatment outcome results for the new smear-positive patients in the past ten consecutive years show that the treatment success rate has improved from about 80% in 2001 to 90% in 2012 and consistently maintained above 85% since 2005. Similarly the mortality rate has been declining since 2006 from 8% to 5.4% in 2012.

3.2.2 Treatment outcome of re-treatment cases notified in 2012
TB re-treatment cases amounting 2,805 were notified in 2012 and among them 2,669 cases or 95% their treatment outcomes were available for cohort analysis. Overall a total 2,313 (86.7%) of those evaluated were either cured or completed treatment resulting in treatment success rate of 82.4%, death rate was 8.4% and both lost to follow up and transferred out accounting to
5.5%. Table 5 below summarizes the treatment outcomes for each category of the re-treatment cases.

Table 6: Treatment outcomes of re-treatment notified in 2012

<table>
<thead>
<tr>
<th>Treatment Outcomes</th>
<th>Relapse</th>
<th>Failure</th>
<th>Return</th>
<th>Others</th>
<th>all previously treated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>number</td>
<td>%</td>
<td>number</td>
<td>%</td>
<td>number</td>
</tr>
<tr>
<td>Cured</td>
<td>859</td>
<td>80</td>
<td>100</td>
<td>64</td>
<td>118</td>
</tr>
<tr>
<td>Treatment Completed</td>
<td>57</td>
<td>5</td>
<td>14</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td>Treatment Success</td>
<td>919</td>
<td>86</td>
<td>114</td>
<td>73</td>
<td>143</td>
</tr>
<tr>
<td>Failure</td>
<td>14</td>
<td>1</td>
<td>13</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Died</td>
<td>75</td>
<td>7</td>
<td>12</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>Out of Control</td>
<td>29</td>
<td>3</td>
<td>7</td>
<td>4</td>
<td>27</td>
</tr>
<tr>
<td>Transferred out</td>
<td>26</td>
<td>2</td>
<td>7</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Total Evaluated</td>
<td>1,034</td>
<td>97</td>
<td>146</td>
<td>93</td>
<td>189</td>
</tr>
<tr>
<td>Reported/notified</td>
<td>1,068</td>
<td>100</td>
<td>157</td>
<td>100</td>
<td>202</td>
</tr>
<tr>
<td>Case holding</td>
<td>97</td>
<td>93</td>
<td>94</td>
<td>94</td>
<td>0</td>
</tr>
</tbody>
</table>

3.3 Collaborative TB/HIV activities
The Programme in collaboration with NACP revised the guidelines for initiation of ART among TB/HIV co-effected patients. The revision was based on the revised WHO recommendations. Furthermore, emphasis on early initiations among TB/HIV co-effected patients was discussed during TB/HIV implementing partners’ meetings and during supportive supervision. ‘One stop shop’ model for TB and HIV services are being scaled up to reach 500 health facilities. The effort has contributed to increased uptake of ART from 54% in 2012 to 73% in 2013. Collaborative efforts with NACP are under way to scale up Intensified TB case finding among PLHIV, Isoniazid Preventive Therapy among eligible PLHIV and Infection Control (3Is) to 300 more health facilities in 2014.

3.3.1 TB/HIV case finding 2013
The 2013 data shows that of 65,732 TB cases notified, 54,504 (83%) were counseled and tested for HIV status. Among those tested, 20,072 (37%) were found to be co-infected with HIV which is less by 1% compared to the co-infection rate in 2013. Furthermore, analysis shows that of the co-infected cases 18,354 (91%) cases were registered at HIV Care and Treatment Centres (CTCs) for HIV care and treatment services. Among them 19,596 (98%) were put on Co-trimoxazole Preventive Therapy (CPT) while 14,679 (73%) were initiated ART in both TB clinic and CTCs within the three months reporting period after a two weeks TB drugs tolerability period. Major improvement compared to 2012 cohort is the increase of patients initiated with ART from
10,993 (54%) to 14,679 (73%). Figure 8 below summarizes the TB/HIV indicators in the country from 2007 to 2013.

Figure 8: Trend of TB patients counseling and testing for HIV, initiated CPT and ART: 2007 – 2013

3.3.2 Regional performance on HIV testing and counselling and ART uptake
HIV counseling is an entry point for accessing HIV care, treatment and preventive services. In 2013 the national average was 83% which is below WHO target of 100%. The majority of the regions are above the national average and few regions are below these included: Ruvuma, Kilimanjaro, Arusha, Dar Ilala I, Shinyanga, Dodoma, Tabora and Tanga.
3.4 Management of Pediatric TB

The programme completed revision of the second edition of pediatric TB guidelines together with training package and job aids. Training on the management of childhood TB to health care providers was conducted across the country in high burden districts. These efforts have contributed in increasing paediatric TB notifications as well as strengthening the management of childhood TB.

3.4.1 Childhood TB notifications 2013

The 2013 data shows that of 62,952 TB cases notified 6,658 (10.6%) were children. This notification has increased compared to 2012 NTLP annual report which was 8.6%. Among regions reported to have higher contribution of childhood TB above the national average were Pemba 22.6%, Unguja 18.2%, Arusha 15.8% and Mwanza 15.1%.

Among childhood TB notified in 2013, smear positive were 496 (7.4 %), smear negative were 3,340 (50.2 %) and extra-pulmonary TB were 2,822 (42.4 %). Figure 10 below show contribution of pediatric TB among total notification in the country 2013.
Sex distribution among children shows that a total of 261 (53%) female were found with smear positive compared to male 235 (47%), smear negative male were 1,769 (53%) and female were 1,571 (47%) and extra-pulmonary male were 1,585 (56%) and female were 1,237 (44%).

3.5 Management of MDR-TB

3.5.1 MDR TB enrolment
A total of 95 MDR TB patients were enrolled to start second line treatment at Kibong’oto TB hospital in 2013, showing a 111% increase from the previous year and contributing to the upward trend in enrolment since 2009 as depicted in figure 11 below. Among enrolled patients, 28 (29%) were women and 37 (38%) were HIV positive. Two patients were not enrolled because they were confirmed to be not MDR TB.
Figure 11: Trends of MDR TB Patients enrolment by Year

The age-sex distribution of MDR TB cases enrolled on treatment showed a male predominance across all age groups with the burden of MDR TB being heaviest in those aged between 35 – 44 years (28%), 25-34 years (21.5%) and 45 – 54 years (20.4%). Children contributed 3.2% of all enrolled MDR TB cases as outlined in figure 12 below.

Figure 12: Age and Sex distribution of MDR TB cases enrolled on treatment in 2013
3.5.2 Enrolled MDR TB patients by region in 2013

The regions notifying enrolled MDR TB patients increased from 11 in 2012 to 18 in 2013. Dar es Salaam continued to notify most of the MDR TB cases enrolled on treatment at 45% down from 62% in the previous year. Other regions that contributed significantly to enrolled cases include; Mwanza (18%) up from 9% in 2012, Iringa (4%) and Tanga (4%), as illustrated in figure 13 below.

Figure 13: Distribution of MDR TB cases enrolled on treatment by regions in 2013

3.5.3 Treatment outcomes of MDR TB cases enrolled in 2010

In 2013, the programme conducted quarterly cohort and expert review meetings aiming at reviewing interim and final results of enrolled MDR TB patients in 2013. Furthermore, discussions on clinical management were provided to difficult and ambiguous MDR TB patients during expert review panels.

Final outcome analysis of 32 patients enrolled in 2011 showed that; 22 patients (69%) were cured, two patients (6%) completed treatment, four patients (13%) died during the course of treatment, and four patients (13%) were lost to follow up. The treatment success rate (cured + treatment completed) was therefore reported at 75%. Comparison of MDR TB treatment outcomes for 2009 - 2011 show that the cure rate is increasing from 60% (2009) to 65% (2010) and 69% (2011) respectively whereas, the death rate is decreasing from 20% (2009) to 13% in both 2010 and 2011 cohorts as summarized below;

Figure 14: MDR TB outcomes in 2009, 2010 & 2011
The programme also developed the MDR TB decentralization framework that will reduce the duration of hospitalization in the intensive phase from 8 months to 2 weeks – 2 months. Training materials on decentralized MDR TB care were also developed. These efforts will guide the programme in the scale up of MDR TB services in the country.
4 LEPROSY CONTROL SERVICES

4.1 Leprosy Case Notification

A total of 2,144 leprosy cases (all forms) were notified in 2013, of which 2,028 (94.6%) were new cases and 69 (3.2%) were relapses and 47 (2.2%) were return after default. The number of cases notified was 520 (20%) less than those in 2012.

