National Strategic Plan
for
Tuberculosis Control

2015 - 2020

National Programme for Tuberculosis Control and Chest Diseases

Ministry of Health, Nutrition and Indigenous Medicine

Sri Lanka

ACKNOWLEDGEMENTS

Panel of Writers

- Dr. Holger Sawert – Consultant, WHO
- Dr. Sudath Samaraweera – Deputy Director, NPTCCD
- Dr. Nirupa Pallewatte – Consultant Community Physician, NPTCCD
- Dr. Pramil Liyanage – Medical Officer (Health Informatics), NPTCCD
- Saman Ranatunga – Project Officer, NPTCCD
- Anuradha Jayasinghe – Project Officer, NPTCCD
- Janaka Thilakaratne – Medical Records Officer (Acting), NPTCCD

Compiled and Published by

Health Information Management Unit, NPTCCD

Cover Design by Dr. Pramil Liyanage

ISBN 978-955-0742-05-9

MESSAGE FROM THE DIRECTOR GENERAL OF HEALTH SERVICES

Since the implementation of DOTS strategy in 1995, tuberculosis control in Sri Lanka has shown a remarkable progress and the end of three-decade long terrorist activities in Northern and Eastern provinces in 2009 has ensured 100% DOTS coverage Island wide.

The country was able to maintain high treatment success rates since 2005 and there was a significant decrease of lost to follow up cases over the years. TB-HIV co infection and multi drug resistant TB has been addressed in a comprehensive manner so that both of these problems are well under control.

Nevertheless, tuberculosis remains a public health problem in Sri Lanka. Annually, around 9,500 tuberculosis patients are identified. Huge disparity in distribution of TB cases across districts is observed.

There were several changes in Global TB Control strategies and there were new developments in TB diagnosis. WHO has revised disease classification of TB to be aligned with these new changes. In order to incorporate the recommendations of the Joint Monitoring Mission held in 2014 and to address these changes in a comprehensive manner, there was the felt need to revise the existing Strategic Plan.

A list of strategic directions has been identified under five objectives to implement the TB control activities. This revised strategic Plan distinctly identifies necessary activities and funding requirements over next five years to ensure TB control activities in Sri Lanka in order to achieve the Post-2015 TB control Targets.

Finally, I congratulate the Director and staff of National Programme for Tuberculosis Control and Chest Diseases, being sensitive to the changes occurring globally as well as nationally and taking the leadership role to develop this revised Strategic Plan.

Dr. Palitha Mahipala

Director General of Health Services

PREFACE

The previous National Strategic Plan for Tuberculosis Control was for the period of 2012 -2016 and was developed four years ago in 2011. However, over the past few years there were many changes related to control of tuberculosis locally as well as globally. World Health Organization has declared post 2015 TB control strategies aiming to end global TB epidemic.

There were introduction of new technologies in tuberculosis diagnosis allowing more rapid diagnosis, benefitting patients individually as well as at community level. There were significant changes in socioeconomic and political aspects of the country which contributed to the improvement of access to health services all over the country. The joint monitoring mission held in 2014 also made several important recommendations for improvement of tuberculosis control activities. Therefore, a need has arisen to revise the existing National Strategic Plan of the NPTCCD.

The development of this new Strategic Plan was a process with the contribution of many individuals and organizations. First of all, I am very thankful to the staff at the Central Unit of the NPTCCD including NTRL, district teams including the District Tuberculosis Control Officers, Sri Lanka College of Pulmonologists, health administrators, experts from universities, professional organizations, international and local non-governmental organizations, UN agencies, community groups representing key affected populations and other public health programmes including the National STD/AIDS Control Programme who have provided their expertise to develop this National Strategic Plan. I also would like to acknowledge the support rendered by the Director General of Health Services, Dr. Palitha Mahipala and Deputy Director General (Public Health Services I) Dr. Sarath Amunugama, during the development of this strategic plan. I am also very thankful to Dr. Holger Sawert, WHO Consultant and the panel of writers, Dr. Firdosi Rustom Mehta, WHO Representative to Sri Lanka and Dr. N. Janakan, National Professional Officer of WHO Sri Lanka for their contribution to develop this National Strategic Plan in line with the Regional Strategic Plan for TB Control. I also express my sincere thanks to the WHO Country and Regional Offices and the Global Fund to Fight AIDS, Tuberculosis and Malaria for their financial support provided. Special thanks goes to Ms. Karin Bergstrom, Independent Consultant and Dr. Priyadharshani Samarasinghe, Consultant Community Physician for helping with proof reading.

I hope that successful implementation of National Strategic Plan will ensure achievement of post-2015 end TB strategies in Sri Lanka.

Dr. K. N. Gamini Senevirathne

Director,

NPTCCD

CONTENTS

ABBREVIATIONS

ACSM	Advocacy, Communication and Social Mobilization
AIDS	Acquired Immune Deficiency Syndrome
ART	Anti-Retroviral Therapy
ARTI	Annual Risk of Tuberculosis Infection
CCP	Consultant Community Physician
CDS	Central Drug Stores
CHW	Community Health Worker
CRP	Consultant Respiratory Physician
DCC	District Chest Clinic
DDG	Deputy Director General
DGH	District General Hospital
DGHS	Director General of Health Services
DOTS	Directly Observed Treatment Short Course
DST	Drug-Susceptibility Testing
DTCO	District Tuberculosis Control Officer
EQA	External Quality Assurance
FDC	Fixed Dose Combination
GDF	Global Drug Facility
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GP	General Practitioner
HIV	Human Immunodeficiency Virus
HR	Human Resource
HRD	Human Resource Development
HSS	Health Systems Strengthening
IC	Infection Control
IPT	Isoniazid Preventive Therapy
ISTC	International Standards for Tuberculosis Care
IT	Information Technology
JMM	Joint Monitoring Mission
KAP	Knowledge, Attitudes and Practices
LED	Light Emitting Diode
LPA	Line Probe Assay
MC	Microscopy Centre
MCH	Maternal and Child Health
MDR-TB	Multi Drug Resistant Tuberculosis
MLT	Medical Laboratory Technician
MO	Medical Officer
MOH	Medical Officer of Health
MSD	Medical Supplies Division
MTB	*Mycobacterium tuberculosis*
NCD	Non Communicable Disease

NGO	Non-Governmental Organization
NPTCCD	National Programme for Tuberculosis Control and Chest Diseases
NHRD	National Hospital for Respiratory Diseases
NSACP	National STD/AIDS Control Programme
NSP	National Strategic Plan
NTRL	National Tuberculosis Reference Laboratory
OPD	Out Patient Department
OR	Operational Research
PAL	Practical Approach to Lung Health
PDHS	Provincial Director of Health Services
PHI	Public Health Inspector
PHLT	Public Health Laboratory Technician
PHM	Public Health Midwife
PLHIV	People Living with HIV
PMDT	Programmatic Management of Drug-Resistant Tuberculosis
PPD	Purified Protein Derivative
PPM	Public-Private Mix
QA	Quality Assurance
R&R	Recording and Reporting
RDCP	Respiratory Disease Control Programme
RDHS	Regional Director of Health Services
SOP	Standard Operating Procedure
STD	Sexually Transmitted Diseases
TA	Technical Assistance
TB	Tuberculosis
TFM	Transitional Funding Mechanism
WHO	World Health Organization
XDR-TB	Extremely Drug Resistant Tuberculosis

1 INTRODUCTION

The previous National Strategic Plan (NSP) for Tuberculosis Control in Sri Lanka covered the period from 2012-2016. The plan was based on the Stop TB Strategy Framework and the Global Plan to Stop TB, 2011-2015. The central aim of the plan was the enhancement of access to TB diagnostic and treatment services. Six strategic directions were identified to support the achievement of the overall goals. Key components of the plan included improving access and quality services, to enhance case finding and further improve the treatment results, engaging all care providers in TB control, strengthening the health system and implementing a comprehensive advocacy and communication strategy.

Several recent developments have necessitated the development of a revised National Strategic Plan even before the completion of the previous plan in 2016. Foremost is the addressing of gaps identified by the fifth Joint Monitoring Mission of the National TB Control Programme that was held in June 2014. The Mission has recommended several key interventions targeting at decentralization of TB diagnosis and treatment services, strengthening case finding, improving treatment adherence, management of human resources for TB control and promoting and contributing to research.

Secondly, WHO has recently issued a new global TB control strategy, focusing on the post-2015 era. The strategy includes important changes to the Stop TB Strategy, 2011-2015, which should be rapidly translated into revised national strategic plans. The next is the introduction of new technologies for early diagnosis of MDR-TB achieved through the recent roll out of the Xpert MTB/RIF technology. The technology also allows for the highly sensitive detection of smear negative cases. Sri Lanka has successfully introduced this new methodology in one laboratory at the national level. Due to its strategic potential, a revision of the National Strategic Plan including the rapid expansion of the Xpert MTB/RIF methodology is required. Finally, the NPTCCD Sri Lanka will apply for funding under the Global Fund's new funding model in 2015. For the new funding model, an updated and costed National Strategic Plan is a pre-requisite.

The National Strategic Plan 2015 - 2020 therefore seeks to re-structure TB control activities, incorporate recent technological advances in TB control as well as new strategic directions developed by the World Health Organization in order to lay a sound foundation for the future development of the NPTCCD and its continued collaboration with NGOs, technical partners and donor organizations.

2 BACKGROUND INFORMATION ON SRI LANKA

2.1 GENERAL BACKGROUND

Democratic Socialist Republic of Sri Lanka is an island situated in the Indian Ocean, as a part of the Indian sub-continent. It is separated off the south-western coast of India by a narrow stretch of sea known as the Palk Strait, 35 km in width at its narrowest. The climate is tropical equatorial. The population of the country was 20.7 million in 2014 with a population density of 331 persons per sq. km. The land surface area is 65,610 km^2 and has 30,686 km of roadways and 1,459 km of railways. The median age of the population is 30.8 years. The age structure of the population shows that one fourth (25.2%) are in the age group 0 to 14 years, 66.9% are in the productive age group of 15 to 64 years and 7.9% are in the age group 65 years and over. The population growth rate is 0.9% (2014) and Total Fertility Rate is 2.1. Urban population comprised 18% of the population and the major urban centres are Colombo and Kandy. Over 50% of the population lives in the Western, Central and Southern provinces, which together make up less than a quarter of the land area of the country. Sri Lanka's official languages are Sinhala and Tamil, although English is commonly used in government and is spoken competently by about 10 percent of the Sri Lankan population.

Almost five years after the end of the three-decade armed conflict, Sri Lanka is now focusing on long-term strategic and structural development challenges as it strives to transition to an upper middle income country. Key challenges include ensuring that growth is inclusive, realigning public spending and policy with the needs of a middle income country, ensuring appropriate resource allocations for the various tiers of government and enhancing the role of the private sector, including provision of appropriate incentives for increasing productivity and exports. The Sri Lankan economy has seen robust annual growth at 6.4 percent over the course of 2003 to 2012, well above its regional peers. Following the end of the armed conflict in May 2009, growth rose initially to 8 percent, largely reflecting a “peace dividend”, and underpinned by strong private consumption and investment.

Sri Lanka experienced a big decline in poverty between 2002 and 2009, from 23 percent to 9 percent of the population. Despite the very positive story of poverty reduction and shared prosperity, important development challenges remain in Sri Lanka. Pockets of poverty continue to exist, especially in the districts of Batticaloa (in the Eastern Province), Jaffna (in the Northern Province), Monaragala (in Uva Province) and in the estate sector. An estimated 9 percent of Sri Lankans who are no longer classified as poor, live within 20 percent of the poverty line, and are, thus vulnerable to shocks which could cause them to fall back into poverty.

2.2 OVERVIEW OF THE HEALTHCARE SYSTEM AND HEALTH SITUATION

The country is divided into nine provinces, 25 administrative districts, 331 divisional secretary areas and 14,021 Grama Niladhari Divisions. For health sector purposes, an additional functional health district has been identified, thereby taking total numbers to 26.

In Sri Lanka, public sector play a prominent role in health care provision and all the citizens are privileged to get health services free of charge. It provides more than 80% of the inward care facilities in the country. There are three tiers of curative health facilities in the public sector. Tertiary care is provided at the National Hospital of Sri Lanka, Teaching Hospitals and Special Hospitals (cancer, chest, children, eye and mental hospitals). Secondary care facilities are at

Provincial, District General and Base hospitals. Primary care facilities comprise the Divisional Hospitals and Primary Medical Care Units (Central Dispensaries, Maternity Homes).

There is a well-established preventive health service which serves up to grass root level in the country and functions through over 300 Medical Officers of Health. The private sector consists of over 200 private hospitals, over 500 private laboratories and around 500 full time general practitioners who are registered at the Private Health Regulatory Council. There are large numbers of medical practitioners who engage in private practice part-time. In addition, there are significant numbers of Ayurveda practitioners, Homeopathy practitioners and other traditional medical practitioners like Siddha and Unani who provide ambulatory care mostly.

