REPORT OF THE REVIEW OF THE NATIONAL TUBERCULOSIS AND LEPROSY PROGRAMME IN TANZANIA 12 – 23 JUNE 2000

Final report: October 2000
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Ministry of Health
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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>AIDS</td>
<td>Acquired Immune Deficiency Syndrome</td>
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<tr>
<td>BCG</td>
<td>Bacille Calmette Guerin, TB vaccine</td>
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<td>CTRL</td>
<td>Central Tuberculosis Reference Laboratory</td>
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<td>DHMT</td>
<td>District Health Management Team</td>
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<td>DMO</td>
<td>District Medical Officer</td>
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<td>DTLC</td>
<td>District Tuberculosis and Leprosy Coordinator</td>
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<td>DOTS</td>
<td>Directly Observed Treatment, Short-course</td>
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<td>DRA</td>
<td>Daily Rifampicin Accounting</td>
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<td>DP</td>
<td>Development Plan</td>
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<td>EPI</td>
<td>Expanded Program of Immunization</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GLRA</td>
<td>German Leprosy Relief Association</td>
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<td>GNP</td>
<td>Gross National Product</td>
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<td>GoT</td>
<td>Government of Tanzania</td>
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<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<td>HSR</td>
<td>Health Sector Reforms</td>
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<td>HIPC</td>
<td>High Indebted Poor Countries</td>
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<td>IEC</td>
<td>Information, Education and Communication</td>
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<td>IMR</td>
<td>Infant Mortality Rate</td>
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<td>KNCV</td>
<td>Royal Netherlands Tuberculosis Association</td>
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<td>LEC</td>
<td>Leprosy Elimination Campaign</td>
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<td>MDT</td>
<td>Multi-drug therapy</td>
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<td>MOH</td>
<td>Ministry of Health</td>
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<td>MUCHS</td>
<td>Muhimbili University College of Health Sciences</td>
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<td>MSD</td>
<td>Medical Stores Department</td>
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<td>NACP</td>
<td>National Aids Control Programme</td>
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<td>NGO</td>
<td>Non Governmental Organization</td>
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<td>NTLP</td>
<td>National Tuberculosis and Leprosy Programme</td>
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<td>PHC</td>
<td>Primary Health Care</td>
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<td>POD</td>
<td>Prevention Of Disability</td>
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<td>RTLC</td>
<td>Regional Tuberculosis and Leprosy Coordinator</td>
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<td>RMO</td>
<td>Regional Medical Officer</td>
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<td>RFT</td>
<td>Released from Treatment</td>
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<td>SAPEL</td>
<td>Special Action Programme on Elimination of Leprosy</td>
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<td>SCC</td>
<td>Short Course Chemotherapy</td>
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<td>SDC</td>
<td>Swiss Development Co-operation</td>
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<td>SWAP</td>
<td>Sector Wide Approach</td>
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<td>TB</td>
<td>Tuberculosis</td>
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<td>TLCU</td>
<td>Tuberculosis/Leprosy Control Unit</td>
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<tr>
<td>TOR</td>
<td>Terms of Reference</td>
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<tr>
<td>UNHCR</td>
<td>United Nation High Commission for Refugee</td>
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<td>WB</td>
<td>World Bank</td>
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<td>WHO</td>
<td>World Health Organization</td>
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TB drugs:
H  Isoniazid
E  Ethambutol
R  Rifampicin
S  Streptomycin
Z  Pyrazinamide
EXECUTIVE SUMMARY

1. Tuberculosis and Leprosy Situation in Tanzania

The Ministry of Health launched the National TB and Leprosy Programme (NTLP) in 1977 with the assistance of the International Union against Tuberculosis and Lung Disease. Together they formulated strategies for the tuberculosis control in a resource poor country, which developed into a model TB program over the years. The NTLP is the birthplace of the WHO recommended Directly Observed Treatment Short course (DOTS) strategy, which is implemented countrywide since 1986.

Although the NTLP has been functioning well, the number of tuberculosis cases has increased rapidly due to the rampant HIV-infection in Tanzania. The number of cases increased from 11,753 in 1983 to 52,437 in 1999 - an increase of almost fivefold in 16 years. The present average annual increase is about 5% and the majority of cases appear in young age groups between 15-45 years. According to WHO estimates, NTLP detects only about 55% of the existing cases. The almost 80% treatment success rate over the years is a good achievement nationwide. Multiple drug resistance is still low at about 1% and has not increased over the years indicating proper control activities. According to national tuberculin surveys, the annual risk of tuberculosis infection has remained the same between 1983 and 1998 at around 1%. However, the high rate of deaths (around 10%) mainly due to HIV makes it difficult for Tanzania to reach the WHO global target of 85% cure rate.

On the side of leprosy, the prevalence has been steadily declining from almost 50,000 in 1977 to 5,563 in 1999 in Tanzania. The number of new leprosy cases detected has remained the same over the years and the backlog of old cases has been cleared with the use of WHO-MDT. The majority of leprosy cases are found in 25-54 age group. Almost a fifth (15-20%) of the new cases have disabilities indicating late case finding. The WHO elimination target of 1/10,000 population has not yet been achieved.

2. Review Process

The review was conducted in order to evaluate progress made so far in implementing the 3-year development plan (July 1997-June 2000) which comes to an end by 30th June 2000. This was the first development plan to be implemented under direct supervision of TLCU. The results of the review will form the basis for a new development plan to be synchronised so as to accommodate the on-going Health Sector Reforms (HSR) in the country.

The review was conducted from 12th June to 23rd June 2000. The review team was composed of the external consultants who represented donors supporting the programme and WHO together with nationals. As far as possible, the WHO methodology for reviewing a National TB/Leprosy programme was followed using standardized format and data collection tools. The regions selected included those with good, intermediate and poor programme performance. Overall the team visited 43 hospitals, 14 health centers and 12 dispensaries in ten regions in Tanzania Mainland and Zanzibar.
On the last day, the team presented a summary of findings and recommendations to the Ministry of Health and donors supporting the programme.

3. Major Findings

The review team identified a number of achievements and constraints facing the programme.

3.1 Achievements:

1. The Government of Tanzania has given a priority to the control of TB and leprosy in the country
2. NTLP has established a well functioning management structure at all levels.
3. DOTS and WHO – MDT strategies are being used in the fight of tuberculosis and leprosy cases respectively in all service delivery points
4. NTLP has established a satisfactory case management system that has resulted in high cure rates despite the negative influence of the HIV epidemic.
5. The supply of Drugs and laboratory reagents for TB and Leprosy control is integrated into the general system through Medical Stores Department (MSD)
6. The recording and monitoring system is well developed and provides accurate and timely data from most areas.
7. The NTLP has established a well functioning transport and supervisory system.
8. Donor co-ordination is functioning well and there is a transparent financial management system from TLCU
9. NTLP has established collaboration between Government, Mission, Prisons, Military and Private sector.

3.2. Constraints

1. The TB burden has increased rapidly in the last 15 years mainly because of the HIV/AIDS epidemic in the general population.
2. There is no strategic plan on how to integrate TB/Leprosy control into the HSR process although both have been included in the Essential Health Intervention Package
3. Weak programme management capacity of District TB/Leprosy coordinators (DTLCs).
4. TLCU is over stretched and needs additional technical staff.
5. The knowledge and attitude of general health workers towards TB and leprosy control is unsatisfactory.
6. Shortage of skilled laboratory personnel in diagnostic centres

7. A delay of six months from beginning of symptoms of TB or leprosy to beginning of treatment.

8. Inadequate advocacy and IEC activities.

9. Lack of formal structural collaboration between NTLP and the National AIDS Control Programme

10. Low TB case detection rate compared to WHO recommended rate of 75%.

11. High disability rate (15% grade 2) of newly diagnosed Leprosy patients.

12. The programme relies on donor funding to sustain effective TB and leprosy control activities.

3.3. Main Recommendations from the Review Team for Strengthening TB and Leprosy Control in Tanzania

1. Since the current three year development plan comes to an end in June 2000, and since the donors have agreed to continue with a one year bridging budget, NTLP should prepare a new strategic 3-year development plan 2001/2002 – 2003/2004

2. Strengthen community awareness about the TB epidemic and involve communities in TB control activities, mainly in early case finding and monitoring of treatment

3. Training activities should be strengthened. TLCU should train RTLCs and DTLCs as well as R/DHMT in programme management aspects related to HSR. General health workers should be trained in TB/LEP control. A simplified TB/leprosy control manual for general health workers is needed.

4. The Ministry of Health should allocate TLCU additional qualified technical staff and space within the MOH

5. NTLP and NACP should formalize their collaboration and identify activities to be implemented together.

6. Deploy additional qualified laboratory staff in diagnostic centres.

7. There is need to review the curriculum for pre-service training of health workers to include TB and leprosy control as recommended by the programme.

8. Donors should continue supporting TB and leprosy control in the country and the Government should gradually increase its financial commitment.

9. NTLP should develop strategy to increase TB case detection.

10. LEC and SAPEL activities should continue to be implemented in the country to enhance Leprosy case detection
1.0 BACKGROUND INFORMATION

1.1 Geographical and Social-economic profile

The United Republic of Tanzania was formed in April 1964 following the union between Tanganyika and Zanzibar. Administratively, the country has twenty five regions – 20 in the mainland and 5 in Zanzibar. The surface area is 945,087 km² of which 60,000 km² is covered by water and has common border with 8 neighbouring countries: In the north - Kenya and Uganda; west - Rwanda, Burundi and Democratic Republic of Congo. In the south, there is Zambia, Malawi and Mozambique. The country is home to over 120 ethnic groups who speak a common language - Kiswahili. English is also widely used as an official language of communication.