Both the annual national notification rate (case detection rate) and registered prevalence were calculated at 0.4/10,000 population which is lower than that of 2012 at 0.6/10,000. Among new cases notified, 1,654 (81.6%) were MB and 374 (18.4%) PB. Females were 757 (37.3%) giving a female to male ratio of 1:1.7 suggesting that being male continues to be suggestive of a risk factor. The number of children among the new cases was 93 or (4.6%) which was less than those reported in 2012 by 65 cases. New leprosy cases notified with disability grade II were 262 or 12.9% which was slightly higher than those reported 2012 at 11.9% indicating that cases are detected late into the course of illness by health system. Table 1 below summarizes indicator data on new leprosy cases notified in 2013 by regions and those having disability grade II according to WHO classification. However, the trend of new leprosy cases detected for the past 20 years shows tremendous decline country wide as is displayed in table 7 below.
Table 7: New leprosy cases detected by indicators in 2013 by regions

<table>
<thead>
<tr>
<th>Region</th>
<th>All cases</th>
<th>new cases</th>
<th>new MB cases</th>
<th>new Female cases</th>
<th>new Children cases</th>
<th>new Disability grade II</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Dar Ilala I</td>
<td>39</td>
<td>94.9</td>
<td>34</td>
<td>91.9</td>
<td>16</td>
<td>43.2</td>
</tr>
<tr>
<td>Dar Kinondoni</td>
<td>84</td>
<td>96.4</td>
<td>69</td>
<td>85.2</td>
<td>21</td>
<td>25.9</td>
</tr>
<tr>
<td>Dar Temeke</td>
<td>86</td>
<td>94.2</td>
<td>61</td>
<td>75.3</td>
<td>22</td>
<td>27.2</td>
</tr>
<tr>
<td>Dar Ilala II</td>
<td>14</td>
<td>85.7</td>
<td>12</td>
<td>100.0</td>
<td>6</td>
<td>50.0</td>
</tr>
<tr>
<td>Dar es Salaam</td>
<td>223</td>
<td>94.6</td>
<td>176</td>
<td>83.4</td>
<td>65</td>
<td>30.8</td>
</tr>
<tr>
<td>Arusha</td>
<td>9</td>
<td>100.0</td>
<td>9</td>
<td>100.0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Dodoma</td>
<td>54</td>
<td>100.0</td>
<td>51</td>
<td>94.4</td>
<td>18</td>
<td>33.3</td>
</tr>
<tr>
<td>Iringa</td>
<td>14</td>
<td>100.0</td>
<td>12</td>
<td>85.7</td>
<td>1</td>
<td>7.1</td>
</tr>
<tr>
<td>Kagera</td>
<td>98</td>
<td>85.7</td>
<td>74</td>
<td>88.1</td>
<td>25</td>
<td>29.8</td>
</tr>
<tr>
<td>Kigoma</td>
<td>86</td>
<td>92.7</td>
<td>76</td>
<td>85.4</td>
<td>28</td>
<td>31.5</td>
</tr>
<tr>
<td>Kilimanjaro</td>
<td>7</td>
<td>85.7</td>
<td>4</td>
<td>66.7</td>
<td>2</td>
<td>33.3</td>
</tr>
<tr>
<td>Lindi</td>
<td>201</td>
<td>100.0</td>
<td>143</td>
<td>77.7</td>
<td>87</td>
<td>47.3</td>
</tr>
<tr>
<td>Manyara</td>
<td>10</td>
<td>100.0</td>
<td>8</td>
<td>80.0</td>
<td>2</td>
<td>20.0</td>
</tr>
<tr>
<td>Mara</td>
<td>36</td>
<td>88.9</td>
<td>21</td>
<td>65.6</td>
<td>11</td>
<td>34.4</td>
</tr>
<tr>
<td>Mbeya</td>
<td>37</td>
<td>35</td>
<td>33</td>
<td>94.3</td>
<td>10</td>
<td>28.6</td>
</tr>
<tr>
<td>Morogoro</td>
<td>259</td>
<td>97.7</td>
<td>199</td>
<td>78.7</td>
<td>71</td>
<td>28.1</td>
</tr>
<tr>
<td>Mwanza</td>
<td>225</td>
<td>93.8</td>
<td>143</td>
<td>67.8</td>
<td>108</td>
<td>51.2</td>
</tr>
<tr>
<td>Mwara</td>
<td>93</td>
<td>100.0</td>
<td>90</td>
<td>96.8</td>
<td>27</td>
<td>29.0</td>
</tr>
<tr>
<td>Pwani</td>
<td>76</td>
<td>93.4</td>
<td>64</td>
<td>90.1</td>
<td>22</td>
<td>31.0</td>
</tr>
<tr>
<td>Ruwana</td>
<td>142</td>
<td>92.3</td>
<td>120</td>
<td>91.6</td>
<td>61</td>
<td>46.6</td>
</tr>
<tr>
<td>Ruvuma</td>
<td>129</td>
<td>96.9</td>
<td>82</td>
<td>65.6</td>
<td>59</td>
<td>47.2</td>
</tr>
<tr>
<td>Shinyanga</td>
<td>84</td>
<td>96.4</td>
<td>73</td>
<td>90.1</td>
<td>27</td>
<td>33.3</td>
</tr>
<tr>
<td>Singida</td>
<td>29</td>
<td>100.0</td>
<td>25</td>
<td>86.2</td>
<td>7</td>
<td>24.1</td>
</tr>
<tr>
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<td>93</td>
<td>98.9</td>
<td>74</td>
<td>80.4</td>
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<td>34.8</td>
</tr>
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<td>101</td>
<td>88.6</td>
<td>44</td>
<td>38.6</td>
</tr>
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<td>1,578</td>
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<td>707</td>
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</tr>
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<td>97.7</td>
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<td>43</td>
<td>50.0</td>
</tr>
<tr>
<td>Zanzibar</td>
<td>103</td>
<td>97.1</td>
<td>76</td>
<td>76.0</td>
<td>50</td>
<td>50.0</td>
</tr>
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<td>1,664</td>
<td>81.6</td>
<td>757</td>
<td>37.3</td>
</tr>
</tbody>
</table>

A figure 15 below summarizes the contribution of new leprosy cases by different regions. It shows that 80% of cases which were detected in 2013 were from only 12 regions.
Since 2004, the proportion of new MB cases detected annually has been slowly increasing from 68% to over 80% while the proportion of females and children detected has been declining slowly from 44% down to 37% and 10% to 4.6% respectively. The changes in proportion of MB cases and children notified annually suggest reduction in the prevalence of the disease in the country. Moreover, the data also suggest that females could be utilising less the available leprosy services compared to their male partners. This is summarised in the figures 16 and 17.

The trend of leprosy case notification over years shows a progressive decrease for both PB and MB from over 5,000 cases in 2003 down to just above 2000 in 2013. However, the proportions
of MB cases remain high and have been on the increase while the number and proportions of PB cases were gradually declining as shown below in figure 3.

Figure 17: Trends of MB cases, children and females among new leprosy cases: 2003 -2013

For over a decade now, the proportion of disability grade 2 among new detected cases has remained higher above 12%, however, there has been a gradual decrease in rates due to change and growth of population as shown in figure 18 below.

Figure 18: Trend of disability grade 2, percentage among new cases and rates per 1,000,000 populations
4.2 Registered prevalence

The leprosy prevalence rate in 2013 was 0.4/10,000 population which remains below the WHO leprosy elimination target of 1 case per 10,000 populations since when was attained in 2006. But there are still 22 districts from different regions with prevalence rates higher than 1/10,000, as shown in table 8 below. These data show that the regions of Lindi and Morogoro had most of their districts still endemic and remain at high risk of increased disease burden. Overall, the prevalence of leprosy has showed a steady decline since 2002. The prevalence detection ratio has remained around 1 between 2004 and 2013 suggesting that patients are timely removed from the registers after completing their MDT treatment.

Figure 19: Trends of new leprosy cases detected and registered in Tanzania 1983 – 2013
Table 8: Districts with prevalence or detection rate greater or equal to 1.0/10,000 population in 2013

<table>
<thead>
<tr>
<th>No.</th>
<th>Districts</th>
<th>new case detection rate</th>
<th>Prevalence rate</th>
</tr>
</thead>
<tbody>
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<td>Nanyumbu</td>
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<td>6.9</td>
</tr>
<tr>
<td>2</td>
<td>South &amp; Central</td>
<td>4.0</td>
<td>4.2</td>
</tr>
<tr>
<td>3</td>
<td>Nkans DC</td>
<td>2.5</td>
<td>4.0</td>
</tr>
<tr>
<td>4</td>
<td>Liwale</td>
<td>5.3</td>
<td>4.0</td>
</tr>
<tr>
<td>5</td>
<td>Lindi Urban (E)</td>
<td>3.4</td>
<td>3.8</td>
</tr>
<tr>
<td>6</td>
<td>Mkanga</td>
<td>2.3</td>
<td>3.2</td>
</tr>
<tr>
<td>7</td>
<td>Muheza</td>
<td>0.7</td>
<td>2.6</td>
</tr>
<tr>
<td>8</td>
<td>Lindi Rural (West)</td>
<td>3.3</td>
<td>2.5</td>
</tr>
<tr>
<td>9</td>
<td>Chato</td>
<td>1.4</td>
<td>2.2</td>
</tr>
<tr>
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<td>Tunduru</td>
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<td>2.2</td>
</tr>
<tr>
<td>11</td>
<td>Masasi DC</td>
<td>1.2</td>
<td>1.4</td>
</tr>
<tr>
<td>12</td>
<td>Morogoro RN -</td>
<td>1.6</td>
<td>1.4</td>
</tr>
<tr>
<td>13</td>
<td>Kibaha DC</td>
<td>1.1</td>
<td>1.4</td>
</tr>
<tr>
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<td>1.3</td>
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<td>Ulanga</td>
<td>0.5</td>
<td>1.1</td>
</tr>
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<td>Kilombero</td>
<td>2.4</td>
<td>1.1</td>
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<td>1.5</td>
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<td>Rufiji</td>
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<td>Shinyanga MC</td>
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</tr>
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<td>22</td>
<td>Morogoro Urban</td>
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</table>

4.3 Leprosy treatment outcome

4.3.1 Treatment outcome of PB leprosy
The treatment outcome of PB leprosy cases who started treatment in 2012 shows that, 469 (96%) completed treatment while 7 (4%) defaulted from treatment and there was no death reported. No patient was transferred out of region during the course of treatment. Table 9 below summarizes treatment outcome of PB leprosy cases notified in 2012 by region. The data in the table below suggests that Kilimanjaro and Singida regions should strengthen follow up of cases and ensure that all cases notified are evaluated at the end of treatment.
Table 9: Treatment outcome of PB leprosy reported in 2012

<table>
<thead>
<tr>
<th>District</th>
<th>Treatment completed</th>
<th>Died</th>
<th>Transferred Out</th>
<th>Out of Control</th>
<th>Total</th>
<th>Reported in 2012</th>
<th>% completed</th>
</tr>
</thead>
<tbody>
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<td>12</td>
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<td>0</td>
<td>0</td>
<td>8</td>
<td>8</td>
<td>100</td>
</tr>
<tr>
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<td>0</td>
<td>3</td>
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<td>29</td>
<td>79</td>
</tr>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
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<td>0</td>
<td>5</td>
<td>46</td>
<td>49</td>
<td>84</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
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<td>100</td>
</tr>
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</tr>
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</tr>
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<td>47</td>
<td>47</td>
<td>100</td>
</tr>
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</table>

4.3.2 Treatment outcome of MB leprosy

Treatment outcome of MB leprosy cases notified in 2011 shows that, 1,870 (93%) completed treatment while 7 (0.3%) patients died during treatment period. However, the data also shows that 67 patients did not complete their treatment due to various reasons: 34 (1.7%) defaulted from treatment and 33 (1.6%) cases were transferred out during treatment. Table 10 below
summarizes treatment results of MB cases notified in 2011. The three regions of Ilala II, Singida and Tanga had the lowest case holding levels of below 90%. However, most of those whom seem to have been lost to follow up would have self-transferred to other MDT centres after closure of Muhimbili clinic.