There is no rigid referral system and patients are free to seek care from any facility. A health care unit can be found within 1.5 km from any home and free government healthcare services are available within less than 5 km of a patient's home. Sri Lanka has achieved a commendable progress in providing universal health care and the main health indicators of Sri Lanka are far ahead of the other countries of comparable levels of income. The achievements stand out even more when its low expenditures on health are considered. It spends a total (public and private combined) of approximately 4.2 percent of Gross Domestic Product or $70 per capita on health. The remarkable success in reducing maternal and infant mortality to very low levels (31.1 per 100,000 and 10.2 per 1,000 live births, respectively) is partially the result of effective and integrated maternal and child health services for the last half century.

Communicable diseases like malaria and vaccine preventable diseases such as polio, measles, diphtheria, and tetanus are close to elimination, with services for the prevention and control of communicable diseases and maternal and child health care, such as childhood immunizations, antenatal care and institutional deliveries, at nearly 100 percent coverage. Barring under-nutrition and some persisting communicable diseases, such as tuberculosis, dengue, rabies and leptospirosis, Sri Lanka has successfully dealt with most of the typical health problems of low-income countries.

Sri Lanka is in the advanced stages of a demographic and epidemiological transition owing largely to the marked increase in life expectancy and decrease in fertility rates. The country faces the challenges of an aging population and a shift in the disease profile, with non-communicable diseases (NCDs) now accounting for nearly 90 percent of the total burden of disease. Apart from the rapidly changing age distribution, economic development, urbanization, increased motorization and lifestyle changes (including low levels of physical activity, less healthy eating and tobacco, alcohol and substance abuse) are contributing to the growing incidence of NCDs. While Sri Lanka has achieved excellent health outcomes and an equitable health system at relatively low cost, significant challenges lie ahead. Although the model of extensive public provision has served Sri Lanka well, the country now finds itself at a crossroads. Serving the needs of the elderly, as well as treating and managing NCDs, require long term and more expensive services relative to maternal and child health and infectious diseases interventions. Tackling child malnutrition through a multi-sector approach and treating and managing the NCDs for the elderly will require long term and more expensive services relative to previous interventions.

3 THE NATIONAL TUBERCULOSIS CONTROL PROGRAMME IN SRI LANKA

3.1 HISTORY OF TB CONTROL

TB control activities in Sri Lanka were initiated in a planned manner along with the establishment of the TB Commission in 1910. The Tuberculosis Detection Centre was established in Pettah, Colombo in 1916. Inpatient facilities for people diagnosed with TB were established in 1917 at Ragama hospital and later on at Kandana (1919) and Kankesanthurai (1930) hospitals. In 1949, Welisara Hospital, which was used as a hospital for soldiers during the Word War II, was converted to a Chest Hospital with outpatient facilities.

The Anti-TB Campaign was established as a vertical programme in 1945 and functioned under the Deputy Director General (Medical Services). Services were delivered through two chest hospitals, a network of chest wards and nine provincial chest clinics. It was renamed as Respiratory Disease Control Programme (RDCP) in 1989. At the same time the chest clinics (with the exception of Colombo and Gampaha) were brought under the administrative and financial control of the provinces while technical support continued to be provided by RDCP. The RDCP was renamed as National Programme for Tuberculosis Control and Chest Diseases (NPTCCD) in 2002 after being transferred from the DDG (Medical Services) to the DDG (Public Health Services) in 2001. The DOTS strategy was adopted in 1997 and a gradual expansion has taken place, to cover all the population. Programme reviews have been conducted in 2002, 2004, 2006, 2010 and 2014.

3.2 ORGANIZATION, ROLES AND RESPONSIBILITIES FOR TB CONTROL

At the Central Level:

The Director General of Health Services (DGHS) is the chief technical officer at the Ministry of Health. There are 16 Deputy Director Generals (DDGs) assisting the DGHS in implementing the health related activities. The DDGs are responsible for different major subject areas (which include technical, administrative, financial etc.). Two DDGs are responsible for tuberculosis control activities; DDG (Public Health Services I) is responsible for the National Programme for Tuberculosis and Control and Chest Diseases (NPTCCD) and DDG (Medical Services II) is responsible for curative care services including the National Hospital for Respiratory Diseases.

The NPTCCD is one of the key institutions in the national health system. The programme is headed by the Director and is responsible for the tuberculosis and other respiratory disease control activities of the entire country and is in close coordination with the general health services and other governmental and non-governmental stakeholders. At present, there are 26 district chest clinics functioning in 25 administrative districts. Inpatient facilities are provided through National Hospital for Respiratory Diseases and chest wards in 15 Hospitals. Diagnostic services are carried out through the National Tuberculosis Reference Laboratory (NTRL), Regional Culture Laboratories, District Chest Clinic Laboratories and Microscopy Centres. Central Drug Stores of the NPTCCD is responsible for the estimation, procurement, supply and distribution of anti-TB medicines to chest clinics.

NPTCCD is responsible for infrastructure development and financial management of the institutions under its direct administrative purview. It also provides technical guidance and financial assistance from funds obtained from donor agencies for implementation of the TB control activities at the district level.

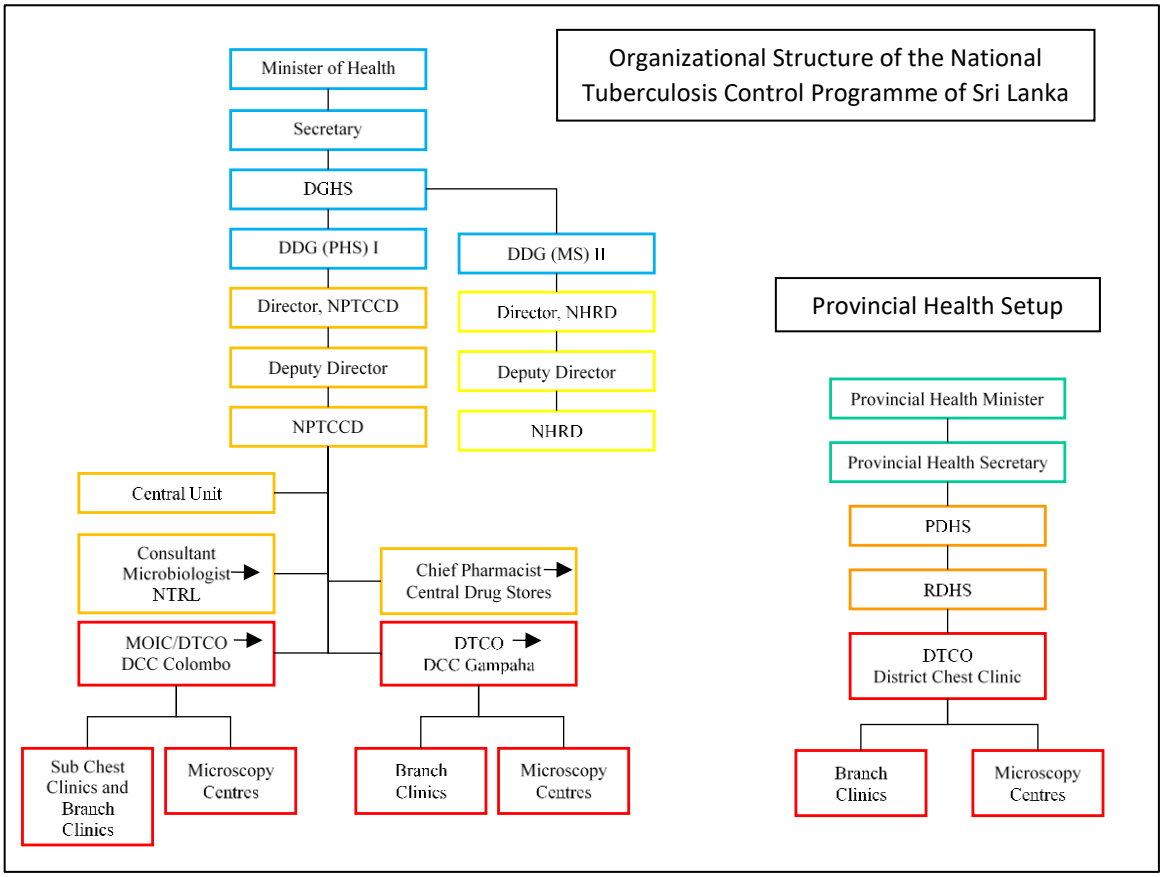

Figure 1: Organizational structure of the National Tuberculosis Control Programme in Sri Lanka

In addition, NPTCCD is responsible for the formulation of policies and guidelines for control of TB and other respiratory diseases in the country and for planning, implementation, monitoring and evaluation of the TB control activities carried out in the entire country. TB surveillance is another main activity carried out by the NPTCCD. It also acts as a coordinating body between the central ministry and provincial health sector and other governmental and nongovernmental organizations.

NPTCCD carries out training of medical and paramedical staff engaged in TB care and carries out public awareness through various channels of communication.

Figure 1 shows the organizational structure of the National Tuberculosis Control Programme in Sri Lanka.

At the Provincial and District Level:

The District Chest Clinic is the key organizational unit of the National Tuberculosis Programme at district level. It is the focal point of the NPTCCD for all TB activities in the district. In addition to TB patients, the clinic also manages patients suffering from other respiratory diseases.

The District Chest Clinic is under the administrative control of the District Tuberculosis Control Officer (DTCO) who functions under the Regional Director of Health Services (RDHS) in charge of health in the district. Provincial Director of Health Services is the chief administrator for health at provincial level. However, the two District Chest Clinics of Colombo and Gampaha come directly under the administrative purview of the NPTCCD.

In the past, respiratory physicians were directly appointed to the District Chest Clinics as the technical in charge of inpatient care. Since recently, they are appointed to the Provincial or District General Hospitals, but their services at district chest clinics are continued as usual.

Other staff of the District Chest Clinic include:

- Medical Officer/s
- Nursing Officer/s
- Radiographer
- MLT/PHLT
- PHI
- Pharmacist/Dispenser
- Management Assistants/Programme Planning Officers/Development Officers
- Laboratory Orderly/Labourers
- Driver

Due to service needs, TB assistants for sputum microscopy, and data entry operators for data management have been recruited to the chest clinic staff on contract basis and will be in service until permanent officers are recruited.

3.3 The Joint Monitoring Mission (JMM) in June 2014

As part of its routine monitoring activities, the NPTCCD conducts regular joint monitoring missions including local participants and international experts. The latest JMM was conducted in June 2014. Joint Monitoring Mission participants were divided into three teams including national and international experts and Ministry of Health/TB programme staff. The teams visited Colombo, Jaffna and Kandy districts. Local health authorities and TB focal staff participated during the field visits. The teams reviewed overall aspects of TB prevention, care and control activities. For each domain of intervention, the team reviewed the plans, the funding, implementation and monitoring, the relations with partners and other sectors as well as identified missed opportunities, gaps and potentials. The JMM report provides a detailed analysis of the current achievements and challenges of the NPTCCD, and gives recommendations for the future development of the programme covering all programmatic components of the NPTCCD. All JMM recommendations were taken into account during the development of the revised NSP.

4 EPIDEMIOLOGY OF TB IN SRI LANKA

4.1 THE BURDEN OF TB IN SRI LANKA

The estimates of the TB burden in Sri Lanka have been more or less static over the period from 2000 to 2013 in comparison to a declining trend of the average burden estimates for the countries in WHO South East Asian Region (SEAR). However, TB mortality has been reduced by 40%.

Table 1: Estimated prevalence, incidence and mortality of TB in Sri Lanka from 2000 - 2013

Year	TB Prevalence		TB Incidence		TB Mortality (Excluding HIV)	
	per 100,000 Population	95% CI	per 100,000 Population	95%CI	per 100,000 Population	95% CI
2000	115	(57-192)	66	(54-79)	10	(6-15)
2001	112	(54-189)	66	(54-79)	9.7	(6.1-14)
2002	110	(53-188)	66	(54-79)	9.2	(5.8-13)
2003	109	(53-186)	66	(54-79)	9.5	(6.2-13)
2004	109	(52-186)	66	(54-79)	8.1	(5.7-11)
2005	108	(52-185)	66	(54-79)	6.9	(5.2-8.8)
2006	108	(51-184)	66	(54-79)	5.9	(4.7-7.9)
2007	107	(51-184)	66	(54-79)	5.9	(4.7-7.9)
2008	107	(51-184)	66	(54-80)	5.9	(4.7-7.9)
2009	107	(51-184)	66	(54-79)	5.9	(4.7-7.9)
2010	108	(52-184)	66	(55-79)	5.9	(4.7-7.9)
2011	108	(52-184)	66	(55-79)	5.9	(4.7-7.9)
2012	109	(51-185)	66	(55-79)	5.9	(4.7-7.9)
2013	109	(53-170)	66	(59-75)	5.9	(4.7-1.3)

Table 2: A comparison of TB Burden in Sri Lanka with average values for WHO SEAR in 2013

Burden Estimates per 100,000 population	Sri Lanka	Average for WHO SEAR
Prevalence	103 (95%CI 53-170)	264 (95% CI 203-333)
Incidence	66 (95% CI 59-75)	187 (95% CI 174-200)
Mortality	5.9 (95% CI 4.7-7.9)	25 (95% CI 18-32)

All figures for prevalence, incidence and mortality shown in the tables above are based on epidemiological model estimates. Since Sri Lanka has a functioning vital registration system, estimates of mortality can potentially be replaced with more accurate empirical information in the future.