According to 1988 census, the population is projected to be 32,000,000 in the year 2000 of which 23% live in urban areas and 77% in rural areas. The population is relatively young with about 50% aged less than 15 years. The crude birth rate in 1988 was 46% and crude death rate was 15%, the annual population growth rate was estimated to be 2.8% and the total fertility was 6.5. The infant mortality rate is estimated to be 88 per 1,000 live births. According to the Demographic and Health Survey (DHS) conducted in 1996, the maternal mortality ratio was 529/100,000 live births. Life expectancy is 49 years for males and 51 years for females.

The first Report on Poverty indicates that around half of the Tanzanian population is absolutely poor. GDP growth rate was 4.6% in 1996 and Per capita GNP was USD 200 in the same year. In 1999 the economic growth was 5% and it is projected to be 5.8% and 6.8% for 2000 and 2001 respectively. The current minimum wage is US $ 50.00. The government spends about USD 3 per capita on health.

The Bureau of Statistics in 1997 estimated the literacy rate to be around 84% with a gross enrolment rate of 79%. The per capita primary school education expenditure was USD 15.

1.2 Government and Health

The Government of Tanzania has always been committed to providing the population with equitable access and utilization of health services. Starting from independence, emphasis was to increase number of health facilities especially in the rural areas to achieve equitable geographical distribution. For example in 1961 there were only 22 health centres, which increased to 409 by 1999. The majority of health facilities (approx. 60%) are Government owned through the Ministries of Health and Regional Administration and Local Government. The remaining 40% belongs to non-governmental organisations (NGOs), voluntary agencies (VAs) and the private sector.

A total of 65,792 people are involved in health care delivery in the country. Of these 70% are in the public sector and the rest are in the non-governmental or private sector. Almost 64 per cent of the recurrent health budget in the public sector is spent on human resources.
The main health financing system is the government budget. Since the 1970s there has been a decline in the allocation of funds to health despite the government’s commitment to improve health care services. Between 1977 and 1993 funds allocated to the health sector declined from 7.5 per cent (1977/78) to 4.4 per cent (1992/93). With expanded services and economic problems, the role of the government as a sole provider of health services has changed to involve more the private sector. The Government has also introduced alternative financing mechanisms in order to bridge the gap. These include user-fee charges (cost-sharing) health insurance and community health financing. The overall government policy is to reduce donor dependency by gradual increase of budget allocation to social sectors including health.

Communicable diseases are the major cause of morbidity and mortality in the country. Health facility based data compiled in the Health Statistics Abstract in 1999 shows that clinical AIDS is now the second major cause of mortality behind malaria and tuberculosis has climbed up to the third place compared to previous years. At the moment, the leading 5 killer diseases in the population aged 5 years and above are malaria (22%), clinical AIDS (17%), tuberculosis (9%), pneumonia (6.5%) and anemia (5.5%)5.

1.3. Organization of Health Services and Structure of the NTLP

Health care services in the country are divided administratively into three levels – national, regional and district. The district level is further sub-divided into hospital, health centre and dispensary levels. At the national level, the Ministry of Health has 6 departments divided into technical and supportive. The technical departments are Hospital Services, Human Resource Development and Preventive Services. The supporting departments are Planning and Policy, Administration and Personnel and Accounts and Audit. The TB/Leprosy Programme is under the Preventive Services department in the Unit of Epidemiology and Diseases Control and is headed by the Tuberculosis and Leprosy Central Unit (TLCU). The Central TB Reference Laboratory is part of the central unit. TLCU is responsible for planning, monitoring and evaluation. It is also responsible for training of staff, supervision of field activities, data collection and analysis, quality control and operational research.

At regional level, the Regional Tuberculosis and Leprosy Coordinator (RTLC) is responsible for management and coordination of programme activities. Their other task is to supervise the DTLCs and general health workers in the control of TB and leprosy diseases. The RTLC is in general highly qualified in TB/LEP case management and control.

The District TB and Leprosy Coordinator (DTLC) coordinates all programme activities within the district including supervision of patient management by general health workers according to the national guidelines. The district is the basic unit for reporting of cases. Within the HSR, the position of the DTLC will become more important. At the health centre and dispensary levels, there is no specific staff for TB and leprosy. All TB and leprosy control activities including case management are fully integrated into the primary health care system.

Organogram of the Ministry of Health is included as annex 2
1.4. History and development of NTLP

The Ministry of Health launched the NTLP in July 1977. Tanzania was the first country in the world to successfully combine the control of TB and Leprosy into a single programme. With the introduction of Directly Observed Treatment with Short course Chemotherapy (DOTS) in 1982, cure rates increased to about 80%. WHO later adopted this approach in its strategy for the global control of tuberculosis. On the side of leprosy treatment, Isoprodian MDT was introduced in 1984 and later changed to WHO-MDT in 1996. The number of annually notified leprosy cases has since dramatically declined from more than 35,000 cases in 1983 to around 5,000 in 1999.

The programme was reviewed in 1996 and the findings were used as input in the formulation of a three-year development plan July 1997 - June, 2000. National Management Committee (NMC) was established to oversee the implementation of the plan. The committee is composed of partners who are supporting the programme together with the Government. These are the Swiss Development Co-operation (SDC), Directorate General for International Co-operation (DGIS) of the Netherlands Government, Ireland Aid, The German Leprosy Relief Association (GLRA), the Royal Netherlands Tuberculosis Association (KNCV) and WHO. All partners, except WHO and GLRA have pulled their funds into one joint account, which is administered by the NTLP.

1.5. Source of funding for NTLP

Currently, the government priority is to increase budget allocation to social sectors including health, taking into account the expected Highly Indebted Poverty Countries (HIPC) debt relief and revenue prospects as well as Aid inflow. TB and leprosy control is one of the areas given a high priority by the Ministry of Health. The Government’s contribution to NTLP has been increasing gradually with the aim of reducing donor dependency.

Starting from July 1998, the Government together with partners supporting the programme started using a joint basket financing mechanism to fund programme activities. All partners, except WHO and GLRA have pulled together their funds into one joint account, which is administered by the NTLP. The NTLP uses the funds according to NMC quarterly approved activities. An international company, PricewaterhouseCoopers, audits the account on a quarterly basis. At the moment, the financial management system is satisfactory to both the donors and Ministry of Health. This is an example of the basket funding system applied under the Health Sector reform at national and district levels which started in the financial year 1999/2000.

GLRA is cautious to join the basket funding because of the mismanagement of funds in the past by the programme. They release funds separately mainly to support activities at district and regional levels including transport and supervision. WHO follows its own financing system and also provides leprosy drugs to the programme twice a year.

The total amount of funds contributed by donors and the Government towards the Joint account between financial years 1997/1998 and 1999/2000 was Tsh. 353,417,314 and USD 3,603,939 as shown in Annex 6. This amount is far less than the total amount of funds pledged by all donors to
support the three-year plan. In addition, the Government pays for personnel emolument and running costs of health facilities where TB and leprosy patients are attended.

1.6 Epidemiology of TB and Leprosy

1.6.1. Prevalence and incidence of TB infection and disease

Three tuberculin surveys have been conducted in the country since 1983. The third round was completed in 1998 and the fourth round started in February 2000. The three surveys have shown a stable risk of tuberculosis infection (ARTI) over the past decade despite a doubling of the notification rate of infectious cases mainly due to HIV infection. The number of infections per notified case has also declined from 29 in the first round to 13 in the third round. These achievements could possibly be attributed to improved tuberculosis control over this period. However, it is important to mention that in Dar es Salaam, a strong increase in the risk of infection was observed between the second and third rounds. This was one of the indicators suggesting the need for strengthening tuberculosis control in Dar es Salaam.

1.6.2. TB notification and trends

A total of 52,437 patients with all forms of tuberculosis were notified in 1999, which is an increase of 2.4% compared with 1998 when 51,231 cases were notified. Dar es Salaam contributed about a quarter (25.6%) of all cases notified in the country. Among the cases notified in 1999, 24,125 (46%) were new sputum smear positive cases and 1,737 (3%) were relapse cases while 26,575 (50.7%) cases were smear negative and extra-pulmonary combined together. The most affected age groups are young adults below 45 years with peak frequency for both males and females at 25-34 years. The male to female ratio has remained around 2:1 in the past 3 years. However, it should be pointed out that the number of smear positive females has slightly increased from 37.5% in 1998 to 41% in 1999 most likely due to higher HIV prevalence among them.

Besides HIV pandemic, the increase of tuberculosis cases in the country can also be attributed to other factors such as the rapid population growth in the country (more than 50% since 1984). Improved case detection by the programme through improved accessibility to free services and overcrowding particularly in urban areas.

As in all high HIV prevalence countries, the smear positivity rate has declined from 62% in 1984 to 46% in 1999. The proportion of the smear negative and extra-pulmonary cases has in the meantime nearly doubled from 33.8% in 1984 to 50.7% in 1999. The number of relapses has remained low over the years at around 3 - 4%.

Treatment outcome for the infectious cohort notified in 1998 shows treatment success rate of 78% of which 72% were cured and the other 6% completed treatment. The death rate was 10% while 8% were out of control. The cure rate for re-treatment cases was 55%.
Two rounds of national survey were conducted in Tanzania between 1991 and 1997 to determine the prevalence of HIV among TB patients notified in the country. The results show that there has been a significant increase in the prevalence of HIV among TB patients from 32% in the first round (1991-1993) to 42% in the second round (1994-1997). The impact of the HIV infection has also dramatically changed the age distribution of TB patients from the elderly to a younger generation (15-44 years).

The anti-TB drug resistance in the country is low as determined in the second round of the TB/HIV survey. Resistance to one drug (monodrug resistance) was found to be about 2.8% while resistance to two or more drugs was less than 1% (0.76%). The low level of drug resistance is attributed to good programme performance.