Table 10: Treatment outcome of MB leprosy notified in 2011

<table>
<thead>
<tr>
<th>District</th>
<th>Treatment completed</th>
<th>Died</th>
<th>Transferred Out</th>
<th>Out of Control</th>
<th>Total</th>
<th>Reported in 2011</th>
<th>% completed</th>
</tr>
</thead>
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<td>68</td>
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4.4 Activities related to prevention of disabilities (POD)

4.4.1 People with leprosy related disabilities
In 2013, a total of 2,438 people affected by leprosy (PALs) with disabilities were registered. Among them, 449 (18.4%) were staying in care centres. A total of 1,693 (69.4%) were reviewed to assess their physical impairments. Results show that 1,181 (69.8%) showed improvements, 444 (26.2%) showed no change while 68 (4%) deteriorated.

4.4.2 Leprosy reactions
A total of 750 leprosy patients were reported with reactions and started on treatment. Out of them, adults MB cases were 85.9% (644) and for PB 96 (12.8%). cases. Children from both types were 1.3% (10). Of all the reported cases, 97 were admitted because of severe reactions. The table below shows patients reported with reactions by region per category.
<table>
<thead>
<tr>
<th>Region</th>
<th>MB(A)</th>
<th>MB(C)</th>
<th>PB(A)</th>
<th>PB(C)</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dar Ilala I</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Dar Kinondoni</td>
<td>33</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>Dar Temeke</td>
<td>15</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>Ilala II</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>Arusha</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dodoma</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Iringa</td>
<td>11</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Kagera</td>
<td>12</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Kigoma</td>
<td>17</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Kilimanjaro</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Lindi</td>
<td>15</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Manyara</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Mara</td>
<td>22</td>
<td>0</td>
<td>17</td>
<td>0</td>
<td>39</td>
</tr>
<tr>
<td>Mbeya</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Morogoro</td>
<td>63</td>
<td>0</td>
<td>14</td>
<td>0</td>
<td>77</td>
</tr>
<tr>
<td>Mtwara</td>
<td>38</td>
<td>0</td>
<td>11</td>
<td>0</td>
<td>49</td>
</tr>
<tr>
<td>Mwanza</td>
<td>38</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>38</td>
</tr>
<tr>
<td>Pwani</td>
<td>40</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>44</td>
</tr>
<tr>
<td>Rukwa</td>
<td>67</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>71</td>
</tr>
<tr>
<td>Ruvuma</td>
<td>17</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Shinyanga</td>
<td>64</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>68</td>
</tr>
<tr>
<td>Singida</td>
<td>25</td>
<td>0</td>
<td>7</td>
<td>2</td>
<td>34</td>
</tr>
<tr>
<td>Tabora</td>
<td>17</td>
<td>1</td>
<td>11</td>
<td>0</td>
<td>29</td>
</tr>
<tr>
<td>Tanga</td>
<td>34</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>36</td>
</tr>
<tr>
<td>Zanzibar</td>
<td>82</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>90</td>
</tr>
<tr>
<td>Tanzania</td>
<td>644</td>
<td>7</td>
<td>96</td>
<td>3</td>
<td>750</td>
</tr>
</tbody>
</table>

4.4.3 Specialized care of people with disabilities

During the year 2013, a total of 387 persons affected by leprosy (PALS) were admitted to different hospitals in the country. These admissions made up of 569 of reasons for admissions. Ulcers and wounds ranked high as the main reasons for admission by 272 (47.8%) followed by reactions 97(17%). Surgery (SPRS) ranked third and accounted for 78(13.7%), and the least was eye pathology which was 9 (1.6 %). In addition, PALS were fitted with prostheses. The table below summarises the number of surgeries done, prostheses fitted and prosthesis repairs for people affected by leprosy in 2013 by regions.
Table 12: Number of surgeries, prosthesis fitted and repair in regions 2013

<table>
<thead>
<tr>
<th>Region</th>
<th>R/surgery</th>
<th>Prosthesis</th>
<th>Prosthesis repairs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temeke</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dodoma</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kigoma</td>
<td>6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mara</td>
<td>2</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Morogoro</td>
<td>24</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Mwanza</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pwani</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Shinyanga</td>
<td>38</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Tabora</td>
<td>-</td>
<td>-</td>
<td>14</td>
</tr>
<tr>
<td>Tanga</td>
<td>-</td>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>78</strong></td>
<td><strong>28</strong></td>
<td><strong>26</strong></td>
</tr>
</tbody>
</table>

4.4.4 Footwear Programme

In 2013, a total of 4404 were produced centrally and distributed to regions country wide. By the end of the year, 2,444 pairs of protective sandals were distributed to people affected by leprosy. This is only 55% of the protective sandals reaching PALs in need. Another 259 pairs of shoes were made locally in several regions by the local shoemakers. In the case of special boots, 281 pairs were fabricated and 204 footwear repairs were done for PALs with foot deformities. The table below shows the amount of footwear distributed to people affected by leprosy by region in 2013. This includes factory made sandals, locally produced shoes, special boots and repairs done.
<table>
<thead>
<tr>
<th>Region</th>
<th>Ready made sandals</th>
<th>Locally produced shoes</th>
<th>Special boots</th>
<th>Footwear repairs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ilala I</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Ilala II</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Temeke</td>
<td>38</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Kinondoni</td>
<td>55</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dodoma</td>
<td>51</td>
<td>0</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Iringa</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Kagera</td>
<td>27</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Kigoma</td>
<td>114</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Kilimanjaro</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lindi</td>
<td>72</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mara</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Mbeya</td>
<td>57</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Morogoro</td>
<td>239</td>
<td>48</td>
<td>104</td>
<td>12</td>
</tr>
<tr>
<td>Mwanza</td>
<td>274</td>
<td>63</td>
<td>0</td>
<td>56</td>
</tr>
<tr>
<td>Pwani</td>
<td>175</td>
<td>38</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Rukwa</td>
<td>70</td>
<td>0</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Ruvuma</td>
<td>95</td>
<td>0</td>
<td>42</td>
<td>26</td>
</tr>
<tr>
<td>Shinyanga</td>
<td>340</td>
<td>65</td>
<td>86</td>
<td>38</td>
</tr>
<tr>
<td>Singida</td>
<td>118</td>
<td>0</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Tabora</td>
<td>480</td>
<td>40</td>
<td>9</td>
<td>63</td>
</tr>
<tr>
<td>Tanga</td>
<td>185</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zanzibar</td>
<td>22</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Tanzania</strong></td>
<td><strong>2,444</strong></td>
<td><strong>259</strong></td>
<td><strong>281</strong></td>
<td><strong>204</strong></td>
</tr>
</tbody>
</table>
Table 14: Materials and tools distributed for fabrication of special and local shoes production per region in 2013

<table>
<thead>
<tr>
<th>REGIONS</th>
<th>LEATHER</th>
<th>MCR</th>
<th>H.RUBBER</th>
<th>GLUE</th>
<th>L.LEATHER</th>
<th>THREAD</th>
<th>S.RIVERTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zanzibar</td>
<td>15</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>Morogoro Chazil</td>
<td>15</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>Morogoro Nazareth</td>
<td>50</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>10</td>
<td>3</td>
<td>300</td>
</tr>
<tr>
<td>Tanga Misufini</td>
<td>30</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>Shinyanga Shirati</td>
<td>30</td>
<td>2</td>
<td>2</td>
<td>8</td>
<td>8</td>
<td>2</td>
<td>300</td>
</tr>
<tr>
<td>Shinyanga Busanda</td>
<td>30</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>Kagera Biharamuro</td>
<td>30</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>Pwani Kindwilwi</td>
<td>30</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>Tabora Sikonge</td>
<td>50</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>8</td>
<td>2</td>
<td>200</td>
</tr>
<tr>
<td>Mwanza Bukumbi</td>
<td>30</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>200</td>
</tr>
<tr>
<td>Ruvuma</td>
<td>30</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>200</td>
</tr>
</tbody>
</table>
5 LABORATORY SERVICES

The role of the CTRL is to oversee AFB smear microscopy services throughout the country. The CTRL has other core functions that help in appropriate diagnosis and effective patient management. The operation of the routine surveillance system (RSS) on use of drug susceptibility (DST) tests for guiding and monitoring patient’s treatment. In addition, it has overall responsibility of setting up national standards and overseeing the implementation of policies. Decentralization of certain activities like training, supervision and implementing external quality assessment of smear microscopy has been done. The regional laboratory technologists (RLT) in collaboration with Regional TB and Leprosy Coordinators (RTLC) perform these activities. Through this decentralization, implementation of the mentioned tasks taken over by the regions is supposed improve the efficiency of the diagnostic services at peripheral levels. For a long time, countries have demonstrated effective TB control using microscopy-based diagnosis and monitoring combined with well-managed treatment programmes. Effective control involves access to laboratory services at every level, which requires managing and supporting laboratory network that provide accurate reliable and consistent services.