In addition to the death of TB patients reported through the quarterly reporting of the NPTCCD, there are three sources for TB mortality in the country; the notification of hospital TB deaths through the form Health-814, the Indoor Morbidity and Mortality Register and the vital registration system of the country which is functioning according to the ICD-10 classification.

The system of notification of hospital TB deaths through the form Health-814 has limitations e.g. the completeness, as only the TB deaths in state hospitals are captured through this system. Even

among the TB deaths in state hospitals, not all are notified through this system. A second limitation is the accuracy of notifications as all deaths notified as deaths due to other causes among patients diagnosed to have TB at any time of their lives, have also been found to be notified erroneously as TB deaths through this system.

TB death data by the vital registration system in Sri Lanka is classifying TB deaths accurately based on the revised version of the ICD-10. However, timeliness is an issue in this source with the latest published data available only for the year 2006. TB mortality data from the vital registration system can be obtained by requesting a detailed analysis through official channels.

There has been no prevalence survey conducted since 1970 (prevalence of 235/100,000), however the first national level ARTI survey was undertaken in 2009 and showed continuing transmission of TB with an estimated ARTI of between 0.07 – 0.72%.

The estimates and notification rates for 2013 are summarized in the table below.

Table 3: Estimates and notification rates of TB in 2013

Incidence of all forms of TB	14,000 (13,000 – 16,000)
Incidence rate of all forms of TB (per 100 000 population per year)	66 (59-75)
Prevalence of all forms of TB	22,000 (11,000 – 36,000)
Prevalence of all forms of TB (per 100 000 population per year)	103 (53 – 170)
Notification rate of new and relapsed TB (per 100 000 population for the year 2013)	43
Notification rate of new smear-positive cases (per 100 000 population for the year 2013)	21.7
Case detection rate (all forms of TB)	66 (59-74)

4.2 Case Notifications and Time Trend

The total number of all forms of TB cases reported from DCCs in 2013 was 9,496, of which 8,767 (92.3%) were new cases and 410 (4.3%) re-treatment cases. Out of all new cases, 6,304 (71.9%) were pulmonary TB cases (PTB) of which 4,423 (50.5%) were smear-positive and 1,881 (19.8%) were smear negative. Number of extra pulmonary TB cases were 2,463 (25.9%) (*Figure 2*).

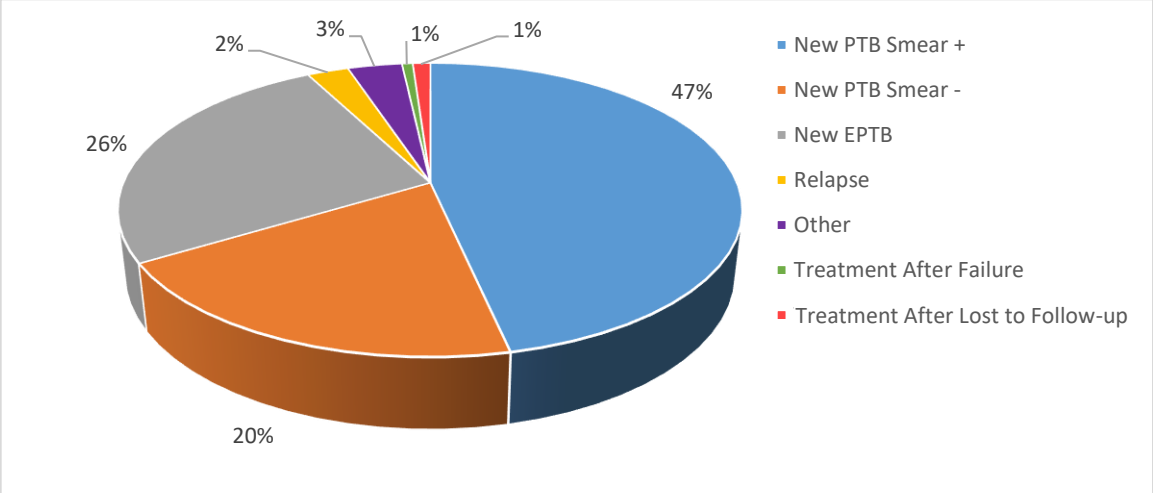

Figure 2: TB case notification by type in 2013

The most prominent feature in the trend of TB case notifications in the country was the sharp drop of TB cases in the year 2012 as compared to the steadily increasing trend of TB case notifications from 2006 to 2011.

Compared to the number of notified cases in 2011, the drop in 2012 was 986 cases (9.5% from the number in 2011). The increasing trend of case notifications from 2006 to 2011 had been at rates ranging from 2% to 5% higher than the preceding year. If one expected the increasing trend to continue into 2012, at least in the lowest expected rate of 2%, the deficiency of cases in 2012 is 1,190. Thus, the noted drop in the number of case 'notifications' denoting a drop in the number of cases 'registered' for care, can be considered as a serious lapse in TB control activities in the country. This conclusion is further supported by the increase in notification in 2013 as shown in Figure 3 below.

Examining the trend of the notifications of the different types of TB indicates that the numbers notified in almost all the types of TB had declined in 2012, as compared to 2011.

Retreatment case notification is the only type of case that had shown an increase in the year 2012 when compared to 2011 (9.6%). However, the actual increase in the number from 2011 to 2012 was small (38 cases). Reviews of data revealed that the increase was among the subcategory of patients previously treated for TB and returned to treatment after lost to follow up.

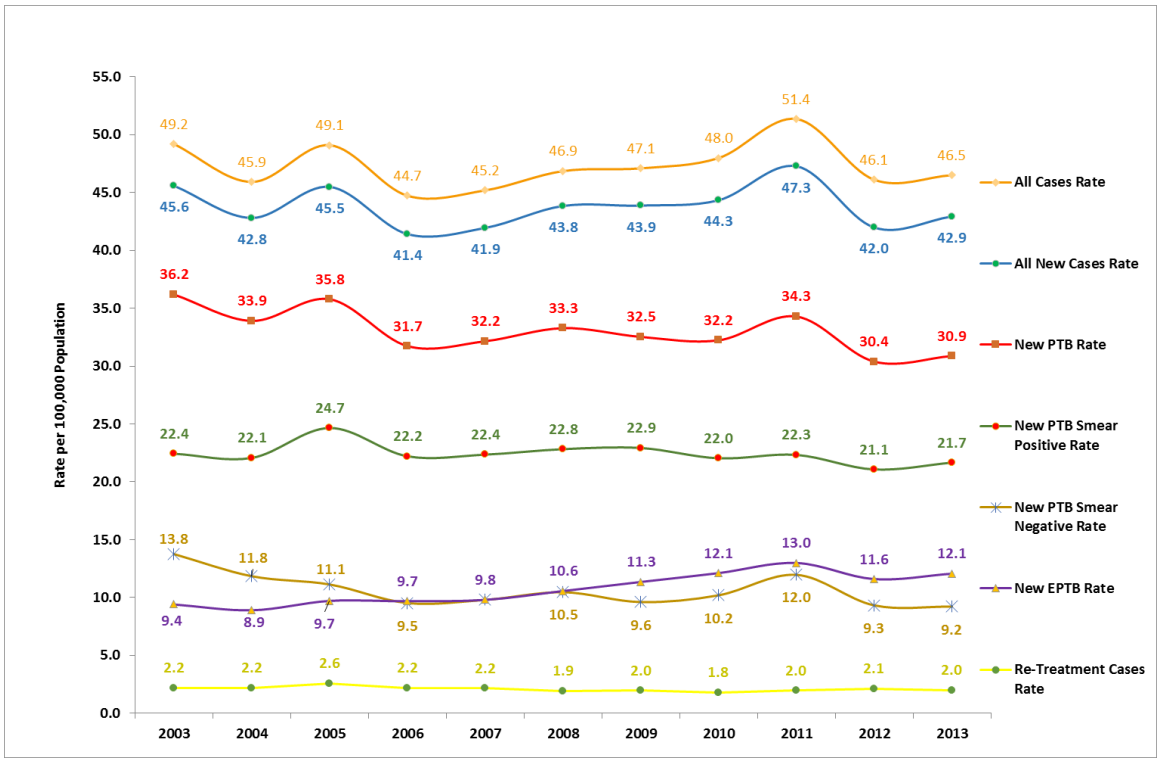

Figure 3: All TB case notifications by type from 2000 – 2013

The table below shows the trend in case detection rates based on the estimates of underlying incidence shown in Table 1 above. In most years since 2000, case detection rates were below 70%. The latest available figure for 2013 shows a case detection rate of 66.9%.

Table 4: Trend in case detection rates from 2000 - 2013

Year	Case Detection Rate (%)
2000	67.8
2001	67.4
2002	71.2
2003	70.8
2004	66.5
2005	71,0
2006	64.5
2007	65.2
2008	67.9
2009	67.9
2010	68.8
2011	73.5
2012	65.4
2013	66.9

4.3 VARIATIONS IN CASE DETECTION BETWEEN DISTRICTS

Case detection levels vary widely between different districts in the country (see figure below). This could be related to either differences in underlying incidence, or differences in the effectiveness of diagnostic procedures. An attempt was made to assess the performance of diagnostic procedures for TB in the districts, using the number of smear examinations/100,000 population in 2013. As shown in the figure below, there is no direct relationship between the intensity of smear examinations and the case detection rate.

These results indicate both that the quality of smear diagnosis is insufficient in some districts, and that the number of detected cases could potentially be further increased with intensified case finding activities in those districts that already report high case numbers despite a relatively low number of smear examinations.

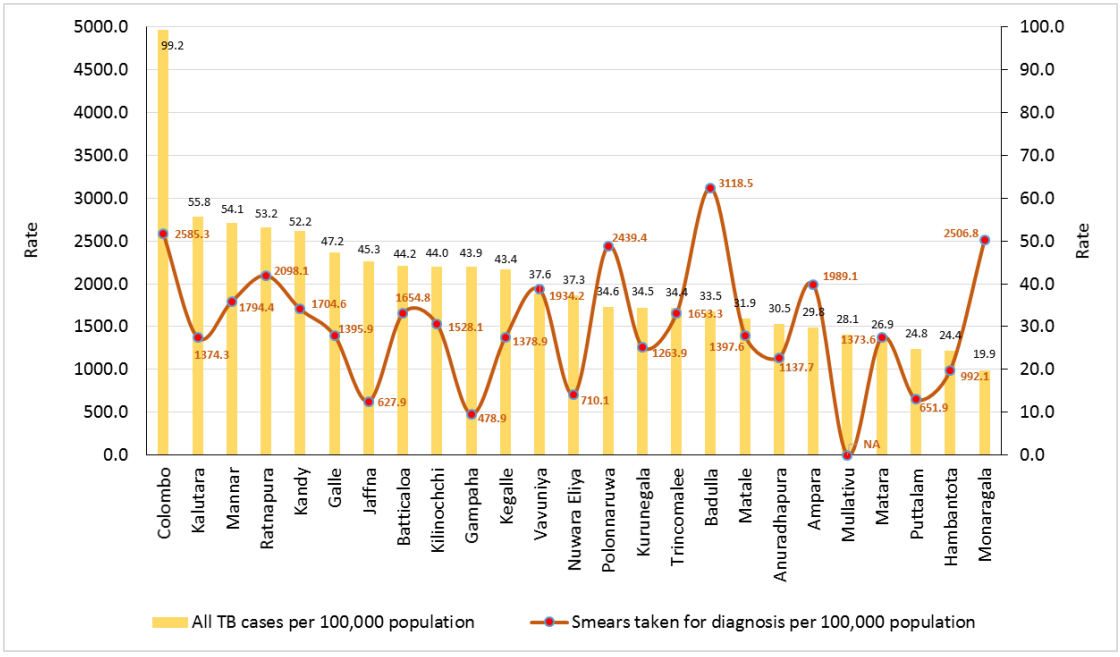

Figure 4: Case notification rates and diagnostic activity in all districts in 2013

Data not available for Mullaitivu District

4.4 Proportions of Various Disease Types

EPTB cases as a percentage of all new cases have increased over the period of 2000 - 2013. EPTB cases accounted for 2,463 (26.0%) of all TB cases in 2013. Globally, of the 9 million cases of TB in 2013, 0.8 million were EPTB cases (8.8%) (WHO 2013).