1.6.3. Leprosy notification and trends

The prevalence of leprosy in the country has been declining over the last 15 years from 26,630 in 1985 (11.8 per 10,000 population) to 5,564 in 1999 (1.7 per 10,000). However, the number of new notified cases per year has remained nearly constant at around 3,000 for the past ten years. Furthermore, the proportion of new patients with disability has also not changed over the years (14% for disability grade 2) indicating a delay in the diagnosis and by implication many hidden cases in the community. The sharp increase in the number of patients notified in the last two years partially as a result of SAPEL and LEC activities is a clear indication. On the other hand, no one knows the true magnitude of the leprosy problem in the country.

Tables and graphs for TB/Leprosy notifications, TB /Leprosy treatment outcome are included as annexes 7 to 12
2.0. METHODOLOGY

2.1. The Review

The review was organized by The Ministry of Health in Tanzania in order to evaluate the progress made so far in implementing the 3-year development plan that comes to an end by 30th June 2000. The results of the review will form the basis for a new development plan that will be synchronised to accommodate the on-going HSR. TLCU was given the mandate by the NMC to oversee the planning process and actual implementation of the review and dissemination of the results.

The review team was composed of 5 external consultants who represented donors supporting the programme and WHO, 7 nationals from different departments of the Ministry of Health, one regional medical officer, one district medical officer and two public health specialists from a local Non Governmental Organization (NGO) and Muhimbili University College of Health Sciences (MUCHS). All were experts in the Epidemiology and control of TB and leprosy, laboratory services, advocacy, health planning and policy, TB and HIV co-infection and health economics.

As far as possible, the WHO methodology for reviewing National TB and Leprosy programmes was followed using a standardized format and data collection tools. The review was conducted from 12th – 23rd June 2000. Most participants arrived on the 11th June 2000. Day 1 was used to formulate field teams, logistics and orientation on the tools for data collection. Overall there were 7 teams of 3-4 members each except the laboratory team that had only 2 members who were experts in laboratory services. All teams traveled to their assigned regions according to an earlier agreed schedule on day 2 and returned on day 11. Each team was accompanied by at least one NTLP staff in the field. Overall the teams visited ten regions in Tanzania Mainland and Zanzibar. In each region at least one district was visited. The regions were selected according to their performance in TB/Leprosy control with good, intermediate and poor performance. Overall the teams visited 43 hospitals, 14 health centers and 12 dispensaries. Day 12 was used to prepare a summary of team reports, which was presented to the Ministry of Health in the presence of donors supporting the programme the following day. The teams departed to their respective destinations on day 14 and 15 depending on their travel itinerary.

All efforts have been taken to minimize bias. Each team was composed of members from outside and inside the country together with one RTLC to guide them in the field. Standardized tools were used to guide the interviews and data collected in the field. The report has been circulated to majority of the members for their input. Despite all these precautions, it is not always easy to exclude all elements of bias in a report.

A map of Tanzania is included as annex 1. Terms of reference for the review are included as annex 3. A list of review team members is included as annex 4. A list of people met and place visited is included as annex 5.
3.0. FINDINGS

3.1. TB and Leprosy case detection

3.1.1. Tuberculosis

Based on WHO estimates, Tanzania has an underreporting of about 40% of new infectious cases despite 100% DOTS coverage since 1986. The basic health network in the country is very good and the programme is collaborating fully with the increasing private health sector and other institutions. The three tuberculin surveys conducted in the country shows the transmission of infection is rather stable therefore, it is difficult to ascertain that the under reporting could be of such a magnitude bearing in mind that the WHO estimates are based on computer modeling. However, there is enough indication that there is underdetection of the patients with symptoms of TB. Study done in Mwanza and review team finding in Kigoma showed that there was unacceptable delay for the patients to report to the health facility. The average delay for the patients was about half a year and nearly half of them reported first to the traditional healer. Data from adult mortality and morbidity study shows that TB was the second cause of death in the community in Dar es Salaam. The review team recommends that NTLP should develop strategic plans to increase case detection rate by improving contact tracing and raising people’s awareness of the disease. Active case finding is not advised at this stage due to limited resources.

3.1.2. Leprosy

The number of cases reported in 1999 was almost 50% more than in 1998. This dramatic increase is observed both in pauci-bacillary and multi-bacillary leprosy. The increase is mainly attributed to LEC activities in Mtwara, which detected 1437 more cases than the previous year. Regions reporting highest number of cases were Mtwara (1785), Morogoro (653), Dar es Salaam (386), Kigoma (324) and Tanga (311). Together they reported more than two thirds (68%) of all leprosy cases notified in the country in 1999. In order to reach the WHO leprosy goal by the year 2005, the programme will need to continue implementing LEC and SAPEL activities.

Prevention Of Disability (POD) and rehabilitation of leprosy patients is part of leprosy control. The number of patients diagnosed with disability is still big despite decline from 17% in 1996 to 11% in 1999 of the total number of new cases diagnosed annually. An inventory done in the country between 1993 and 1994 registered a total of 4,437 disabled leprosy patients. This is considered an underreporting and the actual number could be much higher. With the decline in the number of patients notified annually, the programme is now giving priority to POD and rehabilitation. POD and rehabilitation activities have been included in the NTLP three-year development plan, which ended in June 2000 in order to address the special needs of leprosy patients with disability. However, these activities were not implemented properly except for distribution of footwear materials. It is the opinion of the review team that POD activities should be strengthened and where feasible decentralized to general health workers for wider coverage. Issues related to stigma also need to be addressed.

The NTLP three-year development plan for 1997-2000 is a comprehensive document. The planning phase of the document included participation of RMOs, DMOs, DTLCs and RTLCs, Ministry of Health, partners supporting the programme and other stakeholders. Nine specific objectives were identified for this phase of the programme implementation. The vision and activities to reach the objectives included all aspects of the programme within the present restructuring policies of the MOH. There was a one-year’s delay in implementing the plan due to management problems in the transition period. However, the majority of planned activities have been realized during this phase and the achievements are remarkable despite notable staff shortage at the TLCU particularly for IEC and operational research. Almost all activities planned for the regional and district levels were implemented including case finding and supervision. The quarterly assessment by the KNCV programme consultant shows that NTLP was able to implement above 75% of the planned activities for the last two years. The review team felt that the current NTLP objectives are still relevant but in future the programme should put more emphasis on decentralization and integration, promoting community awareness in the control of TB and leprosy and on operational research issues.

3.2.1. TB control in Dar es Salaam

During the 1996 NTLP review it was found that there was high increase of TB patients in Dar es Salaam, which was not coping with the available services leading to congestion of the patients and deterioration of the programme. A separate Plan of Operation was developed in close collaboration with all TB stakeholders and integrated into the three municipalities health plans. Decentralization of diagnostic and treatment services based on clear criteria for burden of work, combined with close supervision and monitoring of the quality of work has improved the services drastically. Since 1998, 63 Clinicians, 80 CBHCs and 20 traditional healers have been trained. The completeness of investigation of TB suspects has increased from 65% in 1998 to more than 90% in 1999. The collaboration and communication with municipalities, private sector, prison and army is good and the quality of provided services are satisfactory measured in treatment outcome results although the workload of staff remains very high. According to TB notification data for 1999, almost two-thirds of all reported cases were notified in seven major regions where TB/HIV co-infection is between 25% and 67%. The review recommends to extend the experience of the Dar es Salaam to other major towns.
3.3. Financial Aspects of NTLP

3.3.1. Present and future funding

In the health sector reform, the sector wide approach (SWAP) has been identified as a financing mechanism for health activities. According to SWAP, funds from donors as well as the Government are pooled/deposited into a common basket similar to the NTLP joint account. These funds are used at national as well as the district levels. At the district level, in addition to the pooled funds, the council is required to look for additional sources of income to finance their activities according to the district health plans. It is anticipated that only planned activities will be funded and there will be a discipline in using these funds. The basket funds will be disbursed to the districts in a form of block grants, in which three types of grants will be involved:

a) Conditional grants: These will cover the national priorities according to the health policy.

b) Unconditional grants: These funds will be used according to the district priorities.

c) Equalisation grants: These are grants, which will be given to the councils with a weak resource base. They will basically be non-conditional grants, but its implementation has been postponed until all the districts are covered by the local government reform.

At the moment funds are being released to the 37 reforming districts through account number 6, which was formerly being used to disburse funds for kerosene procurement. The Ministry has also distributed guidelines on how to manage these accounts and relevant people have been trained.

The Government and partners supporting NTLP are aware of the two joint basket-financing mechanisms. It was however, strongly felt by both parties that a separate funding system for NTLP should be maintained for the next 3-5 years during this transition period. In the long run the two systems will gradually merge taking into consideration achievements gained by the programme, the rising burden of TB and the challenge to eliminate leprosy in the country, which require smooth disbursement of funds. Nonetheless, the review team felt strongly that Ministry of Health should place TB/Leprosy control higher among the priority areas similar to malaria and HIV/AIDS to access additional Government funds.

Finally, the present NTLP financial system works well according to all partners and there has not been shortage of funds to implement approved activities. The system is transparent and allows implementation of activities without delay. The review team concluded that this successful joint mini-basket system of the NTLP should continue until there is enough experience and proof that the HSR basket funding is transparent and fully accountable for integration.
3.4. Health Sector Reform and NTLP

The Government has started implementing civil service and health sector reforms. The reforms aim at improving quality of service provision by increasing coverage and accessibility to the community. The emphasis is being given to the districts as the focal point of implementation. The reform addresses the priority health problems in the country and at district level. TB and leprosy have been included into the national essential health package.