5.1 Collaboration with Partners

The CTRL has been collaborating with the International Union Against Tuberculosis and Lung Diseases (IUATLD), which supported the (NTLP) from 1977 to 1997. Thereafter, collaboration has been established with other partners such as the Royal Netherlands TB Association (KNCV), Swiss Development for International Cooperation (SDC), Royal Netherland Association (NRA) and German Leprosy and TB Relief Association (GLRA). In addition, the CTRL received technical support and TB laboratory supplies and commodities from other partners such as; FIND through expand TB project, FIND/CDC and PATH through USAID support.

5.2 Laboratory Workload

In 2013, 7,840 specimens were received at the CTRL, out of these 1398 (18%) were for studies/projects and 6,442(82%) were from different parts of the country for AFB smear microscopy, culture and DST examinations.

Of these 6442 specimens 1,766 (18%) were from Muhimbili National Hospital (MNH) for routine AFB smear microscopy examination only and 4,676 (73%) were set for culture and DST as part of MDR-TB routine surveillance system. However, culture was done on 4,529 sputum specimens using solid Lowenstein-Jensen (LJ) media of which 2182 (48.1%) were culture negative while 2,217 (49%) were positive isolates and some of these positive isolates (Retreatment cases) were set for DST. DST results were available for 771 isolates.
Of these, 246 (69%) of all isolates with DST results were sensitive to all four first line anti-TB drugs, 22 (9%) of the positive isolates had resistance to one or more anti-TB drugs and 55 isolates (22%) were multi-drug resistant.

Table 15: Culture and DST Results

<table>
<thead>
<tr>
<th>Source</th>
<th>Specimens Received</th>
<th>Culture Done</th>
<th>Positive Isolates</th>
<th>DST Results</th>
<th>Sensitive to 4 Drugs</th>
<th>Any Resistance</th>
<th>MDR</th>
</tr>
</thead>
<tbody>
<tr>
<td>MNH</td>
<td>1,766</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Upcountry</td>
<td>4,676</td>
<td>4,529*</td>
<td>2,217</td>
<td>771</td>
<td>246</td>
<td>22</td>
<td>55</td>
</tr>
<tr>
<td>Projects (INH, LPA &amp; REMSTAT)</td>
<td>1,398</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Total</td>
<td>7,840</td>
<td>4,529*</td>
<td>2,217</td>
<td>771</td>
<td>246</td>
<td>22</td>
<td>55</td>
</tr>
</tbody>
</table>

Table 16: Culture indicators

<table>
<thead>
<tr>
<th>Smear Result</th>
<th>Positive</th>
<th>Negative</th>
<th>Contaminated</th>
<th>Not done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>1,831</td>
<td>966</td>
<td>86</td>
<td>2</td>
</tr>
<tr>
<td>Negative</td>
<td>372</td>
<td>1200</td>
<td>24</td>
<td>10</td>
</tr>
<tr>
<td>Unknown</td>
<td>14</td>
<td>18</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>2217</td>
<td>2182</td>
<td>110</td>
<td>20</td>
</tr>
</tbody>
</table>

5.2.1 Culture analysis

The culture analysis shows an increase on smear negative/culture positives, a decrease on smear positive/culture positive. There was decrease of false negative during quarter 1 to three and an increase in quarter four of almost equal magnitude which came close to 50% towards the end of the year as can be seen in the graph below.
Figure 21: Quarterly monitoring of culture performance by the CTRL in 2013

Quarterly monitoring of culture performance
Laboratory CTRL Year 2013

Figure 22: Summary of the liquid culture implementation

MGIT results in 2013 Total

- Contaminated
- Negative
- Positive
- Total done
## 5.2.2 DRUG SUSCEPTIBILITY TESTING (DST) – PROPORTIONAL METHOD

Table 17: DST Profile

<table>
<thead>
<tr>
<th></th>
<th>New case</th>
<th>Previously treated</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Total samples with DST results</td>
<td>23</td>
<td>91</td>
<td>223</td>
</tr>
<tr>
<td>Sensitive to all four drugs</td>
<td>21</td>
<td>12</td>
<td>148</td>
</tr>
<tr>
<td><strong>Any resistance</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INH</td>
<td>2</td>
<td>0.8</td>
<td>60</td>
</tr>
<tr>
<td>RIF</td>
<td>1</td>
<td>0.4</td>
<td>64</td>
</tr>
<tr>
<td>ETH</td>
<td>0</td>
<td>0.0</td>
<td>26</td>
</tr>
<tr>
<td>STR</td>
<td>1</td>
<td>0.4</td>
<td>47</td>
</tr>
<tr>
<td><strong>Mono resistance</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isoniazid</td>
<td>1</td>
<td>0.4</td>
<td>2</td>
</tr>
<tr>
<td>Rifampicin</td>
<td>0</td>
<td>0.0</td>
<td>9</td>
</tr>
<tr>
<td>Ethambutol</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>Streptomycin</td>
<td>0</td>
<td>0.0</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1</td>
<td>0.4</td>
<td>14</td>
</tr>
<tr>
<td><strong>Multidrug resistance</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H+R</td>
<td>0</td>
<td>0.0</td>
<td>15</td>
</tr>
<tr>
<td>H+R+E</td>
<td>0</td>
<td>0.0</td>
<td>2</td>
</tr>
<tr>
<td>H+R+S</td>
<td>1</td>
<td>0.4</td>
<td>15</td>
</tr>
<tr>
<td>H+R+E+S</td>
<td>0</td>
<td>0.0</td>
<td>22</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1</td>
<td>0.4</td>
<td>54</td>
</tr>
<tr>
<td><strong>Poly resistance other than MDR</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H+E</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>H+S</td>
<td>0</td>
<td>0.0</td>
<td>4</td>
</tr>
<tr>
<td>H+E+S</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>R+E</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>R+S</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
</tr>
<tr>
<td>R+E+S</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>E+S</td>
<td>0</td>
<td>0.0</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>0</td>
<td>0.0</td>
<td>7</td>
</tr>
</tbody>
</table>
5.3 Genexpert MTB/Rif Implementation in Tanzania – Rapid DST

The Xpert MTB/RIF assay, which operates on the GeneXpert (GX) system (Cepheid, CA, USA) is a relatively new technology which was endorsed by the World Health Organization (WHO) in 2010 for use in low and middle income countries for the diagnosis of TB and detection of rifampicin resistance *(WHO news release; December 2010)*. This test is being adopted in
Tanzania as a diagnostic tool for the identification of Tuberculosis using the MTB-RIF cartridges. Xpert MTB/RIF has shown to be more sensitive than smear microscopy (Boehme et al., 2010) and therefore it increases the detection of TB. It is especially useful in historically difficult to diagnose groups such as people living with HIV and in children and it can determine resistance to rifampicin, which is used as a proxy for MDR diagnosis without culture and DST testing.

In Tanzania, these requirements can generally be met at regional and district laboratories. Tanzania was an early adopter of the technology, with GXP testing commencing in 2009. However, the majority of sites became operational in 2011 and 2012. The CTRL, with support from one of the implementing partners (PATH) held an Xpert stakeholders meeting in Dar es Salaam early 2013, where the lack of information available from Xpert sites was a concern. A few sites were collecting routine data or conducting recommended servicing and maintenance of equipment. Therefore, to fill this gap, FIND (with funding by CDC Tanzania under its CDC Cooperative Agreement) planned together with CTRL to visit all sites and gather information pertaining to implementation using a standardized checklist, as well as to gather data from the Xpert instruments to determine the challenges and gaps, in order to develop a clear way forward with regard to FIND technical assistance and CTRL priorities for support of the Xpert laboratory network.

In total, 15 sites were assessed in 7 regions. Four sites are exclusively research sites and do not test routine patients, representing three different research centers. A further 2 sites with the GXP testing are funded by research organizations in accordance with their own protocols but test routine patients. One site is partially funded for research but also provides patient testing. Five sites are supported by partners such as FIND and PATH and the NTLP is responsible for the rest of the sites.

There may be other sites in Tanzania but they were unknown to the program at the time of visit.

5.3.1 The main aims of the Xpert assessment were as follows:
1. Gather data from Xpert instruments to determine test performance characteristics
2. Pilot a prototype checklist to determine its use as a tool for future supervisions
3. Gather data regarding laboratory and programmatic aspects of Xpert implementation to inform CTRL/NTLP planning
4. Confirm the presence of instruments in some sites, collect relevant documentation and meet with partner organizations responsible for supporting these sites
5. Undertake calibration of instruments using remote calibration kits supplied by FIND with CDC Tanzania support
5.3.2 Observation on GXP Implementation in the Country

- Majority of sites not utilized to their maximum capacity.
- Instruments currently used at between 7 and 71% capacity giving the opportunity to expand TB diagnosis in existing locations.
- Different algorithm were used hence it was not possible to measure performance in specific risk groups.
- High error rates were observed due power cuts.
- Uneven distribution of instruments in the country with majority of the machines in Mbeya region due to partners support.