Since 2000, the proportion of smear positive PTB had been more or less double the proportion of the smear negative PTB in Sri Lanka. In the year 2013, the ratio of the two types in Sri Lanka was 2.35:1. Globally, in 2012, among the new cases, 2.6 million had bacteriologically confirmed PTB and 2.0 million had clinically diagnosed (sputum smear negative) PTB, thus giving a ratio of 1.3:1 (WHO, 2013).

Table 5: Frequency distribution of the TB case notifications by the type in Sri Lanka in 2013

New Cases	No.	Percentage out of New Cases
Smear Positive	4423	50.5
Smear Negative	1881	21.5
Extra Pulmonary	2463	28.1
Total New	8767	

While the average proportion of smear negative cases is relatively low, there are very large variations between districts. The data shown in the figure below indicate that diagnostic algorithms are not uniformly followed, and a mixture of over-diagnosis and under-diagnosis of smear-negative cases exists in different districts in the country.

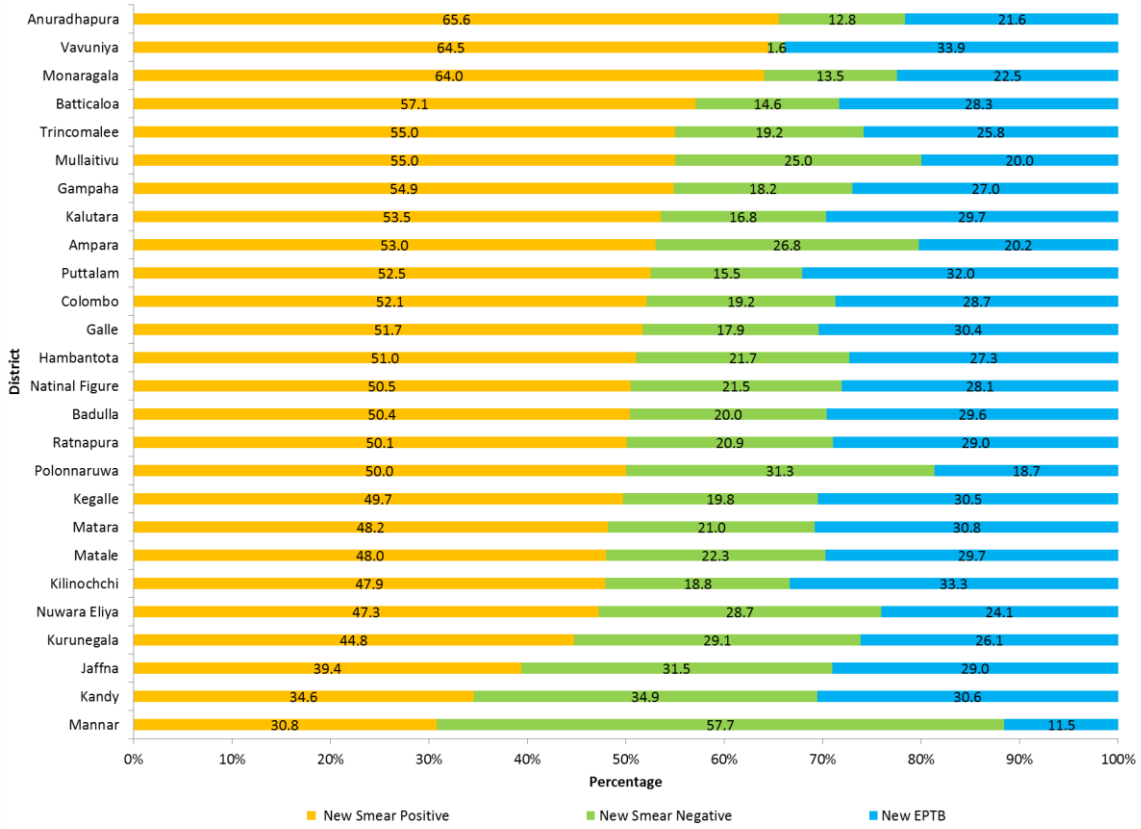

Figure 5: Percentage distribution of new cases of TB by type and district in 2013

4.5 Distribution of Cases by Age : Trend over Time

In 2013, the highest number of new cases were in the age category of 45 - 54 years. In 2013, 80.8% of new cases were in the age category 15 - 64 years while the percentage of new cases in the 15 - 45 years and < 15 years categories were 42.0% and 3.5%, respectively. The male to female ratio among the new cases was 1.96:1.

This age and sex disaggregated data was mostly in keeping with the global data of the new cases for 2013 which showed that, most cases (82%) were aged 15 – 64 years, 55% were aged 15 – 45 years and 6% were among children (<15 years). Globally, the average male: female ratio of new cases was 1.6:1 ranging from 1.0 to 2.1 among the six WHO regions (WHO, 2014).

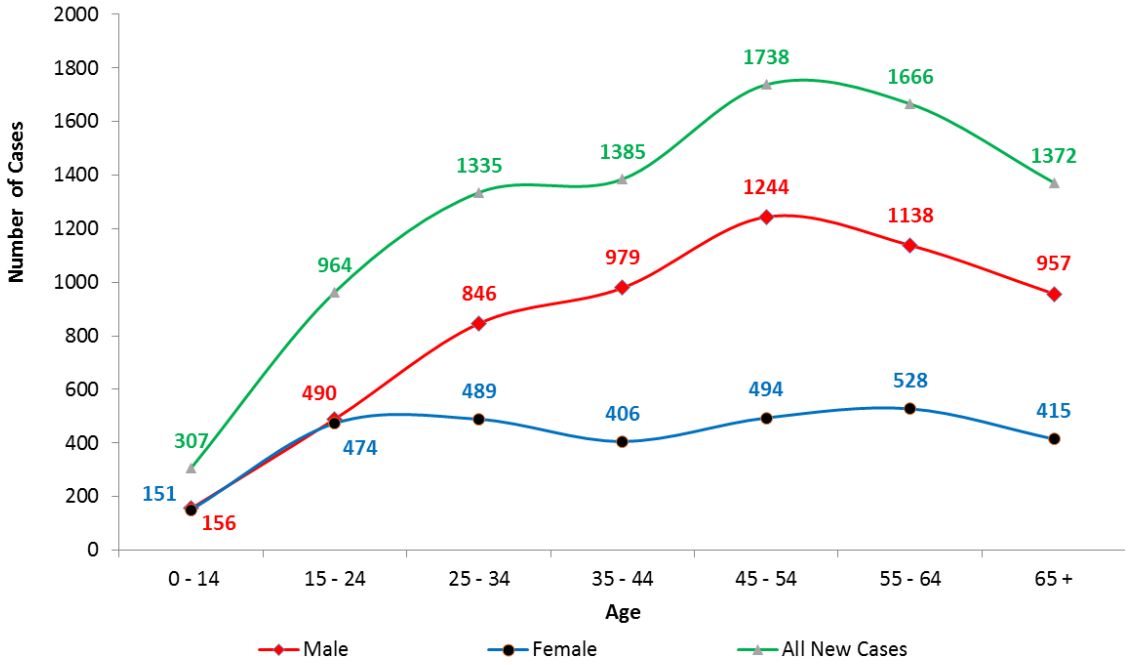

Figure 6: Percentage distribution of all new cases of TB by age group in Sri Lanka in 2013

4.6 Treatment Outcomes

Since 2005, Sri Lanka has maintained a high treatment success rate for all forms of TB, with the highest rate for the 2011 cohort (87.1%). The rate of lost to follow up for all forms of TB has significantly decreased since 2000 from 13.8% to reach 3.5% in the 2010 cohort. However, in 2011 this rate showed a slight increase (3.7%) which was confirmed in 2012 (4.6%) and in 2013(4.8%).

Of concern is the decrease in treatment success (83.5%) in 2013 accompanied by an increase in patients dying while on TB treatment (5.7%) as well as the increase in lost to follow up (4.8%). The increasing death rate is of particular concern especially in view of the low HIV prevalence. An analysis of the timing of TB death undertaken in 2011 from onset of treatment under NPTCCD shows a similar pattern all over the country, with most patients dying in the first month of treatment.

Several likely causes put forward in the analysis were late case detection at an advanced stage of the disease and management deficiencies especially comorbid conditions. The first proposed cause is in line with observations during the JMM related to the centralized and complex pathway for diagnosis and treatment. Secondly, death could possibly occur due to inadequate inpatient

treatment facilities for needy patients and also due to human resource deficiencies[1]. Lastly, the limitation of the current definition of TB death as deaths due to other causes unrelated to TB (RTA, CV events) are also counted as TB deaths can also contribute. The programme has initiated a study to assess the cause of death among TB patients on treatment.

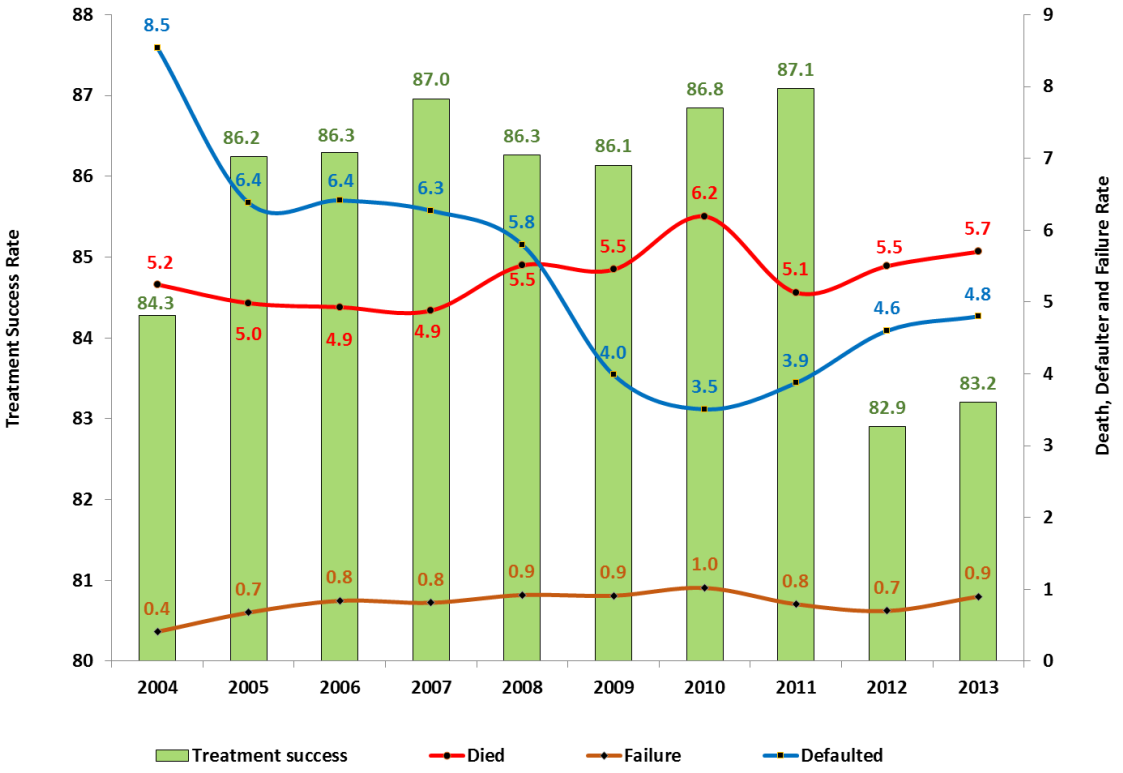

Figure 7: Treatment outcomes of all forms of TB cases in Sri Lanka (excluding "other" cases) from 2004 - 2013

4.7 HIV Associated TB

The number of HIV positive TB cases in 2013 was 37 (0.39% of all TB cases for the year). Of the 37, six HIV positives were found in 2013 by screening TB patients for HIV. The others were HIV positive patients who subsequently developed TB.

Though these findings point towards a low burden of HIV-TB co infection it should be noted that the number of TB patients tested for their HIV status in 2013 was approximately half of the total number of cases.

Table 6: TB-HIV co-infection in Sri Lanka in 2013

Type of Cases	Number	Percentage out of all TB Cases
TB Patients with Known HIV Status	4,650	48.9%
TB Patients Positive for HIV	37	0.39%*

* Only 49% of TB cases have been tested. Therefore the proportion out of those tested (i.e. 4650) is~ 0.8%.

[1] National Strategic Plan 2012 – 2016 ; NPTCCD Sri Lanka

4.8 MDR-TB

Reported data from a survey in 2007 shows a drug resistant rate of 1.4% among newly diagnosed TB cases and 8.8% among retreatment cases. The MDR-TB rate was 0.17% (unpublished data).The number of MDR-TB cases diagnosed and enrolled for treatment was consistently very low over the years until up to 2013. With the use of rapid diagnostics including Xpert MTB/RIF and LPA has improved MDR-TB case detection.