The Ministry of Health and donors commended the NTLP as a vertical programme that is well established throughout the country. The increasing number of cases is not due to programme failure but rather due to the HIV/AIDS epidemic. The Ministry of Health together with the donors agree that the integration of the NTLP should be gradual in order not to lose the achievements gained so far through the vertical programme. *It was also generally agreed that position of the DTLC would have to remain in the structure of the NTLP because TB and leprosy activities require at this epidemiological stage a full time co-ordinator.* The DHMT will need to be more proactive to own the programme and ensure that the DTLCs are fully supported to implement their assigned roles. For example the districts should provide the fuel for the transportation of the DTLC. In turn, the DTLCs should be answerable to the DHMT and be co-opted into district health planning team. Presently not all planning teams in the reforming districts have incorporated TB/Leprosy activities in their plans with a budget. *Therefore, it is necessary to improve the planning and management capacity of the DTLCs in order to strengthen the district planning. Furthermore, the programme needs to develop a package of TB/leprosy activities to be integrated at different levels.*

NTLP is fully aware of the implications of the Health Sector Reforms to the programme and has started to respond accordingly. For example already drug procurement has been integrated into the Medical Stores Department (MSD) procurement and distribution system. NTLP has retained the function of estimating drug and supplies requirements at all levels and distribution within the district.

3.5. Diagnosis and Laboratory Services

3.5.1. Diagnosis policies and methods

Patients with respiratory symptoms present themselves in the government and private dispensaries or hospitals where the general health workers attend them. A tuberculosis suspect is a patient having cough for more than three weeks. Usually TB suspects give three sputum samples for smear microscopy examination in a laboratory: one on the spot, the second in the morning followed by a third on the spot. The common method in use is sputum smear microscopy by Ziehl-Neelsen (ZN) technique. If two of the specimens are found positive, then the patient is classified as a smear positive (infectious) TB patient. If the specimens are negative, further examination is performed
following the steps of the provided flow chart in order to ascertain the diagnosis of TB. According to the cost-sharing policy of the Ministry of Health, smear microscopy examination is supposed to be given free of charge to all suspects of tuberculosis.

During the review, a team of two members specializing in laboratory services visited three regions – Mwanza, Dar es Salaam and Mbeya. In addition all team members checked on laboratory services using a questionnaire. The major findings in the review of the laboratory services can be categorized into strengths and weakness.

Strengths

- There was adequate amount of laboratory reagents and supplies in all regions visited which were obtained from the pharmacy stores after approval by the DTLC.
- The majority of the units visited had a working binocular microscope
- A good recording and reporting system of laboratory results was in place in all units and the turn around time for the smear microscopy results was between 48 to 72 hours after receipt of the specimen.
- In most of the laboratory registers seen, new smear positive cases had district TB numbers appended indicating that the DTLC was updating them regularly.

Weaknesses

- All facilities did not have a laboratory bench manual.
- It was noted that the number of cases detected and recorded in the laboratory registers in the urban settings was consistently higher than those on the treatment register indicating that some patients were lost before start of treatment. For example in Temeke and Mnazi Mmoja up to a quarter of the patients (56/240 and 10/95 respectively) diagnosed in the first quarter 2000 could not be accounted for and were missing in the district register book.
- Serial laboratory results for the 3 initial specimen taken for smear microscopy were in most cases the same, suggesting that “once positive always positive”
- Not all health facilities visited provided free smear microscopy services contrary to the cost-sharing policy of the Ministry of Health.

3.5.2. Organization of Laboratory network, structure and staffing

TB and Leprosy laboratory services are integrated into the general health care and are organized in three levels – Peripheral, Zonal and the Central level. The peripheral laboratories are multi-purpose in nature and carry out sputum smear microscopy as part of the general laboratory service in the district. Institutions and private laboratories also carry out sputum smear microscopy based on
NTLP protocols. The zonal and central laboratories are specialized specimen referral centres for the surrounding regions. The main findings from the review regarding organization and laboratory network was grouped into strengths and weakness as shown below:

**Strengths**

- Laboratory networking system is well established and functioning. In the regions visited, the zonal and regional laboratory technologists were supervising lower levels regularly except the Lake zone.

- There is a regular flow of information from the lower to higher levels and in turn they were getting feedback.

**Weaknesses**

- The team noticed a serious shortage of qualified personnel to manage the laboratories. In many cases laboratory assistants managed district laboratories.

- In all regions visited, there was no functioning maintenance system for laboratory equipment in general and microscopes in particular.

- The laboratory staff are neither motivated nor oriented to the functions of the NTLP

3.5.3. Quality control of sputum smear microscopy

According to the guidelines, TB laboratories are required to keep a representative sample of all positive and negative slides in a box after reading them until the next visit of the supervisor. The DTLC periodically collects these samples to a higher-level laboratory for blind reading and brings feedback. The review team observed the following:

**Strengths**

- Most laboratory workers were able to describe the internal quality control measures used including storage of positive samples for testing new batches of stains.

- All laboratories visited are participating in external quality control using slides prepared at CTRL. For example in 1999, all regions participated except Coast.

- Concordance has been found to be high

- There is feedback from higher levels.

**Weakness**

- Not all laboratories keep slides for quality control.
3.5.4. Culture and sensitivity

NTLP does not do routine cultures for *Mycobacterium tuberculosis* for diagnosis purposes at all levels. Cultures are normally done at the zonal and central levels for selected new cases (usually 25% of all cases) and all re-treatment cases for surveillance of drug resistance. In addition these laboratories also support TB/HIV research activities. However, drug sensitivity testing is performed only at the CTRL using the Resistance Ratio method (RR). Results accumulated over the years have shown multi-drug resistance generally to be below 1%. External quality assessment done by exchanging mycobacterium strains between CTRL and the South Africa National Institute for Medical Research (SANIMR) showed a high level of agreement between the two laboratories on two separate occasions except for streptomycin. Despite the good achievements, the review team identified a number of weaknesses that are shown:

- The method of sampling and testing for drug resistance surveillance does not conform to WHO guidelines.
- The flow of specimens from the districts to reference laboratories has not been regular due to lack of universal glass containers.
- There is a high contamination rate of culture specimens both at the lower levels and within the laboratory because of faulty equipment. For example, Bugando Medical Centre is using hot air ovens instead of an appropriate incubator room.
- Plumbing system is old and broken down at CTRL leading into water shortage.

3.6. Treatment, Supervision and Monitoring

3.6.1. Treatment Policies and Regimens

The overall objective of NTLP is to reduce sources of infection in the community by treating patients immediately once they are identified thereby reducing the source of infection and its transmission. In the long run this will reduce incidence and prevalence of TB and leprosy in the community. Patients start treatment in the outpatient facility nearest to their home. WHO-MDT is used for the treatment of Leprosy patients where MB leprosy patients are treated for 12 months and PB patients for 6 months. For TB, treatment is categorized into four groups according to WHO guidelines. In all categories, patients receive 2 months intensive supervised treatment (as in-patient or ambulatory) followed by ambulatory treatment for 6 months or more as shown in the regimens below. The oral drugs used are Rifampicin (R), Isoniazid (H), Pyrazinamide (Z) and Ethambutol (E). Streptomycin (S) is given in an injection form while Rifampicin is normally combined with Isoniazid.

- **Category 1**

  All new smear positive cases and severe TB cases: 2HRZE/6EH
• Category 2

Failure and re-lapse cases get a re-treatment regimen: 2SHRZE/1HRZE/5{RH}3E3H3

• Category 3

All smear negative cases and extra pulmonary cases: 2SEH/10EH

Dar es salaam, smear negative and extra pulmonary cases : 1.5{RH}3Z3H3E3/6.5EH

• Category 4

Chronic cases: No treatment in Tanzania

The Directly Observed Treatment Short-course (DOTS) chemotherapy was introduced in 1982 starting with 2 regions (Tanga and Kigoma) and expanded to cover the whole country by the end of 1986. The health staff supervises the Rifampicin containing treatment phase daily. At the moment, NTLP is also considering to change the treatment of smear negative and extra pulmonary patients by using a shorter Rifampicin containing regimen. Streptomycin will be omitted in the new regimen to minimize possibility of transmitting HIV infection through injections. However, the drug will continue to be used for retreatment of relapse or failure cases. The review team recommends continuing with the system of supervising the Rifampicin intake daily because this has helped the country to maintain a low level of anti-TB drug resistance.

All new smear positive patients on treatment are monitored for sputum conversion at 2 months, (3 months for retreatment), 5 months and at the end of the treatment which is usually one month before completing treatment. To monitor sputum conversion patients bring only one specimen for smear microscopy. The results are registered in treatment cards and unit treatment registers. The team found this information to be fairly complete in most of the areas visited. However, in some of the regions visited e.g. Arusha and Dodoma the team found discrepancy between the information in the district register and the one sent to TLCU.

A new DOTS and Rifampicin Accounting (DRA) register was introduced in all treatment centres in 1999. This book has proven to be very useful in monitoring the daily attendance of patients and consumption of Rifampicin. The review team commends TLCU for starting the DRA register and strongly recommends its continuation and expansion to all centres.

According to the cohort reports, on average around 9% of the cases abscond from treatment. There are a number of reasons including change of address and transport costs etc. Defaulter tracing is usually the responsibility of the NTLP staff but because of the high workload, it is inconsistently carried out. In Dar es Salaam more than 80 Community Based Health Workers (CBHCs) have been trained in the last two years to perform defaulter tracing with good results. In addition other
patients also help the programme to trace defaulters. The team felt this was an area of research to identify risk factors leading to defaulting from treatment for future intervention.

3.6.2. Supervision plans and practices

Supervision is one of the important tools in controlling and monitoring the implementation of the national tuberculosis and Leprosy Programme. The main aim of supervision is to improve the performance of the individual health worker and to ensure adherence to the NTLP standards. Supervision is done at three levels. The national level is supposed to supervise each region at least once per year. The regions supervise districts once every three months as a minimum. The districts supervise diagnostic and DOTS centres once every month and continuation centres once every quarter. Additional supervision may be done at any level if problems persist.