Table 18: Sites included in FIND-CTRL assessment visits conducted in September 2013

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Region</th>
<th>District</th>
<th>Site status</th>
<th>Site Type</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amana</td>
<td>Dar es Salaam</td>
<td>Ilala</td>
<td>Active</td>
<td>Public</td>
<td>Jul-12</td>
</tr>
<tr>
<td>Apopo-SUA</td>
<td>Morogoro</td>
<td>Morogoro urban</td>
<td>Active</td>
<td>Research</td>
<td>Nov-10</td>
</tr>
<tr>
<td>Bagamoyo</td>
<td>Pwani (coast)</td>
<td>Bagamoyo</td>
<td>Active</td>
<td>Research</td>
<td>Jun-12</td>
</tr>
<tr>
<td>Bugando Medical Centre</td>
<td>Mwanza</td>
<td>Nyamagana</td>
<td>Active</td>
<td>Public</td>
<td>Oct-13</td>
</tr>
<tr>
<td>Butimba Prison Health Facility</td>
<td>Mwanza</td>
<td>Nyamagana</td>
<td>Active</td>
<td>Prisoners</td>
<td>Dec-13</td>
</tr>
<tr>
<td>CTRL</td>
<td>Dar es Salaam</td>
<td>Ilala</td>
<td>Active</td>
<td>Public</td>
<td>Feb-12</td>
</tr>
<tr>
<td>Geita District Hospital</td>
<td>Geita</td>
<td>Geita urban</td>
<td>Active</td>
<td>Public</td>
<td>Nov-13</td>
</tr>
<tr>
<td>Haydom Lutheran hospital</td>
<td>Manyara</td>
<td>Haydom</td>
<td>Active</td>
<td>Research</td>
<td>Dec-13</td>
</tr>
<tr>
<td>Iringa</td>
<td>Iringa</td>
<td>Iringa urban</td>
<td>Active</td>
<td>Public</td>
<td>Jul-12</td>
</tr>
<tr>
<td>KCRI</td>
<td>Kilimanjaro</td>
<td>Moshi Urban</td>
<td>Active</td>
<td>Research</td>
<td>Mar-12</td>
</tr>
<tr>
<td>Keiko Prison Health Facility</td>
<td>Dar es Salaam</td>
<td>Temeka</td>
<td>Active</td>
<td>Prisoners</td>
<td>Dec-13</td>
</tr>
<tr>
<td>Kyela</td>
<td>Mbeya</td>
<td>Kyela</td>
<td>Active</td>
<td>Public</td>
<td>Feb-10</td>
</tr>
<tr>
<td>Mbeya Regional Hospital</td>
<td>Mbeya</td>
<td>Mbeya Urban</td>
<td>Active</td>
<td>Public</td>
<td>Dec-10</td>
</tr>
<tr>
<td>Mererani Health Center</td>
<td>Manyara</td>
<td>Hai</td>
<td>Active</td>
<td>Public</td>
<td>Nov-13</td>
</tr>
<tr>
<td>MMRC</td>
<td>Mbeya</td>
<td>Mbeya Urban</td>
<td>Active</td>
<td>Research</td>
<td>Nov-12</td>
</tr>
<tr>
<td>Mobile Diagnostic and Training Centre</td>
<td>Mbeya</td>
<td>Mbeya rural</td>
<td>Active</td>
<td>Public</td>
<td>Nov-09</td>
</tr>
<tr>
<td>Mwananyamala</td>
<td>Dar es Salaam</td>
<td>Kinondoni</td>
<td>Active</td>
<td>Public</td>
<td>Mar-13</td>
</tr>
<tr>
<td>Ruanda Prison</td>
<td>Mbeya</td>
<td>Mbeya Urban</td>
<td>Active</td>
<td>Prisoners</td>
<td>Dec-09</td>
</tr>
<tr>
<td>Sekotoure</td>
<td>Mwanza</td>
<td>Nyamagana</td>
<td>Active</td>
<td>Public</td>
<td>Nov-12</td>
</tr>
<tr>
<td>Tanga Bombo Hospital</td>
<td>Tanga</td>
<td>Tanga Urban</td>
<td>Active</td>
<td>Public</td>
<td>Nov-13</td>
</tr>
<tr>
<td>Temekte</td>
<td>Dar es Salaam</td>
<td>Temekte</td>
<td>Active</td>
<td>Public</td>
<td>Apr-12</td>
</tr>
<tr>
<td>Ukonga Prison Health Facility</td>
<td>Dar es Salaam</td>
<td>Ilala</td>
<td>Active</td>
<td>Prisoners</td>
<td>Dec-13</td>
</tr>
<tr>
<td>Mira district hospital</td>
<td>Manyara</td>
<td>Babati</td>
<td>Active</td>
<td>Public</td>
<td>Nov-13</td>
</tr>
<tr>
<td>Mwananyamala Ilakara</td>
<td>Dar es Salaam</td>
<td>Kinondoni</td>
<td>Not active</td>
<td>Research</td>
<td>May-12</td>
</tr>
<tr>
<td>Tunduma</td>
<td>Mbeya</td>
<td>Not active</td>
<td>Public</td>
<td>Nov-12</td>
<td></td>
</tr>
</tbody>
</table>

Sites indicated in red did not have GXP. Where modules are indicated in brackets this means the facility had extra equipment available but was not currently utilized so no data were collected for these.
Table 19: Summary analysis of the Xpert MTB RIF in 2013

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total # Xpert tests</td>
<td>1,164</td>
<td>1,134</td>
<td>1,534</td>
<td>1,164</td>
<td>1,361</td>
<td>1,883</td>
<td>1,270</td>
<td>1,028</td>
<td>1,300</td>
<td>1,126</td>
<td>1,361</td>
<td>1,361</td>
<td>15,985</td>
</tr>
<tr>
<td>Total # successful Xpert tests</td>
<td>1,060</td>
<td>1,040</td>
<td>1,350</td>
<td>1,050</td>
<td>1,220</td>
<td>1,540</td>
<td>1,040</td>
<td>1,060</td>
<td>1,090</td>
<td>1,030</td>
<td>1,220</td>
<td>1,190</td>
<td>14,350</td>
</tr>
<tr>
<td>Total # Xpert tests MTB+</td>
<td>255</td>
<td>282</td>
<td>334</td>
<td>397</td>
<td>374</td>
<td>416</td>
<td>468</td>
<td>390</td>
<td>348</td>
<td>340</td>
<td>300</td>
<td>3,302</td>
<td></td>
</tr>
<tr>
<td>Total # Xpert tests RR+</td>
<td>8</td>
<td>20</td>
<td>12</td>
<td>10</td>
<td>16</td>
<td>19</td>
<td>25</td>
<td>21</td>
<td>24</td>
<td>21</td>
<td>21</td>
<td>204</td>
<td></td>
</tr>
<tr>
<td>Total # error results</td>
<td>112</td>
<td>46</td>
<td>69</td>
<td>66</td>
<td>73</td>
<td>138</td>
<td>139</td>
<td>76</td>
<td>32</td>
<td>48</td>
<td>69</td>
<td>525</td>
<td></td>
</tr>
<tr>
<td>Average Error rate</td>
<td>11%</td>
<td>6%</td>
<td>5%</td>
<td>7%</td>
<td>8%</td>
<td>6%</td>
<td>8%</td>
<td>4%</td>
<td>3%</td>
<td>8%</td>
<td>6%</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>Average Rate of Unsuccessful tests</td>
<td>11%</td>
<td>5%</td>
<td>7%</td>
<td>8%</td>
<td>8%</td>
<td>10%</td>
<td>10%</td>
<td>9%</td>
<td>6%</td>
<td>10%</td>
<td>12%</td>
<td>11%</td>
<td></td>
</tr>
<tr>
<td>Average Rate of Invalids</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
<td>6%</td>
<td>3%</td>
<td>2%</td>
<td>2%</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Average Rate of No results</td>
<td>5%</td>
<td>3%</td>
<td>5%</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Average Rate of Xpert MDR positivity</td>
<td>5%</td>
<td>6%</td>
<td>5%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>Average Rate of Xpert Rif resistance</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Average Instrument capacity being utilised</td>
<td>53%</td>
<td>47%</td>
<td>49%</td>
<td>48%</td>
<td>48%</td>
<td>48%</td>
<td>48%</td>
<td>48%</td>
<td>49%</td>
<td>49%</td>
<td>49%</td>
<td>49%</td>
<td></td>
</tr>
</tbody>
</table>

*The higher rate on RR (rifampicin resistance) seen in the month of July was due to EQA being carried out.

Figure 25: Genexpert testing sites per year – Tanzania
5.4 External Quality Assurance of Drug Resistance

In December 2013, CTRL participated in an External Quality Assurance of drug resistance organized by WHO/IUATLD Supranational laboratory (SLN) Antwerp, Belgium. A total of 20 strains were retested at CTRL against Isoniazid, Rifampicin, Streptomycin and Ethambutol. Preliminary feedback results on the panel of strains tested are as shown below:
Table 23: Summary EQA (drug resistance)

<table>
<thead>
<tr>
<th>Drugs tested</th>
<th>Streptomycin</th>
<th>Isoniazid</th>
<th>Rifampicin</th>
<th>Ethambutol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total correct results</td>
<td>16</td>
<td>20</td>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td>True resistant</td>
<td>10</td>
<td>14</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>False resistant</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>True susceptible</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>False susceptible</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Sensitivity (Ability to detect true resistance)</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>83%</td>
</tr>
<tr>
<td>Specificity (Ability to detect true susceptibility)</td>
<td>100%</td>
<td>100%</td>
<td>83%</td>
<td>100%</td>
</tr>
<tr>
<td>Predictive value for resistance (The rate of true resistance to total resistance)</td>
<td>100%</td>
<td>100%</td>
<td>93%</td>
<td>100%</td>
</tr>
<tr>
<td>Predictive value for susceptibility (The rate of true susceptibility to total susceptibility)</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>89%</td>
</tr>
<tr>
<td>Efficiency (Ratio between the number of correct results and the total number of results)</td>
<td>100%</td>
<td>100%</td>
<td>95%</td>
<td>93%</td>
</tr>
<tr>
<td>Reproducibility or Reliability (Intra-laboratory agreement between duplicate cultures expressed as a percentage)</td>
<td>90%</td>
<td>100%</td>
<td>90%</td>
<td>80%</td>
</tr>
</tbody>
</table>