Culture and DST is expected to be performed for all patients who fail Category I regimens, at the time of initiation of treatment for all patients commencing Category II regimens, contacts of MDR-TB cases, HIV infected TB cases, TB cases among healthcare workers, migrants, prisoners. MDR-TB is diagnosed at the National Tuberculosis Reference Laboratory (NTRL), and patients are treated initially at the National Hospital for Respiratory Diseases after which they are referred for treatment at chest clinics in their respective districts.

Table 7: Total confirmed cases of MDR-TB in Sri Lanka during the period 2005-2013

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Number	16	16	8	8	4	8	11	5	3
% out of all TB cases	0.165	0.179	0.087	0.083	0.041	0.079	0.116	0.053	0.032

4.9 Projected Number of TB Cases for Planning Purposes

To obtain estimates of procurement requirements for this NSP, projections of expected numbers of TB cases of different types for the period 2015 to 2020 were based on the following assumptions:

- An increase of the total population size according to population projections based on the census data of 2012 and average growth rate of the population
- A constant incidence rate of TB (all forms) of 66/100,000 population
- An increase of the case detection ratio for all forms of TB to 80% by 2017 and 90% by 2020
- A constant proportion of relapse cases among all new cases of 2.8%
- A constant proportion of retreatment cases other than relapse of 43.4%
- An increase of the proportion of retreatment symptomatics receiving Xpert MTB/RIF for the diagnosis of MDR-TB to 60% by 2017 and 100% by 2020
- A constant proportion of MDR-TB in retreatment cases of 7%
- A decrease of the proportion of extra-pulmonary cases to 23% by 2020
- An increase of the proportion of smear negative cases receiving Xpert MTB/RIF to 100% by 2020 (resulting in an increase of the proportion of bacteriologically confirmed cases).

The figures below shows the projected case numbers based on these assumptions.

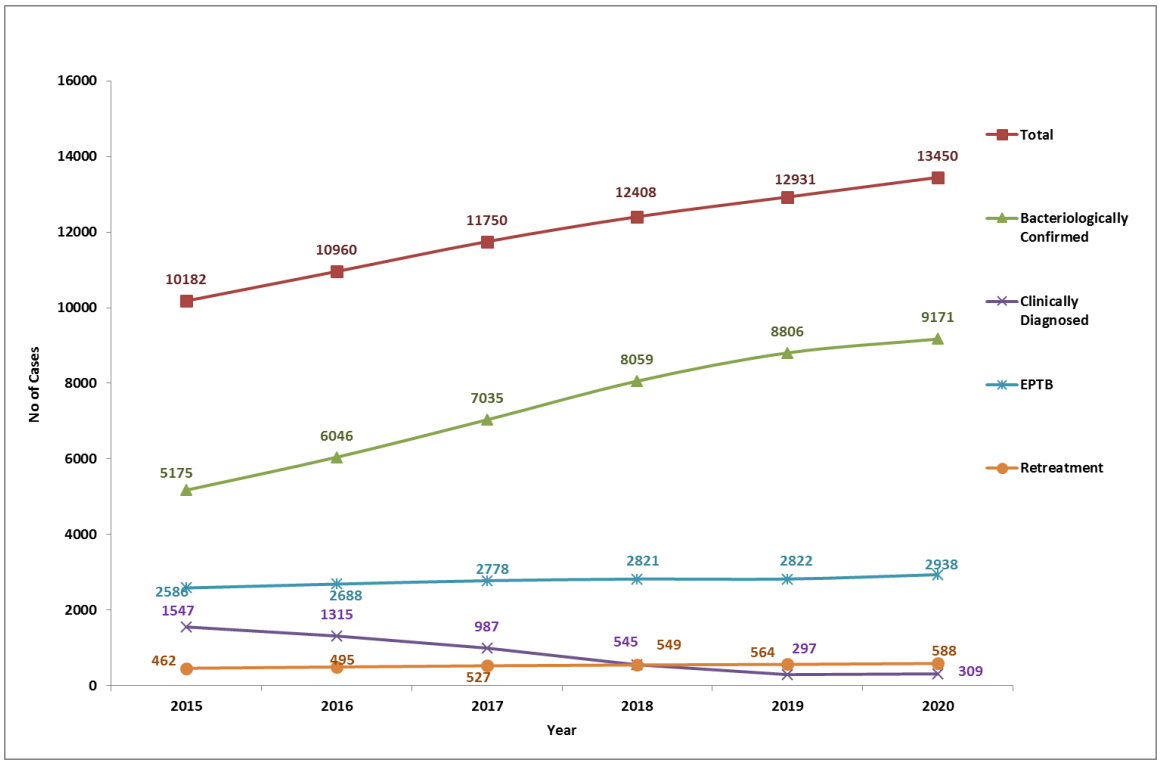

Figure 8: Projected case numbers (non-MDR) for 2015 - 2020

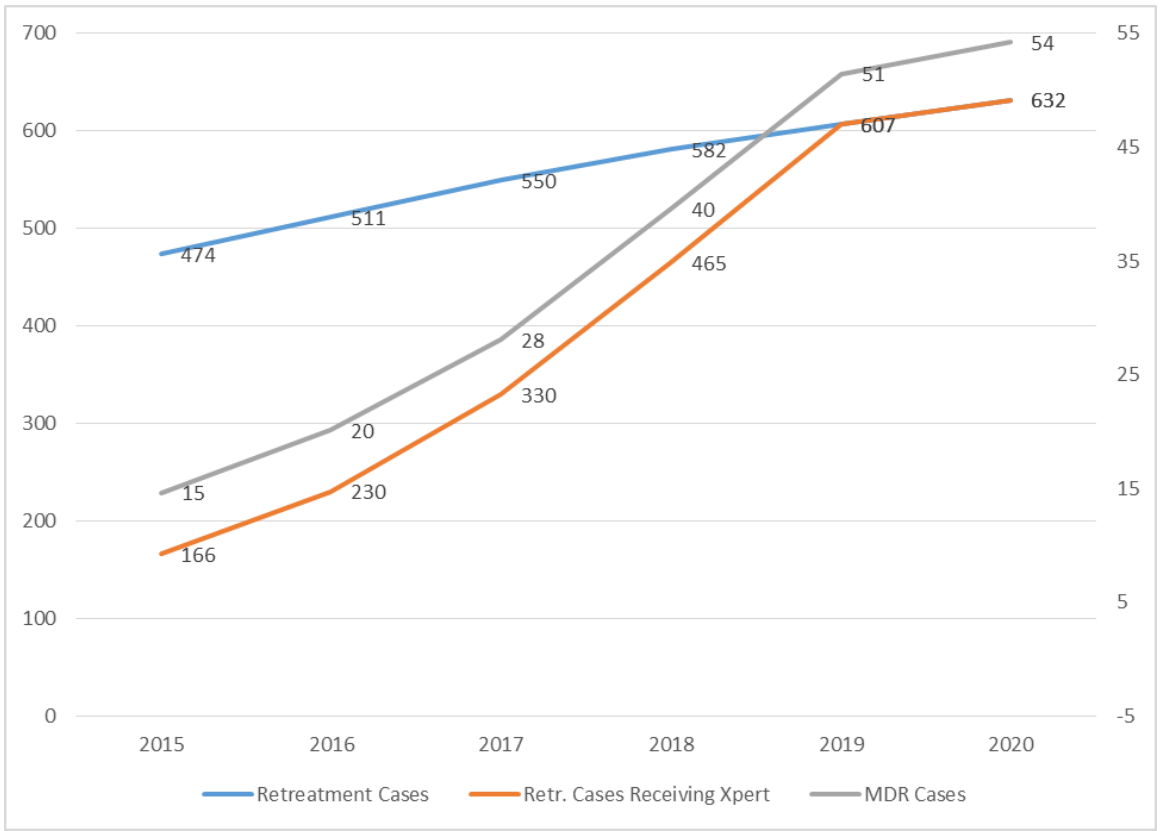

Figure 9: Projected number of MDR-TB cases for 2015 - 2020

5 Analysis of Gaps in Current NPTCCD Activities

To identify key interventions that will most likely contribute to an improved performance of the NPTCCD, a gap analysis was performed describing gaps in current NPTCCD performance for key programmatic areas. The analysis drew on the results of the Joint Monitoring Mission that was completed in June 2014. The mission provided an updated assessment of the status of TB control in Sri Lanka, as well as a detailed description of achievements and deficiencies in key programmatic areas. The programmatic areas that were considered for the gap analysis are listed below.

- Case detection
- Quality assured laboratory network
- Treatment including patient support and DOT
- Management of anti-TB medicines and supplies
- Supervision
- Recording and reporting
- TB in children
- TB-HIV and other vulnerable groups
- MDR-TB
- Involving all care providers (public and private)
- Infection control
- Programme management (Human Resource Development - HRD, Financing)
- Community and civil society engagement through advocacy, communication and social mobilization
- Operational research
- Health system response to TB control

5.1 Gaps Related to Case Detection

In 2013, a total of 9,496 tuberculosis patients were reported. Of them 8,767 were new cases of which 50% was new smear positive, 22% new smear negative and 28% new extra pulmonary TB. Retreatment cases represented 4.5% of total cases. Childhood TB accounted for 3% of all new cases in 2013. From 2006 to 2011 there was a constant increase in case notification of all cases (2-5%) mostly due to an increase in extra-pulmonary cases and to a smaller extends to an increase in smear negatives. The number of retreatment cases remained overall relatively low.

In 2012, there was a sharp decrease in total cases reported affecting all categories followed by a slight increase in 2013. This trend has been analyzed extensively in the epidemiological review contributing to the conclusion that the decrease in the number of reported cases in 2012 cannot be attributed to a decrease in the actual number of cases in the population but to a programmatic trend that will need to be corrected with appropriate measures.

The following programmatic gaps contributing to a relatively low case detection level have been identified:

- The centralized system for registration of patients and initiation of treatment at the District Chest Clinic is a major risk for initial loss to follow-up.
- Most peripheral hospitals and central dispensaries do not actively screen for TB.

- The current policy for sputum smear examination does not allow same day 2 sputum sample examination, thus leading to unnecessary delays in case detection and potential primary default.
- There is very limited access to rapid and sensitive diagnosis using molecular tests (Xpert MTB/RIF).
- The proportion of new pulmonary TB smear negative cases among all cases is low, indicating deficiencies in diagnostic procedures for smear-negative cases.
- The proportion of children reported is comparatively low (3% of all cases, compared to a global average of 5-8%).
- The screening of household contacts is not performed adequately for all active cases.
- Active case finding activities for high-risk groups have not been fully implemented.

5.2 Gaps Related to the Laboratory Network

The quality assured TB laboratory network of NPTCCD is a well-established 4 tiered structure; National (National TB Reference Laboratory), Regional, (Regional TB Culture Laboratories), Intermediate (District Chest Clinic laboratory) and Peripheral level (Microscopy Centres). The microscopy services are delivered by the microscopy centres (MCs) located in District Chest Clinic laboratories (n=26) and peripheral health institutions, primary health care centres and Base/District General hospitals (n=214). The EQA for smear microscopy services using the Lot Quality Assurance Sampling system is in place and is covering the entire nation. All MCs need to include one positive and one negative unstained slide with each batch of staining as a part of internal quality control. Each set of positive and negative slides are also stained when new batch of reagents are received in the MCs. These MCs sends the calculated number of slides to the DCCLs and slides are rechecked and feedback reports are sent back to MCs.

The National Tuberculosis Reference Laboratory (NTRL) at Welisara is currently providing culture and DST (1st line) in the public sector in the country. A biosafety Level-III laboratory is under construction and is expected to be completed before end of this year (2014). Since 2011, two laboratories in Kandy and Ratnapura have started providing cultures. Each is manned by a single Medical Laboratory Technologist (MLT). Two other culture laboratories (Jaffna and Galle) are under construction, and an additional two are planned (Anuradhapura and Batticaloa). Newer WHO endorsed technologies like, Xpert MTB/RIF (1 machine, 4 module) and Line Probe Assay (MTB-DR plus assay, Hain test) was started for MDR-TB detection, however they are currently limited to NTRL.

The following programmatic gaps related to the laboratory network have been identified:

- Only 165 of 214 laboratories are functional; a key problem is that many established PHLT positions have not yet been filled.
- Laboratories with very high workloads have insufficient equipment; in many laboratories, some existing microscopes are broken. LED microscopes allowing for a higher workload are not available.
- The QA system is not functional in some districts, and the turnaround time is very long for other areas.
- There is no regular maintenance of microscopes and other equipment.
- Only a few private laboratories are enrolled in the EQA system.

- The laboratory supply management system is weak in some areas, leading to expired reagents in some facilities.
- Supervision is insufficient, mostly due to insufficient staff capacity at the central and district laboratories.