The team found that each region was visited by TLCU at least once per year in the past two years. Some regions such as Dar es Salaam, Tanga, Morogoro, Arusha and Mwanza were being visited more than twice in a year. The programme had a schedule for supervisory visits at different levels that were being followed. However, written feedback was not being given regularly to the lower levels. Nonetheless, the high level of skills among NTLP staff suggested that regular supervision and on-the-job training activities are performed throughout the country. At all levels, information about NTLP policies were well understood and generally followed. Biannual meetings are convened with RTLCs to review regional data, identify constraints, and propose solutions. KNCV consultant attends these meetings regularly. The team recommends continuing with supervision at the current frequency and if possible maintaining the quarterly and bi-annual meetings of the programme.

3.7. Human Resources and Training

3.7.1. Staff in the TLCU

The TLCU has a total of 16 staff members including the reference laboratory personnel: three medical officers, an accountant, a research co-coordinator on secondment, a supply officer, administrative assistant, an accountant, data management clerk, secretary and two drivers. Half of the employees are permanent government staff while the remaining are on a contract basis. The Netherlands Government has provided a public health specialist to assist the programme in 1998 who was assigned to oversee TB/Leprosy control in Dar es Salaam for three years. Presently, the workload at TLCU has tremendously increased beyond its capacity because of increasing caseload and training needs to implement HSR. A statistician is also needed for better data management at TLCU. In additional to the allowed manning level, the review team recommends two more medical officers and a statistician at TLCU.
Over the years, NTLP had received technical support from IUATLD and KNCV in a form of consultant’s visits twice yearly. WHO and GLRA have also been regularly providing technical input to the programme. Since 1998, IUATLD stopped visiting the programme but a KNCV consultant has continued to visit biannually. There are numerous comprehensive reports on these visits with recommendations. GLRA gives technical support by providing a consultant for leprosy who also covers Ethiopia and Sudan. WHO provides consultancy when requested or in a form of workshops. The role of the IUATLD has been reduced to annual conferences.

The team felt that the present arrangement of getting external consultancy should continue in order to enrich the programme with new ideas and identify blind spots in the programme to improve its performance.

The review team found that all regions and districts had a full-time TB and leprosy coordinator. Most coordinators interviewed were knowledgeable, motivated compared to other general health workers and were active in the programme. Many of them have launched independent initiatives to increase defaulter tracing, improve case management by involving communities in the care of TB patients as it was observed in Dar es Salaam and Kilombero district. The team observed that this network of skilled staff was critical to the overall success of the programme and must be maintained.

Because of the ‘vertical’ nature of the programme the majority of the general health workers have not been involved in NTLP activities and therefore their knowledge and attitude towards TB and Leprosy was found to be unsatisfactory in many health facilities visited. In–service training together with a simplified TB/Leprosy manual for general health workers is needed.

The first edition of the TB/Leprosy manual was printed in 1987. The present third edition, which came out in 1995, addressed new challenges in TB and Leprosy control, including TB/HIV co-infection and prevention of disabilities in leprosy. Nearly all programme staff who were interviewed by the review team had a manual and implemented the programme accordingly. However, the manual again needs revision to take into consideration the change in treatment regimen, health sector reforms and evolving knowledge of TB/HIV co-infection.

3.7.2. Training policies

The NTLP as a rule provides in-service training to its new staff who are joining the programme. All new DTLCs undergo a one-month’s training course. The last course was organized in 1999 when 57 DTLCs were trained in two sessions partly remove a backlog of previous years. The programme also has been hosting international TB courses in collaboration with IUATLD in Arusha for the last ten years. All RTLCs and several DTLCs have attended this 3-weeks’ course. Besides, all RTLCs have attended the leprosy course in Ethiopia organized by ALERT and sponsored by GLRA except for the RTLC from Arusha and Tanga. Apart from the above structured training, NTLP does not have clear policies for postgraduate training to improve programme management.
Despite all this, the review team found that case management skills of NTLP staff in TB were far better than for leprosy despite the above-mentioned courses. The Programme Management skills of DTLCs were found to be weak even in the districts that are under Health Sector Reforms. Furthermore, many of them need refresher course to improve their knowledge.

Some of the DTLC were last trained in late 1960’s or early 1970’s. In Zanzibar the training of laboratory staff has not been done for many years. The team also established that many TB/Leprosy coordinators lacked the necessary skills to counsel patients on HIV testing despite the increasing problem of dual TB/HIV infection. Finally the team felt that the management skills of NTLP staff needs to be improved to meet the changing roles of the programme.

The review team also visited Muhimbili University College of Health Sciences (MUCHS) to discuss the TB/Leprosy training for undergraduate and postgraduate students. Tuberculosis and leprosy is taught in the 3rd year (theory) and 4th year (practice). In fact TB is high on the agenda including case detection, diagnosis, treatment and management of cases. WHO and NTLP manuals are used as training materials. However, there is no curriculum for undergraduate training. They use guidelines that were developed in 1973. HIV/AIDS is also included as dual infection with TB. TB and leprosy is also taught in paramedical schools including nursing. The teaching staffs expressed their concern that there is no collaboration between the Medical school and NTLP. NTLP does not participate in teaching of medical undergraduates unlike in paramedical schools and there is little collaboration in research activities. They also considered NTLP a vertical programme that is rigid. The staff recommended to the NTLP to use their expertise in research activities. The challenges of NTLP in the present Health Sector Reform were discussed. The lecturers admitted that they were not aware of the recent policy changes in the provision of health care services. The team recommends NTLP to be closely involved with training of students at all levels by providing technical support and materials and where feasible updating the teaching staff.

3.8. Logistics

3.8.1. Estimates, procurement and storage

In April 1999, a Memorandum of Understanding between the MSD and the Ministry of Health was signed to formalize the handling of the NTLP drugs and supplies by MSD. The memorandum clearly defines the roles of MSD and NTLP in procurement, clearance, storage and distribution across the country up to the zonal level. MSD is a semi-autonomous body of the Ministry that procures drugs and supplies under the supervision of the Medical Tender Board and distributes them to all zones in Tanzania. The Pharmacy Board oversees the quality of drugs procured, their registration in the country and post-market surveillance for all drugs including TB and leprosy. The Government has deliberately restricted importation of TB and Leprosy drugs and only NTLP can supply them to the general public to minimize misuse and subsequently drug resistance. Drugs and supplies consume more than one half of the NTLP budget. At the moment only TB drugs are procured through MSD. Plans are underway also to include laboratory equipment and supplies. WHO donates leprosy drugs but also follow the same storage and distribution system.
TLCU prepares annual estimation of drug requirements based on the projected number of patients in the following year taking into consideration the recommended treatment regimen and the available stock in the country. Usually the programme includes a 6 months buffer stock at national level and three months stock at regional and district levels each amounting to 12 months cumulatively. A formal request is then forwarded to MSD with clear instructions on the items required and other specifications including strength, labeling and time of delivery. Since the average lead-time between placing an order and arrival into the country is about 6 months, the programme usually prepares for a new order 3 months prior to the start of the annual procurement cycle.

TLCU usually prepares the distribution list and the Regional Medical Officer collects the drugs and supplies from MSD zonal stores together with other non-NTLP hospital supplies and stores them in regional and district pharmacies respectively. The distribution within the region generally follows the routine system. RTLCs and DTLCs also participate in the distribution of the drugs during their supervision trips. MSD and RTLC provide separate feedback to TLCU on distribution and receipt of the items. In addition, a manual on “Management and Control of Tuberculosis and Leprosy drugs and Supplies” which was launched in January 2000 has been distributed across the country. This booklet is a good guide for field personnel on logistics issues.

The review team did not get any complaints about the system and did not observe shortages of drugs or other consumables in the field. However, the storage of these drugs in some of the regions including Dar es Salaam was not always satisfactory. A number of drugs were still kept in their boxes on the floor and bin cards were not always in use. In other regions such as Arusha, the pharmacist was not directly responsible for maintaining the drug ledger. The review recommends NTLP to continue with the current arrangement of drug procurement and distribution but should improve on drug storage and recording.

3.8.2. Transport

Each RTLC has a 4-wheel drive vehicle for supervision and monitoring of programme activities while each DTLC has a motorcycle. GLRA provides funds for procurement and running of these vehicles. However, at the moment GLRA does not support TLCU. All vehicles were functioning during the review except for those at TLCU which were old and not economical to run. The team recommends that TLCU should replace some of the aging vehicles using funds from the Joint Account.

3.9. Recording and Reporting

Accurate keeping of records of all individual patients, maintaining of up-to-date registers and reliable reporting are essential to the management of the programme. All recording and reporting forms are in line with NTLP guidelines and follow WHO recommended format. Notification data is compiled on a quarterly basis with the cohort analysis of treatment outcome from each district being reported to the central unit by the regions. Every report from the district level is scrutinized by the RTLC before forwarding it to the national level where it is entered in a computer using
Access programme. Usually the districts and regions get feedback during quarterly and annual meetings respectively. *Due ‘verticality’ of NTLP most of information compiled by the DTLCs is forwarded to TLCU without being utilized at local level by DHMT.*

The NTLP reporting system is parallel to the Health Management Information System (HMIS), which is functioning in most districts in Tanzania Mainland but not in Zanzibar. The HMIS format includes tuberculosis and leprosy case detection data, the total number and infectious cases reported quarterly but does not include cohort analysis. Thus HMIS at the moment is limited in its scope and geographical coverage

During the review it was found that generally all recording and reporting forms were filled appropriately and consistently with the exception of some few regions notably Arusha and Morogoro where inconsistencies were noted in the district registers. In Morogoro urban, for example data on sputum results at diagnosis and follow up was missing in the district register for 30% of cases registered in 1st quarter 2000. The programme at the moment does not collect data on patients developing reactions during and after MDT treatment. Also there was no disability register for leprosy patients. *Overall, the review team recommends NTLP to continue with the current reporting system because it allows monitoring programme performance while at the same permitting global comparison with other WHO member states. However, the information should be shared at all levels through the relevant focal people.*

### 3.10. Inter-sectoral Collaboration

3.10.1. Collaboration with Non-Governmental Organisations and Private Sector

The Ministry of Health recognizes the important role other agencies such as voluntary agencies and private for profit sectors can play in the control of TB and leprosy in the country. The team visited two private hospitals, a prison hospital and a military hospital. These hospitals have recently started treating TB patients in collaboration with NTLP. NTLP provides the drugs to the hospital and in return the hospital treat the patients according to NTLP guidelines. A medical officer has been appointed by NTLP to coordinate TB/Leprosy activities in private hospitals. The team observed that the knowledge of some of the private sector staff is not up to date causing delays in diagnosing patients. Most mission hospitals visited said they have good collaboration with NTLP.