5.5 Overall TB Laboratory Network Evaluation

5.5.1 Strengths
a) Wide coverage of the TB microscopy laboratory network with a microscopy manual
b) Presence of 3 TB public culture laboratories in the country with capacity for culture technique
c) Introduction of TB new diagnostic techniques in the country (LED, Xpert, HAIN)
d) Presence of the draft National TB Laboratory strategic Plan

5.5.2 Challenges
a) Inadequate laboratory human resources at the CTRL e.g Logistic officer
b) Inadequate room at the CTRL and some smear microscopy centers
   a. Poor information management system
c) Inadequate biosafety measures and practices in the laboratories
   a. No guidelines for sputum specimen referral
d) Weak coordination between public and research organizations
e) No guidelines and sustainability plan for Xpert MTB RIF rollout plan
f) Inadequate coverage of Lot EQA system in the country and where present not all implemented

5.5.3 Recommendation

a) Finalize and implement the National TB Laboratory Strategic Plan
b) Improve space at the CTRL, new laboratory is recommended
c) Strengthen laboratory human resource at CTRL for managing logistics on TB lab commodities
d) Strengthen information management system for TB laboratory network to facilitate planning, provision and implementation of lab services
e) Develop and implement guidelines for sputum specimen referral system in the country.
   i. Integrate the TB sample referral with the EID in Mbeya and throughout the country
   ii. Upgrade Public Health Lab in Zanzibar to perform DST
f) Strengthen and expand coverage of EQA system in the country
g) The zones and regions should take on more roles in managing their TB laboratory network – Mbeya can serve as a model and fast track Zanzibar
h) NTLP to conduct audit of all Rif Resistance previously detected by Xpert and manage them.
i) Strengthen the referral system to ensure all Rif resistant patients have 1st and 2nd line DST performed
j) Orient laboratory personnel at culture laboratory on MDR TB management.
6 OPERATIONAL RESEARCH ACTIVITIES

During this reporting period, the programme prepared and implemented various operational research activities in collaboration with various internal and external partners. Some of the research activities were a continuation of multi-country research projects involving Tanzania. The status of the implementation of these projects is explained hereinafter.

6.1 First National Tuberculosis Prevalence Survey

The implementation and completion of the First National TB Prevalence Survey, and the information collected will contribute to the improvement of TB control and prevention interventions in Tanzania through the provision of current and reliable data on the disease burden.

Towards the end of this reporting year, NTLP in collaboration with the national institute of medical research (NIMR) have successfully completed preliminary analysis with provisional results. The survey was designed as a nation-wide population-based survey in the adult population, in which districts were randomly selected, followed by a random selection of a single ward (denoted as cluster) within each district. A set number of participants in each ward were invited to participate in the survey. Participants were screened for being suspect of having TB by a simple symptom questionnaire and a chest X-ray (CXR). Identified TB-suspects were requested to submit three sputum specimens, of which two were assessed by microscopy in a field laboratory and the third was transported to the CTRL for culture.

During the year of field operations, there were four external monitoring visits conducted by the full time consultant, Dr Frank van Leth from KNCV and TME-TF experts of the World Health Organization. The conduct of the survey has been recommended as good and adhering to both the protocol and WHO standards.

The initial analysis has been completed and the provisional results show that, prevalence of bacteriological confirmed TB was 295 per 100,000 adult populations which is higher than expected. Prevalence was higher in mainland Tanzania compared to Zanzibar, rural compared to urban populations, men compared to women, older compared to younger participants and in participants with lower compared to higher socio-economic position.
The prevalence of HIV-infection in identified TB cases was 6.8%. Case Detection of new smear-positive adult TB patients was estimated to be between 42 and 54%. The majority of identified TB cases were 54 years or older, indicating a shifting epidemic from young HIV-infected patients as shown in the figure above.

The survey was conducted in the adult population only, which makes it impossible to assess the burden of childhood TB. Data analysis was hampered by missing data due to recording errors and misplacement of survey records, especially for the central laboratory. However, formal imputation analyses to account for this situation did not change the conclusions of the survey.

The next steps during the coming year will include validation of laboratory smear and culture results in collaboration with WHO and SNL at Antwerp, finalizing analysis and production of final report.
7 PROGRAMME SUPPORT ACTIVITIES

7.1 Procurement and Supply Management of Anti-TB and Anti-Leprosy Medicines

Procurement of TB commodities is done through the support from the Government and other development partners such as; the World Health Organization (WHO), the Global Drug Facility, (GDF), the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM). Adults and children’s first line anti-TB medications are procured through GDF support grant and leprosy medications are procured through the World Health Organization (WHO). On the other hand, the Global Fund procures second line anti TB drugs, ancillary medications for side effects management in patients taking second line drugs, single therapy Isoniazid tablets for INH prophylaxis among PLHIV and laboratory commodities related to MDR TB diagnosis and monitoring of patients on MDR-TB treatment.

The Program is responsible for estimating requirements of first and second line anti TB drugs, leprosy drugs and isoniazid preventive therapy (IPT). Also the program monitors commodity availability at point of service delivery. The coordination of procurement and supply of these products is through the MSD, which is an autonomous institution of the Ministry of Health and Social Welfare responsible for the procurement, clearing, storage and distribution of pharmaceuticals and medical supplies.

First line anti TB and anti-leprosy medications are transported to all regions by MSD headquarters through their zone offices in line with the distribution list prepared by the program. MDR TB drugs are transported directly to Kibong’oto National TB Hospital where patients are admitted for the intensive phase of treatment and thereafter distributed to districts with discharged MDR TB patients who will be receiving second line drugs in the continuation phase. NTLP is responsible for monitoring and supervision of anti-TB and leprosy drugs at all levels.
Table 21: Stock status of TB and Leprosy medicines at the end of December 2013

<table>
<thead>
<tr>
<th>Item Description</th>
<th>UOM</th>
<th>STOCK STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rifampicin 150mg + Isoniazid 75mg Tablets</td>
<td>672TB</td>
<td>7,463</td>
</tr>
<tr>
<td>Rifampicin 150mg + Isoniazid 75mg + Pyrazinamide 400mg + Ethambutol Hydrochloride 275mg Tablets</td>
<td>672TB</td>
<td>199</td>
</tr>
<tr>
<td>Mb Blister Adult</td>
<td>BLS</td>
<td>6,514</td>
</tr>
<tr>
<td>Pb Blister Adult</td>
<td>BLS</td>
<td>13</td>
</tr>
<tr>
<td>Mb Blister Child</td>
<td>BLS</td>
<td>99</td>
</tr>
<tr>
<td>Isoniazide Bp 100mg Tablets</td>
<td>100TB</td>
<td>2,883</td>
</tr>
<tr>
<td>Rifampicin 60mg + Isoniazid 30mg</td>
<td>84TB</td>
<td>9,286</td>
</tr>
<tr>
<td>Ethambutol Tablets 100mg</td>
<td>100TB</td>
<td>174</td>
</tr>
<tr>
<td>Pb Blister Child</td>
<td>BLS</td>
<td>662</td>
</tr>
<tr>
<td>Clofazimine Caps 50 Mgs</td>
<td>1000CP</td>
<td>18</td>
</tr>
<tr>
<td>Clofazimine Caps 100 Mg</td>
<td>500CP</td>
<td>41</td>
</tr>
<tr>
<td>Rifampicin 60mg + Isoniazid(Inh) 30mg + Pyrazinamide 150mg Tablets</td>
<td>84TB</td>
<td>5,124</td>
</tr>
<tr>
<td>Isoniazid 300mg</td>
<td>1000TB</td>
<td>1,961</td>
</tr>
<tr>
<td>Ethambutol 100mg Tablets</td>
<td>500 TB</td>
<td>207</td>
</tr>
<tr>
<td>Syringe Auto Disable 5ml</td>
<td>EACH</td>
<td>350,100</td>
</tr>
<tr>
<td>Streptomycin 1 Gram Injection</td>
<td>1AMP</td>
<td>208,600</td>
</tr>
<tr>
<td>Water For Injection 5 ML</td>
<td>1AMP</td>
<td>280,400</td>
</tr>
<tr>
<td>Rifampicin 60mg + Isoniazid 30mg + Pyrazinamide Tablets</td>
<td>90 TB</td>
<td>20</td>
</tr>
<tr>
<td>Ethambutol Tablets 400mg</td>
<td>1000TB</td>
<td>19</td>
</tr>
</tbody>
</table>

One of the challenges facing drug management in most facilities is inadequate record keeping and reporting resulting in poor estimations of drug use and may at times create unnecessary shortages. To counteract this problem, internal redistribution of drugs and supplies from facility to facility, district to district and region to region is sometimes done. During this period, the programme received through the MSD, consignments of Fixed Dose Combinations (FDCs) of anti TB drugs from the Global Drug Facility (GDF) and anti-leprosy blisters; MB Adult, MB child, PB adult and PB child from the WHO.
Table 22: stocks of anti-TB and leprosy medicines distributed in the country in 2013.