5.3 Gaps Related to TB Treatment

Annually nearly 10,000 TB patients (all forms) are notified and treated under the NPTCCD. The NPTCCD is following the WHO recommended DOTS strategy for management of TB patients. The entire country is covered under DOTS. Patients are categorized as new or retreatment cases and treated with daily DOT under Cat I or Cat II regimen using FDCs.

Treatment success rate has been consistently over 85% in line with the global targets for the last several years. The case fatality rate (death rate) due to TB has been over 5% and the lost to follow up (lost to follow up rate) close to 4% in the last 3 years. Failure rate has been less than 1% during the same period.

The following programmatic gaps related to TB treatment activities have been identified:

- While average treatment success rates are adequate, there are large district variations in treatment success rates, and some districts achieve less than 80% treatment success.
- The centralized treatment services at the DCCs is inconvenient for patients; currently, treatment for all cases is initiated at DCCs, involving long travel times for patients in some areas.
- There is limited use of community members or private providers for DOT; DOT options are limited, potentially contributing to low success rates in some areas.
- Treatment services are sub-optimal in the plantation sector, and prisons; there are no intensified programs to assess the specific requirements of patients in high-risk groups.
- There is minimal social support available for socio-economically deprived TB patients, potentially contributing to low success rates in some areas.

5.4 Gaps Related to Management of Anti-TB Medicines and Supplies

The First Line anti-TB medicines (adult and pediatric), were received from the Global Drug Facility (GDF) in 2013. Funds for the Second line anti-TB medicines have been provided by the Global Fund (GF) and drugs have been procured through GDF. Quantification of medicines is done on an annual basis. This has ensured continuous supply of quality assured anti-TB medicines. No stock-outs have been reported. There is a good infrastructure at the Central Drug Stores (CDS) and Good Storage Practices are adopted. Testing of Anti-TB medicines has been initiated by the National Drug Quality Assurance Laboratory of the Ministry of Health. Fixed dose combinations (FDCs) procured from GDF and single dose formulations procured by the Medical Supplies Division (MSD) are tested. All the samples tested were found to be of standard quality barring Injectable Streptomycin procured by MSD which has been withdrawn.

The following programmatic gaps related to the management of anti-TB drugs and supplies have been identified:

- The quantification for procurement is based on estimated numbers of patients instead of data based on actual patient enrolment in the past, resulting in high product wastage.

- Not all districts report drug stock status regularly to the Central Drug Stores.
- Single drug formulations procured locally by the MSD are not WHO pre-qualified.
- Standard Operating Procedures (SOPs) on drug management are yet to be developed.
- There is no comprehensive computerized inventory management system.

5.5 Gaps Related to Supervision

Supervision activities are organized in a two-tier system:

- Supervision from the Central level to the District level – This includes supervisory visits by the Director of the National Programme and the staff, Consultant Microbiologist of the NTRL and the staff, and supervisory visits by the Chief Pharmacist.
- Supervision done by the District level officers – This includes supervisory visits by the DTCO, PHI and MLT/PHLT that are carried out to Branch Clinics, health institutions, DOT centres, and microscopy centres in their respective districts. The PHI of DCC should supervise the DOT centres at least once a month and assess the programmatic activities while the PHLT/MLT of DCC are expected to regularly supervise once a month all activities related to diagnostic services in the Microscopy Centres.

In addition to on-site visits the NPTCCD organizes regular meetings at national level for supervisory and support purposes.

The following programmatic gaps related to supervision have been identified:

- Supervisory visits by staff at the DCC do not adhere to a systematic process; a key deficiency is the lack of a check list specifying the detailed requirements for a comprehensive supervisory review.
- Supervisors have had limited training on supervisory methods and protocols.
- The bi-monthly review meeting in the NPTCCD is of only one day duration; this provides limited time for in-depth analysis of programme activities at the district level.

5.6 Gaps Related to Recording and Reporting

The NPTCCD uses standard case register, laboratory register and treatment cards for monitoring of TB control activities. Quarterly reports are prepared in accordance to standards using recommended formats and sent on time by the DCC to NPTCCD. The quarterly reports are paper based but some DCC use Excel spreadsheet to generate data for the quarterly report but no standard format for the spreadsheet is available. WHO recommended indicators are used to assess the achievement of the program.

The following programmatic gaps related to recording and reporting have been identified:

- The centralized registration at DCC is not well functioning, with incomplete recording of data in the District TB register, TB Suspects register and the Laboratory Register.
- The new WHO Recording and Reporting (R&R) format has not yet been implemented.
- There are multiple additional un-necessary registers in the microscopy centres, hospitals and DOTS centres.
- No segregated information on the numbers of patients managed at individual treatment centers are available.
- The available data is not used for planning purposes during the regular review meetings.

- The electronic R&R system is not completely functional; a previously developed electronic R&R system has been discontinued, and the implementation of the developing system is still on a limited scale.

5.7 Gaps Related to TB in Children

Guidelines for management of TB in children were published in 2008 and disseminated. These guidelines need to be revised to incorporate new WHO recommendations for diagnosis and treatment.

Children symptomatic for TB are identified at all levels and usually referred either to large hospitals with Pediatricians or Respiratory Physicians or to the District Chest Clinics. There have been 307 TB cases diagnosed in children in 2013 (184 EPTB) which represent 3% of all cases diagnosed. Cases are almost equally distributed between male and female; the majority (105) are in the age group of 5-14 years. BCG coverage is very high at 98% in 2012.

The following programmatic gaps related to the management of TB in children have been identified:

- Despite the development of guidelines for management of TB in children, the proportion of childhood TB cases has remained low.
- Training on the use of the new guidelines has not been implemented yet and new diagnosis test (Xpert MTB/RIF) are not yet systematically used for children.
- No training activities on TB for pediatricians have been implemented.
- The network of public health midwives is not sensitized for identifying signs and symptoms of TB in mothers and children.

5.8 Gaps Related to TB-HIV and other Vulnerable Groups

In 2013, one third (37%) of TB cases had a known HIV status, and 0.8% of them were HIV positive. All cases of co-infection were treated for TB and given ART and CPT regardless of CD4 level. During the same year only 665 PLHIV were screened for TB and 9 were given IPT. According to the TB-HIV guidelines all TB patients should be offered an HIV test with proper counselling. Blood samples from TB patients should be collected during registration of the patient and sent to the STI clinic for HIV testing. Positive results with screening test are confirmed with confirmatory tests.

The prevalence of TB in the prisons population is very high at 1,688/ 100,000 inmates. TB control activities are present in all prisons, with most of them having branch chest clinic (daily in Colombo and periodically elsewhere). There is strong commitment of the prison management for TB control. There is excellent coordination with the DCC, hospital and public health to diagnose, register and treat TB patients in prisons.

Links between NPTCCD and National Dangerous Drug Control Board has been established to screen drug addicts for TB and provide them with treatment if they have active TB. This work is facilitated during the 6 months rehabilitation programme organized by the board.

There is a large number of cross-border migrants, especially from India and China, who are mainly employed in development projects (mostly construction). These migrants are mobile, following projects. Many come from high TB endemic areas and there is currently no mechanism for screening such migrant workers at entry in Sri Lanka.

The following programmatic gaps related to TB/HIV and other vulnerable groups have been identified:

- The current TB/HIV guidelines do not contain guidance on Xpert MTB/RIF in HIV positive persons.
- Not all TB patients are subjected to HIV screening.
- Due to incomplete exchange of data between NPTCCD and NSACP, data on the number of cases identified in HIV + patients screened for TB is inconsistent.
- Health workers are not adequately aware of the TB-HIV linkages and of collaborative activities.
- The prison health services have limited capacity in personnel to examine, diagnose and treat TB patients, and there is a high loss to follow-up.
- Rehabilitation services for drug addicts are limited; there is no mechanism to systematically screen drug addicts for TB.
- The majority of migrant workers come from countries with high burden of TB, TB/HIV co-infection and MDR-TB; there is currently no mechanism for screening such migrant workers at entry in Sri Lanka.

5.9 Gaps Related to MDR-TB

The entire country has been covered by a PMDT programme since 2010. The country is following the recent WHO guidelines (2011). The duration of treatment for MDR –TB patients is 20 months including an intensive phase (IP) of 8 months. Till date 34 MDR-TB patients have been diagnosed of which 26 have been initiated on treatment. Based on results from the last Drug Resistance Survey conducted in 2005-06, the prevalence of any drug resistance is low and is estimated to be 1.42% amongst new cases and 8.82% amongst retreatment cases. The prevalence of MDR was extremely low at 0.17% in the 2005-06 survey. There are no reported cases of XDR-TB in the country.

The following programmatic gaps related to MDR-TB have been identified:

- The PMDT guidelines are still under revision, and staffs are unaware of the revised MDR-TB suspect criteria and other recent policy changes.
- Training of the medical and paramedical staff in the districts on the PMDT has not been undertaken.
- A significant proportion of MDR-TB symptomatics, as per the revised criteria, are not being identified and tested for MDR-TB.
- The current diagnostic algorithm limits the optimal use of rapid diagnostics (Xpert MTB/RIF MTB/RIF and LPA) for early diagnosis and treatment initiation of MDR-TB patients.
- There are no guidelines and arrangements for the decentralized management of MDR-TB patients; the treatment during the continuation phase is centralized at the DCC and some patients face long travel times to receive treatment.
- The NTRL presently does not have the capacity to perform DST for second line drugs.
- There is a lack of socio-economic support and counselling services for MDR-TB patients.

5.10 Gaps Related to the Involvement of All Care Providers

The health infrastructure network is extensive and well developed. OPD in hospitals are seeing a high number of patients on a daily basis with as many as 1,700 daily in National Hospital of Sri

Lanka in Colombo and up to 400 daily in District hospitals. Secondary and tertiary care hospitals are diagnosing a substantial number of cases (e.g. more than 200 in National Hospital of Sri Lanka in 2013). To facilitate diagnosis and treatment the NPTCCD has established microscopy centres to perform smear microscopy as well as chest clinic branches in some “high workload locations”. Most of the microscopy centres are staffed with DCC resources. The chest clinic branch clinics are organized periodically (every other week usually) by DCC staff in the premises of selected hospitals.

There are a large number of private providers and access to their services can be rapid and cheap, at least for an initial consultation. Private care represents as much as 50% of outpatient care and it is largely concentrated in urban and suburban areas. Many public providers also conduct private practice after office hours. In addition there are more than 21,000 Ayurveda physicians registered with Ayurveda Medical Council. Therefore people with signs and symptoms compatible with TB generally/easily turn to the private sector where the diagnosis can be made. However, patients are very often referred to the DCC for registration and treatment since anti-TB drugs with FDC are not available in the private pharmacies.

The following gaps related to the involvement of all care providers have been identified:

- Due to centralization of services at the DCC, some DOTS centres established in private hospitals are no longer active, and patients have to go to the DCC.
- Some private health facilities and private physicians are treating patients with loose drugs (not prequalified by WHO) available in pharmacies.
- Collaboration between DCC and medical associations is often limited and there is no line listing of private GPs to organize periodic orientation on TB.
- There is late referral of suspected cases by GPs to chest clinics due to insufficient awareness about possible TB diagnosis.
- No analysis of existing implementations and gaps related to private providers has been performed. No PPM Working Group with participation of medical and paramedical associations has been established.

5.11 Gaps Related to Infection Control

A general national infection control guideline for prevention of rabies, chickenpox and TB has been developed and provides general instructions for infection control measures for health care workers in different settings, e.g. outpatient departments, hospital ward settings, laboratory, intensive care units and medico-legal units. This guideline advises infection control measures at three levels; administrative, environmental and personal. The NPTCCD follows these general guidelines. The infection control committee in the DCC meets every 2 months to assess the infection control situation at the chest clinic. Training instructions from NPTCCD were sent to DCC for infection control trainings. A check list is used during supervisory visits by MO from NPTCCD but the same is not in place for the DCC staff for supervisory visits.

The following programmatic gaps related to infection control have been identified:

- There is a lack of guidelines for the general population, symptomatics and TB patients on cough hygiene and sputum disposal beyond the health institutions.
- Fast tracking of patients with respiratory symptoms as per guidelines is not routinely in place in OPDs.

- Waste disposal methods in the laboratory, including the DCC, does not always adhere to infection control methods.
- Information and education material about cough hygiene and etiquette, sputum disposal and collection is not generally displayed.
- There are limited efforts to stop aerosol control from the chest symptomatic and TB patients.
- OPD rooms do not adhere to simple ventilation and air flow mechanisms for effective infection control.
- There is no policy on screening for health workers for TB at regular intervals.
- Private microscopy laboratories are not guided on proper air flow mechanisms in the culture laboratories.