The team also observed that there is close collaboration between NTLP and Tanzania Leprosy Association (TLA), a local NGO that has been in existence for the last 20 years and is responsible for rehabilitation of leprosy patients in collaboration with GLRA and Social Welfare Department of the Ministry of Youth and Employment. There are other partners such as Rotary International and International School of Tanganyika which are also collaborating. *The team strongly recommends strengthening the collaboration with all stakeholders to improve services provided and the social economic rehabilitation of leprosy patients.*
TB and HIV-infection is very much linked together. In many districts around 50% of TB cases are dually infected. Despite that the review team observed that there is no formal structural collaboration between NTLP and NACP. The MOH is aware of this situation and in the ongoing restructuring of the National AIDS Control Programme (NACP), areas of collaboration between the two programmes will be identified and strengthened. The team supports the view of the Ministry and recommends that the two programmes should develop a structure for collaboration at different levels particularly in health education, development of IEC materials and preventive therapy in dually infected persons.

3.10.2. Collaboration with refugees’ camps

NTLP has been involved in treating refugees in Kagera and Kigoma regions for more than 10 years. The refugees are treated according to the national guidelines. Kigoma region has 10 refugee camps with a population of more than 300,000. Each refugee camp has a health facility.

One team visited two refugee camps, Mtabila 1 and Mtendeli in Kasulu and Kibondo districts respectively. Treatment regimes are those of NTLP. Patients receiving DOTS are admitted to the health facility. Staff is trained by NTLP with financial support from UNHCR. The DTLCs visit the camps monthly to register new patients and to provide on-job training. This takes at least 2 days every month for each DTLC. The cost of drugs, supplies and supervision is borne by NTLP. Reporting and recording is also according to the national guidelines although in one unit the register was not properly filled. Patient identity cards were in Kiswahili. Only Mtendeli Refugee camp had guidelines for repatriation of TB cases. There is no standardized policy and guidelines on management and repatriation of TB/Leprosy patients in different camps.

The district and unit TB registers were reviewed to determine the proportion of refugees among newly registered cases as shown below:

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Kibondo</td>
<td>76/133 (57%)</td>
<td>N/A</td>
<td>58/92 (63%)</td>
</tr>
<tr>
<td>Kasulu</td>
<td>78/200 (39%)</td>
<td>114/279 (41%)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

This shows that the caseload attributable to the refugee population is increasing and contributes to almost half the workload in the two districts. Cohort analysis is done on the combined local and refugee population. Separate cohort analysis showed that the cure rates are higher in the local population than in refugees 67.8% and 35.5% respectively. The refugees had higher transfer and defaulter rates. Thus the additional caseload from the refugee population not only is reducing the reported cure rates of the respective districts but also adds a big burden to the programme in defaulter tracing. **UNCHR together with WHO should take up the matter to lessen the burden on the shoulders of NTLP.**
3.11. Advocacy and IEC

Advocacy and health education is important for creation of awareness for policy makers, health workers, patients and the community at large in the control of TB and Leprosy. The review team observed that advocacy activities were carried out only during World TB and Leprosy day celebrations. There is no clear strategy for IEC and the available materials were insufficient despite including IEC activities in the previous 3-year development plan. Many of these activities have not been implemented. Generally patients were poorly informed about TB and Leprosy. For example, in Kigoma only 37.5% of patient knew about the cause of TB and only a half of patients (50%) admitted to have been informed on TB prior to diagnosis. Some health units had leprosy posters written in English, which are not suitable for that community. Community awareness has not been addressed by the NTLP. TLCU has deployed a nurse to be a focal person in IEC activities since March 2000. The team recommends that simple and appropriate IEC materials should be developed in collaboration with other relevant agencies or departments.

3.12. Operational Research

Operational research is important for assessing and improving the programme performance within the local context. It provides relevant information necessary for the decision making process at all levels leading to better performance and subsequently to improvement in the health of the population.

The team noted that in the last 3 years, there have been a number of operational research activities conducted at national level including: TB/HIV, Tuberculin Survey, TB drug resistance surveillance, Community Based DOTS in one district and Rapid Serological Test for diagnosis of TB. Various institutions in collaboration with NTLP are conducting these studies. There is no operational research initiated at lower levels because of limited capacity. The limited capacity at TLCU also does not allow for coordinating and initiating more research activities. Recently one public health specialist joined TLCU to strengthen its capacity in operational research. The team recommends that the capacity of NTLP to conduct operational research be improved to take the leading role in its coordination. The team also urges NTLP to collaborate with other agencies to initiate additional operational research.
4.0. RECOMMENDATIONS

4.1. TB and Leprosy case detection

4.1.1. NTLP should develop a strategic plan to increase TB case detection rate to reach the WHO recommendation (75%) through improving contact tracing and increasing community awareness.

4.1.2. There was sharp increase in number of Leprosy cases notified in the last two years largely due to SAPEL and LEC activities. This indicate that there is big backlog of the patients who are not reached through the routine system, therefore there is need to increase and strengthening of SAPEL and LEC activities in order to reach the WHO goal of eliminating leprosy by the year 2005.

4.1.3. The team observed that Prevention Of Disability (POD) activities are not implemented properly with exception of distribution of footwear. The review team recommends that Prevention Of Disability (POD) activities should be strengthened and where feasible decentralized to general health workers for wide coverage.


4.2.1. A new 3-year development plan should be prepared in line with the Medium-Term expenditure Framework of the Government with participation of stakeholders from different levels.

4.2.2. The current NTLP objectives and strategies are still relevant but in future the programme should put more emphasis on promoting community awareness on TB/Leprosy, Health Sector Reforms and operational research issues.

4.2.3. The number of TB cases continues to increase in the country mainly due to HIV/AIDS infection. However the rate of increase is much higher in urban areas compared to the rural areas. The review team recommends extending the experience of the Dar es Salaam to other major towns.

4.3. Financial Aspects of NTLP

4.3.1. The present NTLP financial system works well and should continue until there is enough experience and proof that the HSR basket funding is transparent and fully accountable for integration.

4.3.2. The scope of Government financial commitment should be gradually increased to ensure sustainability of TB/Leprosy control in the country.

4.4. Health Sector Reform and NTLP

4.4.1. In order for the districts to incorporate TB/Leprosy activities in their plans, NTLP should provide a package on specific programme activities to RHMT and DHMT.
4.4.2. DTLCs and DHMT management and planning capacity on TB/Leprosy should be improved.

4.5. Diagnosis and Laboratory Services

4.5.1. The staffing and distribution of qualified laboratory staff should be reviewed in order to reduce the critical shortage of qualified personnel at all levels.

4.5.2. NTLP should rectify the mal-distribution of the diagnostic centres and where necessary open new diagnostic centres.

4.5.3. The review team recommends that the preventive maintenance workshops for laboratory equipments should be revived.

4.5.4. Rehabilitation of infrastructure especially at CTRL and improvement of the quality of diagnostic equipment at all levels should be undertaken.

4.5.5. The proposed quality assurance scheme should be implemented at all levels and adherence to at all levels with emphasis on regular refresher training of laboratory staff, availing bench work manual and monitoring of junior staff.

4.5.6. Tuberculosis/Leprosy suspects should continue to be exempted from paying user fees for smear examination

4.6. Treatment, Supervision and Monitoring

4.6.1. In order for the country to maintain a low level of anti-TB drug resistance, Daily Rifampicin Accounting (DRA) system should be expanded to all centres.

4.6.2. The review team recommends that quarterly DTLCs meetings and biannual RTLCs meetings should be maintained.

4.7. Human resources and Training

4.7.1. RTLCs and DTLCs should remain as functional officers and their management skills should be strengthened.

4.7.2. Additional technical staff is needed in TLCU due to increasing demand. The review team recommends the recruitment of two more medical officers and a statistician.

4.7.3. Management skills of TLCU staff need to be improved to meet the changing roles of the programme.

4.7.5. The review recommends the present external technical assistance to the programme should continue
4.7.4. The current TB/Leprosy manual which was prepared in 1995 needs revision to take into consideration new changes in the health service delivery.

4.7.5. General health workers should receive in-service training on the management and control of TB/Leprosy as well as on raising community awareness.

4.7.6. A simplified TB/Leprosy manual for general health workers is needed.

4.7.7. The review team recommends NTLP to be closely involved in training of medical and paramedical students by providing technical and material support and where feasible updating the teaching staff on TB/Leprosy programme activities. The programme should be involved in the review of curriculum in medical and paramedical schools.

4.8. Logistics

4.8.1. NTLP should continue with the current arrangement of drug procurement and distribution. Drug storage and recording should be improved by using bin cards and ledgers in the pharmacy stores. TLCU should replace some of the aging vehicles using funds from joint account.

4.9. Recording and Reporting

4.9.1. The team recommends NTLP to continue with the current reporting system because it allows monitoring programme performance while at the same permitting global comparison with other WHO members states. However, the information should be shared with the HMIS and DHMTs for use.

4.10. Inter-sectoral Collaboration

4.10.1. The collaboration between NTLP and private sector, other stakeholders in TB/Leprosy control such as Tanzania Leprosy Association needs to be expanded and strengthened.

4.10.2. National Tuberculosis and Leprosy Programme and National Aids Control Programme should develop a structure for collaboration at different levels. The review team recommends that this collaboration should be in the area of health education, development of IEC materials, home based care and preventive therapy of dually infected persons.