<table>
<thead>
<tr>
<th>ITEM NAME</th>
<th>UNIT</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rifampc in Isoniazid Pyrazinamide Ethambutol</td>
<td>B/672</td>
<td>19,450</td>
</tr>
<tr>
<td>Rifampc in Isoniazid (RH)</td>
<td>B/672</td>
<td>35,363</td>
</tr>
<tr>
<td>Rifampc in Isoniazid Ethambutol (RHE)</td>
<td>B/672</td>
<td>2,107</td>
</tr>
<tr>
<td>Rifampc in Isoniazid Pyrazinamide (RHZ) - Ch</td>
<td>B/90</td>
<td>4,039</td>
</tr>
<tr>
<td>Rifampc in Isoniazid RH -Children</td>
<td>B/90</td>
<td>7,678</td>
</tr>
<tr>
<td>Streptomycin inj</td>
<td>Vials</td>
<td>146,528</td>
</tr>
<tr>
<td>Ethambutol 100mg tabs</td>
<td>B/500</td>
<td>106</td>
</tr>
<tr>
<td>Isoniazide 100mg tabs</td>
<td>B/100</td>
<td>4,390</td>
</tr>
<tr>
<td>Isoniazide 300mg tabs</td>
<td>B/100</td>
<td>0</td>
</tr>
<tr>
<td>MB (A)</td>
<td>Blisters</td>
<td>18,690</td>
</tr>
<tr>
<td>PB (A)</td>
<td>Blisters</td>
<td>2,842</td>
</tr>
<tr>
<td>MB (C)</td>
<td>Blisters</td>
<td>512</td>
</tr>
<tr>
<td>PB (C)</td>
<td>Blisters</td>
<td>222</td>
</tr>
<tr>
<td>Clofazimine 100mg</td>
<td>T/500</td>
<td>20</td>
</tr>
<tr>
<td>Clofazimine 50mg</td>
<td>T/1000</td>
<td>12</td>
</tr>
</tbody>
</table>

The program had been piloting a newly designed system for managing Tuberculosis and Leprosy Medicines as its first objective, one the 2015 target is to ensure uninterrupted supply of quality TB and leprosy medicines at all levels.

The pilot commenced on September 2013 in Tanga region and is expected to end on June 2014, thereafter if the pilot will be proved to be useful in improving TB & Leprosy medicines management in the country, the program will set to roll out the system countrywide.

**7.2 Community empowerment activities**

Community TB care has been implemented in the country since 2003 to complement DOT coverage which is now national wide with high treatment success rates. Despite of the national DOTs coverage, a number of challenges still exist in the control and prevention of TB in Tanzania. They include delays by patients in seeking care when TB symptoms set in, passive participation of the community in TB care and control, stigma associated with TB and HIV and poor adherence to anti-TB regimens, leading to an increased threat of drug-resistant TB. To address these challenges, the MoHSW in collaboration with development partners put more emphasis in community and Civil Society Organizations (CSOs) involvement and empowerment for TB control at community level.

Communities and CSOs empowerment is one of the areas of intervention under the second component of the post 2015 TB Strategy. Community-based organizations (CBOs) and members of key affected communities are in a unique position to assess and address the needs of their
own people. This is especially true for marginalized people who are criminalized and/or stigmatized and who therefore often avoid the services. The strengths of CSOs including CBOs include their reach and ability to engage marginalized or remote people. This direct empowerment of organizations and other actors in their own community response brings greater credibility and relevance to community service delivery systems.

NTLP has been using three approaches to engage and empower communities including NGOs and other CSOs for building and strengthening community systems to increase TB case detection, deliver services and to support communities to use those services for increased treatment success. The following are the community engagement approaches and status of implementation:

7.2.1 Engagement of Non-Governmental Organization (NGOs) and other Civil Society Organizations (CSOs) in community TB control activities

This approach involves sensitizing NGOs and other CSOs to integrating community-based tuberculosis activities into their works. This has been implemented under phased ENGAGE TB project. Tanzania is one of five countries implementing the ENGAGE TB project. Other countries include South Africa, Democratic Republic of Congo, Ethiopia and Kenya. In Tanzania, the project started in 2012 under WHO support. A national operational guideline for ENGAGE TB and Community TB care handbook for community health workers are in place. A number of CSOs have been sensitized and most of them have shown an interest. However, lack of funds for the engagement remained to be the challenge. Only one NGO (Pathfinder International) among sensitized CSOs has integrated community TB care into HIV/AIDS home based care in Kinondoni Municipal Council, in Dar es Salaam. According to data from Kinondoni, the project has contributed 8% of TB cases notified in Kinondoni in 2013. More regional sensitization to national CSOs and support are planned for the coming year.

7.2.2 Patient Centred Treatment (PCT)

This is another approach for community involvement in TB control in the country. TB patients have been managed through Patient Centred Treatment (PCT) approach countrywide. Patients have an option to choose where they would like to be supervised during their daily TB treatment, whether at a health facility (facility based DOT) or at home (home based DOT). Besides, patients have the liberty to choose a treatment supporter of their own choice. Data for this year shows that, 82% of all notified TB patients were supervised at home by community treatment supporters who were mostly family members and community health workers including former TB patients. In 2012, 83% of TB patients who treated under home based DOT were successfully treated. The challenge is improper implementation of PCT procedures to some of newly allocated health workers to TB clinics and low capacity to conduct supervision beyond health facility. To overcome these challenges, the Programme in collaboration with Novartis Foundation produced and distributed 1,000 PCT DVD educational materials (English
and Swahili version) to health facilities in all 26 regions including Zanzibar. The material was meant to create awareness of 8 steps of PCT to health workers. The programme is planning to strengthen supervision and mentorship to health workers who supervise treatment supporters at health facility.

7.2.3 Involvement of community TB health workers
Community health workers are people with some formal education who are given training to contribute to community based health activities and services. These include ex TB patients, sputum fixers, home based care providers etc.

Under PATH support, 75 sputum fixers were identified and supported to fix sputum at remote dispensaries and transport smears to diagnostic centres for examination. The documentation conducted in Geita district in 2013 has shown that from 2009 - 2012; two sputum fixers contributed an average 14.5% of smear positive TB case notifications in the district. Furthermore, 85.8% of all smears examined at two diagnostic centres were from sputum fixers contributing 66% of all smears positive TB diagnosed. The programme is planning to scale up the intervention to all districts in order to increase access of TB diagnosis to communities living more than 10 kilometers from TB diagnostic centres.

Since 2009, the Programme also started to reinforce community TB care by establishing the involvement of community social groups including ex TB patients. Till 2013, 395 groups have been formed with 5,238 members all over the country. Since then the programme in collaboration with other implementing partners has been training and supporting the groups to undertake TB control activities at community level. The groups are involved in community sensitization activities, supporting TB patients during treatment course, defaulter tracing and intensified case finding in their respective areas. In 2012 and 2013, community groups were contributed to TB control as stipulated in the table below:

Table 23: Community contribution to TB control and Patient care for 2012 and 2013

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Average Percent (year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of referrals of presumptive TB patients (TB suspects) attributable to communities (e.g. community volunteers, community health workers) expressed as a percentage of all TB suspects in country</td>
<td>10 (2013)</td>
</tr>
<tr>
<td>Number of notified TB cases resulting from referral by communities (e.g. community volunteers, community health workers) expressed as a percentage of all newly notified TB cases in the country</td>
<td>15 (2013)</td>
</tr>
<tr>
<td>Number of newly notified TB patients who received community-based DOT and/or adherence support expressed as a percentage of all patients receiving treatment in country</td>
<td>82 (2012)</td>
</tr>
</tbody>
</table>
The un-reporting districts for community contribution in TB control remain a challenge where by only 47 districts reported. Another challenge is parallel system of reporting community contribution. To address this, the programme has developed and distributed TB presumptive/contact tracing forms, community referral forms, community TB register and quarterly reporting form to capture community contribution. The yield information will be captured in NTLP M&E system. This will help programme to receive community contribution data along with other data.

7.3 Advocacy, Communication and Social Mobilization (ACSM) activities

7.3.1 Commemorations

World Leprosy Day was commemorated at regional level on 27th January 2013. The government statement was given by the Minister for Health and Social Welfare Hon. Dr. Suleiman Rashid with an emphasis on community involvement and timely reporting to health facilities for early case detection and treatment. The theme for World Leprosy Day was “Dumisha huduma bora kwa watu walingathiriwa na ukoma”.

World Tuberculosis Day was marked on the 24th March 2013. Among activities implemented were: active case finding by screening of people for TB; road shows; health education; distribution of IEC and promotional materials. At National level there was a press conference on 22nd March 2013 during which the Minister for Health and Social Welfare Dr. Suleiman Rashid gave an official statement on World TB Day in front of media. This was followed with official launching of ENGAGETB project which was founded under the auspices of World Health Organization (WHO). The event was covered by both print and electronic media. Among them were: ITV, Channel Ten, Star TV, Radio Free Africa, TBC Taifa, Clouds FM, Radio One Stereo and BBC radio. On print media the event was covered by the Daily News, The Citizen, The Guardian, Tanzania Daima and Nipashe.

The theme of the “World TB Day was Stop TB in my life time” which was translated into Kiswahili as “Jukumu la Kudhibiti Kifua kikuu ni la kila mmoja wetu”.

A number of IEC and audio visual materials were designed, produced for World TB day commemoration. These included wheel covers, umbrellas, printed posters, leaflets, fact sheets, T-shirts, pens with TB message, street banners, khangas and caps. The Programme also produced educational video documentaries on TB, TB/HIV and community involvement which were distributed to all health facilities with TV and DVD sets in the patients’ waiting area (lobby). Relevant messages in a form of spots and talk shows were disseminated through Radio and TV stations with wide coverage.
7.3.2 Community sensitization
In the year under review community sensitization activities were implemented in six Global Fund supported regions (Kagera, Kigoma, Mara, Dodoma, Manyara and Rukwa). The aim of the campaign was to increase community awareness on signs and symptoms of TB, diagnosis and treatment. Sensitization was done through road shows, health education sessions and distribution of educational materials and screening of suspects for TB.

7.3.3 Leprosy control activities
As part of leprosy elimination strategy, the programme conducted one Leprosy Elimination Campaign (LEC) in Nanyumbu district in Mtwara region with support from GLRA. The main objective of the campaign was to early detect and treat leprosy cases and achieve the global leprosy elimination target of less than one case per 10,000 people in Nanyumbu district. Specific objectives were:

- To raise community awareness hence improve health seeking behaviours
- To equip health care workers with knowledge and skills that will enable them to detect, diagnose and treat effectively leprosy patients
- To provide informal knowledge about leprosy to community leaders to enable them to motivate the communities and invite leprosy suspects to come forward for screening and treatment
- Orient RHMT/CHMT members on leprosy control in the country as well as leprosy elimination campaign process with emphasis on leprosy situation in Mtwara region particularly Nanyumbu district

A total of 140 people including health care workers, primary and secondary school teachers, village health works, VEOs and village chairmen were oriented on guidelines and leprosy control in the country.