5.12 Gaps Related to Human Resource Development (HRD)

The overall staffing situation in the health system is, relatively speaking, high (2.29/1,000 population) compared to other countries in the South East Asia region. Through the GF grant additional TB specific staff (technical and administrative) have been recruited under the TB grant as well as staff under the Health System Strengthening grant whose work include TB related tasks. In the TB TFM grant 36% is allocated to HR and 8% to training while in the HSS grant 14% goes to HR and 4% to training.

The following programmatic gaps related to human resource development have been identified:

- No overall comprehensive strategic HRD plan exists.
- There is limited systematic and ongoing training needs assessment followed by needs based planning of training.
- Vacant PHLT positions are not filled.
- The workload for DTCOs and other staff at DCC level is very high.
- There is a limited number of support staff at central and DCC level.
- There is limited involvement of staff outside of the DCC in TB control activities.
- The staffing at central level NPTCCD and at DCCs is suboptimal.
- There is very limited availability of standardized training material.

5.13 Gaps Related to Advocacy, Communication and Social Mobilization

Community and civil society engagement through advocacy, communication and social mobilization is part of the National TB control activities and District TB Control Officers are responsible for activities for awareness among the general public. The TB guidelines advise the DTCO to engage with NGOs, private practitioners and private hospitals and plan for their involvement in TB care services. Involving community volunteers, community leaders and civil society is part of role of the DTCO for providing patient support services.

The following gaps related to advocacy, communication and social mobilization have been identified:

- Only limited activities are planned at district level for awareness generation and sensitization on a regular basis.
- TB posters are not displayed at appropriate places in health institutions.
- Mass awareness programs and local awareness meetings with community are not being organized by the DTCO.

- There is limited participation and involvement of general practitioners, pediatricians, local clinical societies/medical associations, medical colleges/faculties and army/police on TB awareness and advocacy.
- There is limited advocacy and engagement with relevant social departments for TB patients to avail social support benefits and facilities.

5.14 Gaps Related to Operational Research

Research on the subject of tuberculosis has been done by the Consultant Pulmonologists, Registrars/Senior Registrars of Community Medicine and Pulmonology, MSc. Community Medicine, Biomedical Informatics and Medical Administration trainees, Diploma in Tuberculosis and Chest Diseases (DTCD) trainees and NPTCCD staff in the settings of District Chest Clinics (DCC), community and in the chest wards. Some of them are operational research and some are clinical research or case studies. Many are published in international and local peer reviewed journals and/or presented at conferences but recommendations not conveyed to NPTCCD, DCC, regional health authorities or hospitals.

The following programmatic gaps related to operational research have been identified:

- While OR is strategically included in the NSP, implementation is limited due to limited financial and human resources.
- The involvement of DCC staff is suboptimal.
- Research findings have not been made available at operational level.
- There has been limited implementation of recommendations from conducted research.

5.15 Gaps Related to the Health System Response to TB Control

TB control services are integrated into health system service delivery at all levels. Access to health services is in general good and with an in general good staffing density (doctors and nurses). Public expenditure on health expanded from Rs. 45,929 million in 2005 to Rs. 88,243 million in 2011, due to increased deployment of doctors, nurses and other support staff to maintain island wide health services (Ministry of Finance). TB is a notifiable disease. The government has secured funding from GFATM for TB control activities, through both TB grants and a major HSS grant. While much has been achieved in TB prevention, care and control, given the excellent health infrastructure and services network in Sri Lanka, there is a huge potential to further strengthen the system to have a major impact on TB disease in the population.

The following programmatic gaps related to the health system response to TB control have been identified:

- Not all health facilities have been involved in TB control.
- TB is not perceived as a common disease by health personnel and TB symptomatics at OPDs are not referred, or referred late.
- There is persisting stigma about TB among health personnel.
- There is suboptimal involvement of the MOH/range PHIs and PHM for community level TB control activities.
- High level political commitment is not reflected in budget allocations for TB control at local level; there is limited or no local contribution to the implementation of TB control activities (other than the traditional covering of staff salaries and facilities).

6 NPTCCD GOALS AND OBJECTIVES

6.1 ALIGNMENT WITH WHO'S GLOBAL STRATEGY FOR TUBERCULOSIS PREVENTION, CARE AND CONTROL AFTER 2015

NPTCCD policies and strategies to date have been informed by international standards formulated by the World Health Organization, such as the directly observed treatment short course (DOTS) strategy launched in 1993, and the Stop TB Strategy that underpinned the Global Plan to Stop TB 2006–2015. New multi-sectoral strategic approaches and new international targets for the post-2015 period have been approved by the Sixty-seventh World Health Assembly in May 2014.

In developing the NPDCCD's National Strategic Plan 2015 - 2020, it was ensured that the NPTCCD's strategy takes full account of the WHO post-2015 strategy. However, it was noted that the targets of the post-2015 strategy concern long-term goals for incidence rate and mortality, to be achieved by 2025 and 2035. Specifically the reduction of TB incidence rates requires a long time frame due to the prolonged presence of previously acquired infections in a population, which will not be affected immediately by an improvement of TB control activities. To define a short-term goal for the period until 2020 covered by the NSP, the use of TB prevalence was deemed more appropriate, as this epidemiological marker rapidly indicates changes in case finding activities and treatment effectiveness. A summary of the WHO post-2015 strategy is shown below.

VISION	A world free of tuberculosis – zero deaths, disease and suffering due to tuberculosis
GOAL	End the global tuberculosis epidemic
MILESTONES FOR 2025	75% reduction in tuberculosis deaths (compared with 2015) 50% reduction in tuberculosis incidence rate (less than 55 tuberculosis cases per 100,000 population) – No affected families facing catastrophic costs due to tuberculosis
TARGETS FOR 2035	95% reduction in tuberculosis deaths (compared with 2015) 90% reduction in tuberculosis incidence rate (less than 10 tuberculosis cases per 100,000 population) – No affected families facing catastrophic costs due to tuberculosis
PRINCIPLES 1. Government stewardship and accountability, with monitoring and evaluation 2. Strong coalition with civil society organizations and communities 3. Protection and promotion of human rights, ethics and equity 4. Adaptation of the strategy and targets at country level, with global collaboration	
PILLARS AND COMPONENTS	
1. INTEGRATED, PATIENT-CENTRED CARE AND PREVENTION A. Early diagnosis of tuberculosis including universal drug-susceptibility testing; and systematic screening of contacts and high-risk groups B. Treatment of all people with tuberculosis including drug-resistant tuberculosis; and patient support C. Collaborative tuberculosis/HIV activities; and management of comorbidities D. Preventive treatment of persons at high risk; and vaccination against tuberculosis	

2. BOLD POLICIES AND SUPPORTIVE SYSTEMS

A. Political commitment with adequate resources for tuberculosis care and prevention
B. Engagement of communities, civil society organizations, and public and private care providers
C. Universal health coverage policy, and regulatory frameworks for case notification, vital registration, quality and rational use of medicines, and infection control
D. Social protection, poverty alleviation and actions on other determinants of tuberculosis

3. INTENSIFIED RESEARCH AND INNOVATION

A. Discovery, development and rapid uptake of new tools, interventions and strategies
B. Research to optimize implementation and impact, and promote innovations

6.2 Definition of NPTCCD Goals and Objectives for 2015 – 2020

To account for its shorter time frame, the goal of the NSP 2015 - 2020 is defined as a reduction in TB prevalence. For longer time frames (2025 and 2035), the NPTCCD will use the targets of WHO's post-2015 TB strategy described above. The objectives for the NSP 2015 - 2020 have been developed to cover the three pillars of the post-2015 strategy, and to specifically address the deficiencies identified in the gap analysis described in section 5 of this NSP.

6.3 Goal of the National Strategic Plan 2015 - 2020

The goal of the National Strategic Plan for TB control 2015 - 2020 is to:

Decrease the prevalence of TB by 10% by 2020 based on the WHO estimates of TB for 2014

The indicator: Prevalence of all forms of TB (per 100,000 population per year).

The currently used prevalence figures for Sri Lanka are based on estimates derived from epidemiological model calculations. They have remained unchanged for several years, as no epidemiological changes are assumed due to low case detection ratios. Due to the relatively low burden of TB in Sri Lanka, it is unlikely that funding for the conduct of a prevalence survey can be obtained in the foreseeable fututue. Therefore the WHO estimates of TB for year 2014 is taken as the baseline value for this indicator.

6.4 Objectives of the National Strategic Plan 2015 - 2020

PILLAR 1: INTEGRATED, PATIENT-CENTRED CARE AND PREVENTION

Objective 1:

To improve the TB control by detecting at least 80% of incident TB cases (all forms) by 2017 and 90% of incident cases by 2020

The number of detected cases is available from the NPTCCD's routine recording and reporting system. Estimates of the underlying case incidence are published annually in WHO's Global TB Report.

Objective 2:

To improve the outcome of enrolled TB patients

a) **By achieving 90% treatment success rate of all forms of non MDR-TB patients and;**

b) **To maintain at least 75% of treatment success rate among MDR-TB cases by 2017**

The treatment success rate is available from the NPTCCD's routine recording and reporting system. The rate has been regularly exceeding 85% for non MDR-TB patients during previous years, thus meeting WHO target levels. The objective of the NPTCCD will be to further improve treatment success rates to 90% by 2017.

PILLAR 2: BOLD POLICIES AND SUPPORTIVE SYSTEMS

Objective 3:

To integrate TB control activities into general healthcare system by establishing TB diagnostic and treatment services in 40% of all hospitals up to the level of Divisional Hospitals Type B or above by 2017 and in 80% by 2020

The proportion of hospitals that are included in TB control activities will be determined based on the number of hospitals in which staff have been trained, supervision is performed regularly, and recording/reporting data is received regularly

Objective 4:

To improve the accessibility to TB treatment and care by engaging 30% of all private health care providers (hospitals and General Practitioners) in TB control by 2017, and 50% by 2020

The NPTCCD will monitor the number and proportion of TB cases detected at various types of public- and private health care providers through its routine recording and reporting system

Objective 5:

Ensure that quality TB services in line with current international standards are provided by qualified and regularly supervised personnel at 100% of all implementation sites by 2017

The NPTCCD will develop a composite indicator of programme quality at individual implementation sites during 2015. The indicator will comprise an assessment of the adequacy of staffing levels, training and supervision activities, and other components of TB control such as infection control. The performance of implementation sites relative to the composite indicator will be assessed annually, and only sites fulfilling all criteria will be counted as "quality assured" sites.

PILLAR 3: INTENSIFIED RESEARCH AND INNOVATION

Activities related to this pillar are included under strategic interventions related to Objective 1 (implementation of Xpert MTB/RIF MTB/RIF as an innovative method for the diagnosis of smear-negative cases), Objective 3 (implementation of Xpert MTB/RIF MTB/RIF as an innovative method for the diagnosis of drug-resistant cases), and Objective 5 (establishment of an operational research committee and implementation of an annual grant program).

7 STRATEGIC INTERVENTIONS FOR SPECIFIC OBJECTIVES

Strategic interventions have been developed to address the specific NPTCCD deficiencies outlined in the gap analysis described above. The listing of strategic interventions below provides a brief explanation of the rationale for including each intervention in the NSP.

7.1 STRATEGIC INTERVENTIONS FOR OBJECTIVE 1

Objective 1:

To improve TB control by detecting at least 80% of incident TB cases (all forms) by 2017 and 90% of incident cases by 2020.

7.1.1. Use Primary Healthcare Workers, other field level government officers, NGOs and volunteers functioning at MOH level for community awareness and referral for sputum microscopy

WHO has recently recommended systematic targeted screening activities as an effective method to increase case detection levels[2]. The use of PHWs for population screening activities has been shown to be effective in several countries.

Under this strategy, the NPTCCD will utilize primary healthcare workers, other field level government officers and NGO volunteers for house-to-house community awareness while carrying out their routine activities, thereby referral for sputum microscopy. Components of this strategy will be the development of specific training material for primary healthcare workers and other field officers, a large scale training programme for them across the whole country, and the development of communication materials targeting the community for use during house-to-house awareness activities. Any TB symptomatics identified during screening activities will be referred to the closest diagnostic center for further evaluation. The coordination of the community level activities will be conducted by the MOH division in collaboration with the DCC.

7.1.2. Conduct targeted screening activities for high risk groups

Targeted active case finding activities in congregate settings with suspected high TB prevalence have been recommended by WHO as routine components of effective TB control activities[2].

Under this strategy, high risk groups with suspected high prevalence of TB will be regularly screened by a mobile screening team established at districts. These activities will be supported by a mobile team established at the NPTCCD central level. The central level mobile team will use mobile digital X-ray facilities to ensure the rapid evaluation of large numbers of screened suspects. All patients with suspected chest X-rays will be subjected to further laboratory evaluation.