4.10.3. Voluntary Counselling Test (VCT) services for HIV suspects should be expanded to include TB patients. DTLCs and general health workers need training in counselling skills.

4.10.4. The refugee population contributed half of the TB caseload in two of the districts visited. The cost of drugs, supplies and supervision for these patients is borne by the NTLP. The Ministry of Health and agencies should seek additional funding from UNHCR and WHO.
4.10.5. The roles of the NTLP, UNHCR, WHO and other NGOs in the management and treatment of TB / leprosy patients in refugee camps needs to be clearly defined. Standardized policy and guidelines must be implemented.

4.11. IEC and Operational research

4.11.1. NTLP should develop clear IEC strategy to raise community awareness on TB/Leprosy control. Simple and appropriate IEC materials should be developed in collaboration with other relevant stakeholders.

4.11.2. The team recommends that the capacity of NTLP to conduct operational research be improved to take the leading role in coordinating operational research. NTLP should collaborate with other agencies to initiate additional operational research.
REFERENCES


Annex 1
Map of Tanzania
Annex 3

Terms of Reference of the Review

3.1 Review the current organizational and management structure of NTLP within the Ministry of Health and propose any change if necessary to ensure that the programme is an integral part of the national health care system.

3.2 Review the overall progress of the 3-Year Development Plan in the light of existing objectives and expected results and recommend future improvement.

3.3 Review and assess the ongoing HSR and provide guidelines on the integration of TB/Leprosy activities at different levels including accounts.

3.4 Review and assess the current training capacity and provide guidelines on the development of a future TB and leprosy training programme.

3.5 Review and assess the current state of operational research and propose modalities of making operational research an integral part of NTLP.

3.6 Assess adequacy and performance of NTLP laboratory services and its network particularly in quality control and drug resistance surveillance and recommendation ways to improve them.

3.7 Review the impact of HIV infection on tuberculosis and leprosy control and propose strategies for improved collaboration on prevention and care of people with dual infections.

3.8 Review the current I.E.C strategies in the 3-Year Development Plan and propose ways to strengthen them.

3.9 Review and assess the role and responsibility of technical assistance to the NTLP and make specific recommendations if and how these may be improved.

3.10 Review the role of Academic Institutions, NGOs and private sector in the provision of TB and Leprosy services.
Annex 4
Review team members

**Team 1**
Dr. L. Parkkali (KNCV)
Dr. V. Kipendi (RMO – Shinyanga)
Dr. S. Egwaga (TLCU-MoH)
Mrs. R. Kikuli (DPP-MoH)

**Team 2**
Dr. A. Kimambo (TPHA)
Dr. W. Mturnbuka (RTLC – Ruvuma)
Mr. A. Juma (Acting PM – Zanzibar)
Mr. B. Mapalala (CTRL)
Dr. G. Somi (NACP-MoH)
Dr. B. Mwamasaga (DHR-MoH)

**Team 3**
Dr. L. Westman (GLRA)
Dr. E. Mwanemile (DMO-Dodoma rural)
Dr. P. Mhame (DHS-MoH)
Dr. M. Sahali (RTLC-Shinyanga)

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Dr. L’Herminez (TLCU-MoH)
Dr. M. Kimala (RTLC-Singida)

**Team 5**
Dr. B. Njako (TLCU-MoH)
Dr. J. Khan (RTLC-MoH)

**Team 6**
Dr. T. Aisu (Uganda)
Mr. T. Chonde (CTRL)

**Team 7**
Dr. A. Hussein (IPH-MUCHS)
Dr. E. Wandwalo (TLCU-MoH)
Dr. S. Lwechungura (RTLC-Kagera)
Dr. B. Corcoran (Ireland Aid)
Annex 5

List of place visited and persons met

Ministry of Health
Mrs. Mariam Mwafisi  Permanent Secretary
Dr. G. Upunda  Chief Medical Officer
Dr. A. Mzige  Director, Preventive Services
Dr. P. Mbuji  Ag. Director, Hospital Services
Dr. S. Pemba  Ag. Director, Human Resource Development
Mr. Muhume  Chief Pharmacist
Dr. Hingora  Head, PHC Secretariat
Dr. Sam Nyayura  HSR Advisor

Donors supporting the Programme
Mrs. Amina Ally  Irish Aid
Dr. R. Verduin  GLRA
Mr. U. Preuss  GLRA
Mr. Buluba  SDC
Dr. Steenbergen  RNE
Dr. Amri  WHO Country Office

Ministry of Finance
Mr. N. Magambo  Assistant Commissioner for Budget
Mr. S. Kibaja  Senior Finance Officer

Muhimbili University College of Health Sciences
Prof. K. Palangyo  Internal Medicine Department
Prof. Matuja  Internal Medicine Department
Dr. F. Mugusi  Internal Medicine Department
Dr. N. Simkoko  RTLC Ilala II

Ilala Municipal
Mr. J. Lubuva  Municipal Director
Dr. J. Kahama  DMO Ilala Municipal
Mr. A. Swai  RTLC Ilala I
Mr. Mniko  Amana Hospital Administrator
Mr. R. Malekela  TB/Leprosy Coordinator Ukonga Prison

Kinondoni Municipal
Dr. E. Mkondya  Programme Service Coordinator
J. Msangi  RTLC Kinondoni
Temeke Municipal
M. Kimori
Pharmacist
Dr. N. Kapalata
RTLC Temke Temke
Mariam Mindu
DTLC Tambuka Reli
A. Malewo
DTLC Temke

Mtwara and Lindi Regions
Mr. Duwe
Ag. RAS Mtwara
Dr. Budeba
RMO Mtwara
Dr. Mnandoa
RTLC Mtwara
Dr. S. Kungulwe
DMO Mtwara
Dr. A. J. Mohamed
RMO Lindi
Dr. Maulid
Ag. DMO Lindi
Mr. F. Stephen
DNO Nachingwea
Mr. Gwaya
Pharm Assist Nachingwea
Dr. Souke
M.O. (Nurse) Mnero hospital
Sr. Imaculata Mbinga
Hospital admin. Nachingwea
Mr. K. Mnali
Trained Nurse. Nachingwea
Dr. J. Abdulrahman
RTLC Lindi
Dr. E. Mhando
MO i/c Sokoine Hospital - Lindi
Dr. Hella Archie
Doctor MO i/c Kilwa
Dr. Mbukwa Archie
DTLC Kilwa
Dr. Mkapa
Ag. DMO Newala
Dr. Ungere
Ag. DMO Masasi
Mr. A. A. Kimbali
Clinical officer i/c Masoko H.Centre

Iringa Region
Dr. E. Mpuya
RM0 Iranga Region
Mrs. C. Cheremia
Regional Administrative Secretary Iranga
Mr. Kiningu
Regional laboratory technologist
Mr. Malamusha
Regional Pharmacist
Dr. Mhmisole
RTLC Iringa
Mr. J. Mwendu
DTLC Iringa Urban
Mr. C. Kawano
DTLC Iringa Rural East
Mr. P. Jengela
DTLC Iringa Rural West
Mr. E. Goroyi
District Commissioner Iringa Rural
TB nurse
Ngome Health Centre Iringa Urban
Dr. F. Kunyaga
DMO Mufindi District
Mr. P. Mwenda
DTLC Mufindi
Mr. S. Kikongozi
District Laboratory Technologist Mufindi

Mr. A. Kiluka
District Pharmacist Mufindi
Mr. H. Mlelwa
Clinical officer in charge Malangali HC
Dr. J. Ruanda DMO Njombe District
Mr. S. Danda DTLC Njombe
Mrs. R Chilongolo Matron Kibena hospital
Mr. Vitas Mgaya Clinical Officer i/c Uwemba HC

Dodoma region

Dr. Machalo RTL C Dodoma
Mr. Ikapu DTLC Dodoma urban
Mrs. Nanjali Nurse Makore health centre
Mr. L. Malingara DTLC Dodoma rural
Mr. T. Mgalle Regional pharmacist
Dr. Ngwandu MOi/c Mvumi hospital
Sr. E. Mnyanguru Matron Mvumi hospital
Mr. Mesa CO Handali Health Centre

Arusha Region

Dr. Omari Chande Ag. Regional Medical Officer Arusha
Dr. F. Mokiti District Medical Officer Arumeru
Dr. Pallangyo Regional TB/Leprosy Coordinator Arusha
Dr. Swai District Medical Officer Monduli
Dr. E. Urasa Medical officer In-charge Monduli Hospital
Mr. Ngowi Regional Pharmacist Arusha
Mr. Andrew Lobora District TB/Leprosy Coordinator Arusha
Mr. George Mrema RLT Arusha
Mr. Sarakija CO i/c USA River dispensary

Kilimanjaro region

Dr. S. Ulomi RMO Kilimanjaro
Dr. C. Irongo RTL C Kilimanjaro
Mr. Goodluck Mosha DTLC Moshi Urban
Mr. Cliff Mushi DTLC Moshi Rural
Mr. Boniface Panga RLT
Ms. Judith Regional Pharmacist
Dr. A. Sameja i/c Majengo H/C
Ms. Emma Kitiwe CO i/c Msaranga dispensary
Dr. Richard Mcharo Ag. DMO Hai
Dr. Macha MO i/c Kibong’oto TB hospital
Mr. John Mnzava DTLC Hai
Mr. Godfred Mrema Lab Technician i/c Kibong’oto Hospital
Ms Happiness Shuma Pharmacist i/c Kibong’oto Hospital
Mwanza region
Dr. Mathias Lefi  Regional TB/Leprosy Co coordinator Mwanza
Mr. Peter Michelle Regional Laboratory Technologist
Mr. De Gratius Maganya Regional Laboratory Technologist
Dr Richard Mwikwabe I/c TB ward Bukumbi hospital
Dr. Mutayoba B.R. District Medical Officer Misungwi