Leprosy screening exercise was conduct in 15 selected sites. A total of 668 people were screened, 74 (92.5%) were new cases, 6 (7.5%) return after default, 8 (10%) PB children and 2 (2.5%) MB and 5(6.2%) had disability grade two.

Apart from successful implementation of these activities low community awareness on signs and symptoms of both TB and leprosy diseases, diagnosis and treatment is still a problem. Many patients present themselves to health facilities in advance stages of the diseases.

In order to address this challenge the Programme intends to involve more partners/stakeholders
7.4 Logistic Support

7.4.1 Transport
The NTLP receives logistic support for transport from various sources such as; GLRA (German TB and Leprosy Relief Association), CDC/PEPFAR and GFATM. This support varies from motorcycles, motor vehicles, as well as motorboats.

Currently, the NTLP has 38 motor vehicle, 236 motorcycles and 4 boats. These boats are for regions bordering lakes, with hard area to reach by neither motor vehicle nor motorcycle. These includes Kigoma and Rukwa region both bordering Lake Tanganyika. For many years, the GLRA has been the main financier of transport logistics to the programme, with 28 motor vehicles, 154 motor cycles and 4 boats. The remaining 82 motorcycles and 10 motor vehicles are from CDC and GFATM.

Essentially, each region has one motor vehicle for regional TB and Leprosy coordinator, and each district has two motorcycles; one for DTLC and one for TB/HIV Officer. The motor vehicle caters for the whole region while motorcycle caters for the whole district. Maintenance is mainly supported by GLRA and other financier respectively.

7.5 Public and Private Partnership (PPP)
In 2013 coverage of TB services in the private sector were given emphases by the programme; it is estimated that more than 10% of Private Health Facilities (PHF) are providing provision of TB services. Of importance the private and faith based health facilities contributed to 22% of total TB cases notified in the country.

The programme in collaboration with Management Sciences for Health (MSH) conducted evaluation of TB case detection interventions through involvement of drug sellers from private pharmacies and Accredited Drug Dispensing Outlets (ADDOs) in Morogoro and Dar es Salaam regions in which a total of 122 pharmacies and 574 ADDOs were involved. The findings shows that there is potential for improving TB case detection through engaging pharmaceutical sector as out 697 and 105 TB presumptive cases referred to diagnostic centers, 20% and 8% were confirmed smear positive TB cases in Morogoro and Dar es Salaam respectively.

Despite these successes, private health facilities in the country still face a number of challenges which include
- Low involvement of the private sector in TB control services; majority are urban concentrated
- inadequate infrastructure to support TB control services, particular diagnostic services
- Inadequate skilled personnel to delivery TB services in the sector
7.6 TB in Mining sector

The country is among signatories of Southern African Development Community (SADC) declaration for TB in mining sector. The Declaration on TB in the Mining Sector affirms the SADC member states’ commitment to the elimination of TB and pledges to improve practices and standards related to the environment, health and safety in the mining sector. In collaboration with International Organisation for Migration (IOM) the NTLP has introduced TB control services in mining sector. In 2013 the programme conducted baseline assessment in three large mining sites in the country i.e Mwadui in Shinyanga (Diamond), Geita (Gold) and Merelani in Manyara region (Tanzanite) to assess the current practices in mining areas and surrounding communities.

Key findings from this assessment were:

- commonly mentioned health vulnerability was the lack of health promotion information and education
- Poor working environment including excessive exposure to dust and lack of protective equipment
- Barriers to health services included loss of hours, overcrowding, long wait times and unaffordability of services and transport to services
- There is significant HIV vulnerability at the extractive industry sites.

Further survey conducted by Kibong’oto Infectious Disease Hospital (KIDH) at Merelani, Simanjiro revealed that out of 602 randomly screened small scale miners (SSM), 25(4%) were confirmed Smear positive TB cases indicating the burden of TB in mining areas is very high

7.7 Supervision

The NTLP routinely conducted supportive supervision and mentoring activities at central, regional and district levels. The joint supervision at the central level was conducted in 17 regions across the country with support from PATH and CDC/PEPFAR. These regions include Mbeya, Iringa, Tanga, Singida, Ruvuma, Tabora, Shinyanga, Morogoro, Temeke, Lindi, Mtwara, Kilimanjaro, Arusha, Pwani, Mwanza, Ilala and Kinondoni. However 6 regions which are supported by GFR 6 were not supervised due to delay in disbursement of funds. At the regional and district levels the supervision were conducted at least twice in year in collaboration with regional and council health management teams.

In general the key findings from these supportive supervisions include:

7.7.1 Achievement
- The regions performed well in terms of TB case detection and management in line with NSP IV
- Collaborative TB/HIV activities are being implemented both at CTC and TB clinics. The TB/HIV integrated services have been scaled up to 50% of all district hospitals.
- Regions have sufficient drugs, laboratory reagents and supplies with few facilities reported some episodes of out of stock.
- TB and Leprosy control activities were incorporated into CCHP, with varied budget from the basket fund ranging from 2% to 6%.
- Robust recording and reporting system for TB and leprosy cases at all levels of program implementation.
- TB and leprosy commodities at regional and district levels are kept in pharmacies and managed according to drug management practices.

7.7.2 Gaps identified
- Majority of the regions and districts are not produce supervision reports and their schedules are not realistic posing a doubt on numbers and quality of supervisions conducted.
- Weak EQA system; most of diagnostic centre visited few performing TB diagnosis properly; EQA slides are not collected/kept; SOP’s were not displayed and internal control was not including in their routine procedure.
- Community TB care activities were minimal implemented: Most Ex-TB patients clubs are not active, No evidence of most community TB activities (sensitization, training on CBDOT to health workers and treatment support, quarterly meetings of CBTC and supportive supervision visits to the community).
- Electronic based TB registers were not fully functional in majority of the regions and district due to computer illiteracy of the HCWs and huge workload at facilities.
- Funds are received and captured in EPICOR and committed but still they were not utilized due to lack of pre-planned activities recorded in the district financial management system and delay in funds disbursement.
- Leprosy activities are not well known by most of coordinators and HWCs: POD registers are not properly filled in most areas visited and referral of leprosy patients for specialized care including surgery is not done due to lack of funds at councils.

7.8 Data Quality Assessment (DQA)
For the first time the NTLP through GF support conducted data quality assessment in six regions: Kagera, Dodoma, Rukwa, Mara, Manyara and Kigoma. The DQA evaluate the performance of two indicators; (i) case notification and (ii) treatment outcome. This exercise was conducted by central unit staff using adapted WHO structured checklist; among the key findings include:
- The quality of NTLP data in terms of accuracy, reliability and completeness is good.
- Quarterly TB reports, TB registers, and others source document were well matched on part notification indicator
- Timeliness for reports submission from region to the central unit were not met in majority of the regions
- There were evidence of initial defaulters from laboratory and unit registers, however there is no tracing mechanism/strategies in place
- Huge discrepancy on TB treatment outcomes reports, majority of the district registers did not matched with TB quarterly cohort reports

7.9 Evaluation of TB surveillance system

7.9.1 Background
The Ministry of Health and Social Welfare (MoHSW) of the United Republic of Tanzania in support of the Centers of Disease Control and Prevention (CDC) and World Health Organization (WHO) conducted a review of the national TB surveillance data, which included an assessment of the surveillance and vital registration systems using a WHO checklist of TB surveillance standards and benchmarks. The results of the assessment are intended to help inform the development of a monitoring and evaluation (M&E) investment plan based on gaps in current M&E systems in Tanzania. Below are objectives, methods used and main findings, a separate detailed report is available.

7.9.2 Objectives
The objectives were to:
- Implement a checklist of TB surveillance standards and benchmarks to assess the Tanzania national surveillance and vital registration system’s ability to accurately measure TB incidence and mortality;
- Develop a proposed M&E investment plan to address issues identified during the surveillance assessment.

7.9.3 Methods
During November 5-8, 2013 discussions were held with staff from the National Tuberculosis and Leprosy Programme (NTLP), Temeke Hospital, and the Registration, Insolvency and Trusteeship Agency (RITA). The assessment team also joined a meeting between the NTLP, the Global Fund (including the Portfolio Manager for Tanzania), and other partners during which the development of Tanzania’s funding proposals for the coming three years was discussed.

Tanzania’s TB surveillance and vital registration systems were assessed using the checklist of standards and benchmarks developed by the Global Task Force on TB Impact Measurement, in accordance with the standard user guide. This involved a desk review of program documents,
datasets, and the electronic surveillance system. Data were collated and analyzed. Results were disseminated at an exit meeting, during which strategies to improve the measurement of TB morbidity and mortality and assess the impact of TB control in Tanzania were discussed.

7.9.4 Main findings
The TB surveillance system in Tanzania has much strength but also gaps that need prompt action. Of all the standards for TB surveillance, 5 were met, 3 were partially met, and 7 were not met. Increased investment is required to address the gaps identified by the assessment. Based on the assessment, the greatest strengths of TB surveillance in Tanzania include the consistency of its data and its adherence and timely adjustments to best-practices in recording and reporting as described by WHO guidelines. The primary challenges of the system include utilizing the current electronic surveillance system (ETR.Net); knowing that all diagnosed TB cases are reported and that reported cases are accurate; and achieving up-to-date coverage for MDR TB, pediatric TB, and TB mortality surveillance. Increased investment is required to address these gaps and build a system that can accurately measure TB incidence and mortality.