Mbeya region
Dr Mmbando Donman  RMO Mbeya
Dr. Minja Fredirick RTLC Mbeya
Mr John Kisyombe Regional Laboratory Technologist
Dr Gao A.B.M DMO Mbozi

Kigoma region
Dr G Mbaruku  RMO Kigoma Regional Hospital
Dr David S C Muzzazzi Acting MO i/c Kigoma Regional Hospital
Mr Felix Biggi DTLC Kigoma Urban
Pante Abunya Laboratory Technician Kigoma Regional
Mr Masaka Pharmacist Kigoma Regional Hospital
Mr J Semboja DTLK Kigoma Rural
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Mr Matthias N Bwashi DTLK Kasulu District
Mr Makeleno Kabisi Laboratory Technologist, Kasulu District Hospital
Dr Nuru Byamunga TB / Leprosy Doctor Kabanga Hospital
Ms Mary Masawe CO for TB/ Leprosy Mtamili Refugee Camp
Ms Abella Majunga Laboratory Assistant Mtamili Refugee Camp
Dr Matthias Baluya Health Co-ordinator Mtamili Refugee Camp
Mr Shaban Ugumba CO i/c Nyakitintono Health Centre

Mr George Kapufi Health Secretary Kibondo District Hospital
Mr Nicodemus Semagogwa Laboratory Technologist Kibondo Hospital
Mr Anthon C Chanilla CO in Charge Kakonko Health Centre
Mr Barnabas Ndumuligo CO Mtendeli Refugee Camp
Mr Pancras Logistics Manager Mtendeli Refugee Camp
Mr Augusta Vedast Pharmacy Assistant Mtendeli Refugee Camp
Dr Mohammed Qassim Senior Health Co-ordinator UNHCR
**Morogoro region**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position/Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr S Mkambile</td>
<td>RTLC Morogoro Region</td>
</tr>
<tr>
<td>Dr Henry Kitange</td>
<td>Acting RMO Morogoro Regional Hospital</td>
</tr>
<tr>
<td>Mr Isias Mtimbange</td>
<td>DTLC Morogoro Urban</td>
</tr>
<tr>
<td>Ms Gertrude Lebbey</td>
<td>Clinical Officer Mafiga Health Centre</td>
</tr>
<tr>
<td>Mr EA Mchomvu</td>
<td>DTLC Kilombero District</td>
</tr>
<tr>
<td>Ms Eustella</td>
<td>Hospital Matron St Francis DDH</td>
</tr>
<tr>
<td>Mr Godfrey Mdauka</td>
<td>Clinical Officer KITUPA Project</td>
</tr>
<tr>
<td>Mr Anthon Lyachema</td>
<td>CO in Charge Mangula Health Centre</td>
</tr>
<tr>
<td>Mr Stephen Kunjiru</td>
<td>CO in Charge Mkamba Dispensary</td>
</tr>
<tr>
<td>Mr Hussein Mpoto</td>
<td>TB patient Mkamba Dispensary</td>
</tr>
<tr>
<td>Mr Ally Mohammed Liwewe</td>
<td>CB DOTS observer Mkamba Dispensary</td>
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### Annex 6

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<td><strong>TOTAL</strong></td>
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Annex 7

TB patients notified in Tanzania by region in 1990 and 1999

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<tr>
<th>Region</th>
<th>1990 Total Cases</th>
<th>1999 Total Cases</th>
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<td>Arusha</td>
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<td>DSM</td>
<td>4,525</td>
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<tr>
<td>Dodoma</td>
<td>918</td>
<td>1,790</td>
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<td>Iringa</td>
<td>1,141</td>
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<tr>
<td>Kagera</td>
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<td>1,534</td>
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<td>Kigoma</td>
<td>433</td>
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<td>K'njaro</td>
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<td>Lindi</td>
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<td>Mara</td>
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<td>Mbeya</td>
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<td>Morogoro</td>
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<td>Mtwara</td>
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<td>Mwanza</td>
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<td>Shinyanga</td>
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<td>Tanga</td>
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<td>Zanzibar</td>
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<td><strong>Tanzania</strong></td>
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<td><strong>52,437</strong></td>
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Annex 8

Trend of Tuberculosis Case notifications in Tanzania and Dar es Salaam: 1984-1999

[Graph showing annual tuberculosis case notifications for Tanzania and Dar es Salaam from 1984 to 1999, with a legend indicating the contribution of Dar es Salaam to the total cases.]
Annex 9
A: Top 7 regions in TB notifications in 1999

<table>
<thead>
<tr>
<th>Region</th>
<th>Number</th>
<th>HIV Incidence</th>
<th>Growth Rate</th>
<th>Cum. Incidence</th>
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<tbody>
<tr>
<td>Dar es Salaam</td>
<td>13,449</td>
<td>15.7%</td>
<td>-6%</td>
<td>25.6%</td>
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<tr>
<td>Iringa</td>
<td>3,392</td>
<td>8.2%</td>
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<tr>
<td>Arusha</td>
<td>3,429</td>
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<td>Morogoro</td>
<td>3,377</td>
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<tr>
<td>Mwanza</td>
<td>3,377</td>
<td>7.7%</td>
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<tr>
<td>Mbeya</td>
<td>3,305</td>
<td>17.5%</td>
<td>19.6%</td>
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<td>Tanga</td>
<td>3,193</td>
<td>-12.3%</td>
<td>9.7%</td>
<td>6.1%</td>
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Annex 10

B: Treatment outcome results of Relapse cases treated with SCC in Tanzania from 1984-1998.
Annex 11

A: Leprosy notification, prevalence and disability grades 1994-1999

<table>
<thead>
<tr>
<th>Year</th>
<th>Total notified</th>
<th>New MB</th>
<th>Rate/10,000</th>
<th>New PB</th>
<th>Relapse MBT</th>
<th>Disability Gr. I (%)</th>
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<td>0.96</td>
<td>1611</td>
<td>79</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>1995</td>
<td>3924</td>
<td>876</td>
<td>0.90</td>
<td>1664</td>
<td>59</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>1996</td>
<td>3225</td>
<td>1180</td>
<td>0.96</td>
<td>1711</td>
<td>233</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>1997</td>
<td>3475</td>
<td>1441</td>
<td>1.02</td>
<td>1640</td>
<td>239</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>1998</td>
<td>3963</td>
<td>1669</td>
<td>1.15</td>
<td>1906</td>
<td>272</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>1999</td>
<td>5564</td>
<td>2710</td>
<td>1.78</td>
<td>2854</td>
<td>312</td>
<td>14</td>
<td>11</td>
</tr>
</tbody>
</table>

B: Leprosy detection Rates 1983-1999

![Chart showing leprosy detection rates 1983-1999]
## Annex 12

### A: Treatment Results of All PB Leprosy Patients who started MDT in 1994-1997 in Tanzania.

<table>
<thead>
<tr>
<th>Year</th>
<th>Rx Completed</th>
<th>Rx not Completed</th>
<th>Died</th>
<th>Transfer out</th>
<th>Out of Control</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>1854 = 84%</td>
<td>57 = 3%</td>
<td>13 = 1%</td>
<td>28 = 1%</td>
<td>135 = 6%</td>
<td>2202</td>
</tr>
<tr>
<td>1994</td>
<td>1569 = 87%</td>
<td>74 = 4%</td>
<td>22 = 1%</td>
<td>18 = 1%</td>
<td>124 = 7%</td>
<td>1807</td>
</tr>
<tr>
<td>1995</td>
<td>1178 = 85%</td>
<td>77 = 6%</td>
<td>12 = 1%</td>
<td>17 = 1%</td>
<td>94 = 7%</td>
<td>1378</td>
</tr>
<tr>
<td>1996</td>
<td>1472 = 89%</td>
<td>47 = 3%</td>
<td>14 = 1%</td>
<td>22 = 1%</td>
<td>103 = 6%</td>
<td>1658</td>
</tr>
<tr>
<td>1997</td>
<td>985 = 88%</td>
<td>57 = 5%</td>
<td>28 = 35</td>
<td>20 = 2%</td>
<td>24 = 2%</td>
<td>1114</td>
</tr>
<tr>
<td>1998</td>
<td>1722 = 93%</td>
<td>18 = 1%</td>
<td>17 = 1%</td>
<td>29 = 2%</td>
<td>73 = 4%</td>
<td>1875</td>
</tr>
</tbody>
</table>

### B: Treatment Results of All MB Leprosy Patients who started MDT in 1991-1997 in Tanzania.

<table>
<thead>
<tr>
<th>Year</th>
<th>Rx Completed</th>
<th>Rx not Completed</th>
<th>Died</th>
<th>Transfer out</th>
<th>Out of Control</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>696 = 73%</td>
<td>33 = 3%</td>
<td>32 = 3%</td>
<td>56 = 6%</td>
<td>132 = 14%</td>
<td>949</td>
</tr>
<tr>
<td>1993</td>
<td>513 = 70%</td>
<td>37 = 5%</td>
<td>22 = 3%</td>
<td>126 = 17%</td>
<td>38 = 5%</td>
<td>736</td>
</tr>
<tr>
<td>1994</td>
<td>581 = 75%</td>
<td>28 = 4%</td>
<td>17 = 2%</td>
<td>112 = 14%</td>
<td>37 = 5%</td>
<td>775</td>
</tr>
<tr>
<td>1995</td>
<td>674 = 82%</td>
<td>18 = 2%</td>
<td>55 = 7%</td>
<td>52 = 6%</td>
<td>19 = 2%</td>
<td>818</td>
</tr>
<tr>
<td>1996/97</td>
<td>1016 = 81%</td>
<td>43 = 3%</td>
<td>46 = 4%</td>
<td>99 = 8%</td>
<td>49 = 4%</td>
<td>1253</td>
</tr>
</tbody>
</table>