High risk groups to be targeted include prison populations, estate workers, factory workers, drug addicts and urban slum populations. In addition, the NPTCCD will collaborate with the Department of Immigration and Emigration to establish mandatory TB screening mechanisms for all migrant workers entering Sri Lanka, as well as Sri Lankans leaving the country for work abroad. The NPTCCD will also work in collaboration with the Ministry of External Affairs, Ministry of Defense, UNHCR

[2] Systematic screening for active tuberculosis: principles and recommendations. WHO/HTM/TB/2013.04

and International Organization for Migration for screening of asylum seekers from high burden countries.

7.1.3 Ensure screening of all case contacts

Contacts of active TB cases have a high risk for contracting an infection and subsequently developing active disease.

Under this strategy, the NPTCCD will ensure that Public Health Inspectors from the relevant MOH division will visit the homes of all active cases registered at all levels of health care facilities. All family members will be interviewed about signs and symptoms of TB, and TB information brochures will be distributed. Any symptomatics and all childhood contacts and other vulnerable people (e.g. diabetics, people on steroids etc.) will be referred to the nearest hospital for further screening and diagnosis. All identified contacts will be followed up for two years while screening for TB symptoms will be done once in every six months.

7.1.4 Intensify collaboration with NCD programs to increase detection of TB cases with NCD risk factors

Under the ongoing socio-demographic transition in Sri Lanka, NCDs are becoming increasingly important and NCD programs are receiving increasing attention within the healthcare system. Several risk factors related to NCD programs, such as smoking and diabetes, are related to an increased risk for the development of TB. In addition, a marked increase of incidence of Chronic Kidney Disease (CKD) was observed in some areas of the country and related risk for TB was highlighted.

Under this strategy, the NPTCCD will increase collaborative activities with NCD programs/curative care institutions to ensure that NCD programme staff/hospital staffs are trained in presumptive TB case detection, and detected cases are referred to the designated treatment facilities for further management.

7.1.5 Expand implementation of the Practical Approach to Lung Health (PAL)

The Practical Approach to Lung Health (PAL) has been successfully implemented in several countries and has been shown to be effective in increasing TB case detection in private-and government hospital settings. The NPTCCD has previously developed comprehensive PAL guidelines.

Under this strategy, the NPTCCD will implement a comprehensive training programme targeting doctors at private and government hospitals to ensure integrated management of all patients with chest disease, and increase TB case detection among symptomatics.

7.1.6 Intensify collaboration with the Sri Lanka Medical Association, professional colleges, medical faculties and paramedical staff training units

The Sri Lanka Medical Association, professional colleges, medical faculties and paramedical staff training units play a crucial role in defining standards of care for physicians and other health staff in private and government facilities throughout the country.

Under this strategy, the NPTCCD will set up regular coordination with these institutions, to ensure that TB concerns are adequately addressed and both Association and colleges are knowledgeable about and promote the International Standards of TB Care (ISTC).

7.1.7 Ensure high quality laboratory services at all DCCs and MCs

The provision of high quality smear microscopy services is a key requirement for the detection of active TB disease in newly identified TB suspects. The quality of smear microscopy will be ensured under this strategy through the strengthening of the existing EQA system. The NTRL will be internationally accredited, and regular collaboration with Supra-National Reference Laboratories will be strengthened.

The strategy will ensure adequate staffing at the National Tuberculosis Reference Laboratory for the implementation of effective supervision activities. Three assistant posts at science graduate level will be established, and NTRL cadre positions will be revised in line with the new Human Resource Development Plan. A further component of the strategy will be a reassessment of the distribution of microscopy centers to achieve a coverage of one center per 100,000 population. Laboratories in microscopy centers with high workloads will be equipped with LED microscopes.

7.1.8 Ensure access to Xpert MTB/RIF at all diagnostic centers (including hospitals up to district level)

The revised NPTCCD manual will specify the Xpert MTB/RIF technology as the primary diagnostic tool for the diagnosis of TB in any person with presumptive MDR-TB and HIV positive cases. The technology will also be employed for the diagnosis of smear negative TB in areas without regular access to chest X-ray facilities.

Under this strategy, the NPTCCD will ensure the countrywide access from all health care facilities to the Xpert MTB/RIF technology. A total of eight Xpert MTB/RIF machines will be installed; two at the National Reference Laboratory, and the rest at peripheral culture facilities. Access from all peripheral sites will be ensured through the regular provision of twice weekly sample transport. The transport mechanism will utilize existing staff at DCC and sample collection centres. This strategy will also include the design and implementation of a new presumptive TB cases register that will allow the tracking of diagnostic methods for individual symptomatics, as well as training of staff involved in TB diagnosis at all levels in the use of the new register.

7.1.9 Ensure adequate diagnosis of smear-negative cases at all facilities

The Joint Monitoring Mission 2014 identified large variations between districts in the diagnosing smear negative cases. Insufficient diagnosis of smear-negative cases in some districts may be one factor contributing to low case detection levels.

The revised NPTCCD manual will contain clear diagnostic algorithms for the diagnosis of smear negative cases that can be utilized by health facilities at all levels. Chest X-ray remains the primary diagnostic tool for the diagnosis of smear negative TB for all facilities that have access to X-ray services. In facilities in remote areas without access to chest X-ray, the Xpert MTB/RIF technology will be employed for the diagnosis of smear negative cases. Nevertheless, opinion of the Consultant Respiratory Physician will be sought in diagnosing smear negative pulmonary TB cases if Xpert MTB/RIF test is negative or diagnosis is solely made on X-ray and/or clinically. To facilitate the diagnosis of TB in complicated cases (including children), the NPTCCD will ensure the availability of tuberculin test at selected hospitals with specialist services.

7.1.10 Ensure improved diagnosis of extra-pulmonary cases

The proportion of extra-pulmonary cases among all TB cases in Sri Lanka is relatively higher than in other countries in the South-East Asian region. There may be some cases incorrectly diagnosed as TB.

Under this strategy, the NPTCCD will ensure that extra-pulmonary cases will be bacteriologically confirmed whenever feasible. SOPs for the diagnosis of extra-pulmonary cases will be developed, which will specify the specific bacteriological tests to be used for specific forms of the disease. Whenever feasible, bacteriological confirmation will be on the basis of Xpert MTB/RIF testing. In addition, the NPTCCD will provide supplies for the routine use of the Adenosine Deaminase (ADA) test for the rapid diagnosis of suspected TB pleural effusion. The test will be made available at National, Provincial and District General Hospitals.

7.1.11 Ensure adequate screening for MDR-TB suspects

The new NPTCCD manual will clearly describe diagnostic criteria to identify presumptive TB cases that require screening for MDR-TB.

Under this strategy, the NPTCCD will ensure that healthcare providers at all levels are trained in the Manual's diagnostic algorithms. Training will be provided as a component of the standard TB training course based on the new TB training modules that will be developed. The detection of MDR-TB critically depends on access to drug sensitivity testing at all healthcare facilities. As part of this strategy, the NPTCCD will ensure access to Xpert MTB/RIF testing for all newly identified presumptive MDR-TB cases. The strategy will utilize the network of Xpert MTB/RIF facilities described in strategic intervention 7.1.8 above. In addition, the NPTCCD will ensure the testing for INAH resistance in all newly identified rifampicin resistant patients through LPA and DST at the NTRL.

7.1.12 Ensure adequate diagnosis and management of TB in children

National TB statistics indicate that TB in children is currently severely under-diagnosed in Sri Lanka.

Under this strategy, the NPTCCD will improve the diagnosis of children through a comprehensive training programme for doctors at all levels of healthcare facilities, focusing specifically on childhood TB. The training programme will also ensure that all pediatricians in the country are updated about the diagnosis and management of childhood TB. The MCH staff including Public Health Midwives also will be sensitized on childhood TB.

7.1.13 Ensure implementation of all components of WHO's TB/HIV strategy

HIV-positive individuals have a highly enhanced risk of contracting a TB infection and developing active TB disease.

Under this strategy, in collaboration with the National STD/AIDS Control Programme, the NPTCCD will ensure that all components of WHO's TB HIV policy are implemented at all health care facilities, such as the screening of HIV positive subjects for TB, the screening of TB patients for HIV, and the provision of ART and CPT for TB patients living with HIV.

7.1.14 Conduct intensified advocacy and communication activities for the general population

The general lack of information about TB and NPTCCD activities has been described as a key factor contributing to low case detection levels during the recent joint monitoring mission.

Under this strategy, the NPTCCD will significantly enhance its advocacy and communication activities through the implementation of a comprehensive TB information and education package including billboards, posters, flipcharts and pamphlets. The commitment of political leadership and policy makers towards TB control will be further strengthened through well targeted advocacy. The strategy will also include community-based activities, such as the performance of street dramas about TB at village congregations and advocacy meetings with local opinion leaders.

Mass media activities including television and radio spots will form an important component of the strategy. The development of effective communication material will be informed by a KAP study describing current population information gaps, and the effectiveness of interventions will be evaluated in repeat KAP studies.

7.1.15 Intensify social mobilization and partnership activities on TB

Weak contribution by civil society organizations in TB control activities is one of the limiting factor.

Under this strategy, the NPTCCD will strengthen collaboration with locally active civil society organizations willing to involve in TB control. These activities will be done in line with WHO's recently developed "Engage TB Strategy". The strategy will also target opinion leaders at the village level through regular meetings focusing on TB control activities, in order to achieve further social mobilization against TB.

7.1.16 Assess gender issues in TB case detection

The almost equal rates of literacy level between males and females and life expectancy of females higher than males reflect that there is unlikely to be gender discrimination in general terms. But this does not exclude the possibility of women’s ability to access treatment and care. The taboos and myths that persist in certain communities and rural settings have an influence on health seeking behavior in women. Access to health is limited for women working in sectors like plantations and garment industry due to conditions prevailing in these occupations.

Though HIV incidence is not high when compared to other countries in the region, the increasing trend has been observed in the recent years. The majority affected are people in the reproductive age group. TB and HIV co-infection increases women’s health risks: women living with HIV are highly susceptible to developing active TB during pregnancy or soon after delivery, making TB a leading cause of death during pregnancy and delivery, and thereafter.

The NPTCCD will ensure that gender will not be a determining factor for unequal care between males and females. As part of this strategy, the NPTCCD will implement gender assessment tools in collaboration with WHO/UNAIDS. Other components of the NSP focus on improving access to healthcare services for poor populations, e.g. through ensuring access to services at peripheral hospitals. These support measures will also address the specific needs of poor women in rural areas, and gender inequalities will be monitored with the collection of gender specific data on case detection and treatment outcomes in the TB recording and reporting system. Use of the service of the Public Health Midwives whose one of the main responsibilities is visiting families, to disseminate TB specific health information to the community will further improve communication with female patients.

7.1.17 Involve traditional medicine practitioners in TB case detection

In many countries, traditional medicine practitioners remain the first point of contact in health seeking behavior for large parts of the population. Although proportion of people seeking Ayurveda treatment is low (around 2.5%), more people with symptoms chronic in nature visits traditional medical practitioners, it is likely that more people with chronic cough seeking their care. This will be established during a KAP study described under objective four of this NSP, the potential for the early detection of TB symptomatic through traditional medicine practitioners is assumed to be large.

Under this strategy, the NPTCCD will actively seek the cooperation of traditional medicine practitioners in case finding activities through mapping of these providers throughout the country and through the provision of targeted training activities and regular supportive visits by DCC staff.

7.2 Strategic Interventions for Objective 2

Objective 2:

To improve the outcome of enrolled TB patients

a) By achieving 90% treatment success rate of all forms of non MDR-TB patients and;

b) To maintain at least 75% of treatment success rate among MDR-TB cases by 2017

7.2.1 Ensure uninterrupted supply at all treatment facilities

Under this strategy, measures will be taken not to have any drug stock outs or over stocking of anti-TB drugs both at the central and peripheral levels. A revised TB drug procurement and distribution system based on current international standards will be developed. An online drug management system enabling the centre to monitor district level drug stocks will be developed. This strategy will also contain a comprehensive training programme focusing on drug management issues for staff at all levels of the healthcare system, in order to avoid overstocking or drug stock outs at any facility. Quality TB drugs will be procured through the Global TB Drug Facility (GDF).

7.2.2 Use PHW at MOH level (and NGOs for DOT)

The provision of daily directly observed treatment remains a cornerstone for successful TB control activities worldwide. The provision of well-functioning DOT services for all patients is of primary concern for the NPTCCD.

Under this strategy, the NPTCCD will retrain staff at all levels of the health care system on methods for ensuring DOT for all patients, and on strategies for identifying appropriate DOT providers. Options for DOT will be expanded by incorporating primary healthcare workers at MOH divisions other government sector field officers, CHWs working for NGOs and community volunteers in the network of DOT providers. Specific training material will be developed and all DOT providers will receive training in TB management. The strategy will also ensure regular monitoring of all DOT providers through strengthening of the supervisory capacity at the DCC in collaboration with the MOH divisions.

7.2.3 Ensure adequate management of complicated cases, including hospitalization when necessary

All TB cases receiving first line TB drugs are principally managed on an ambulatory basis using community based DOT providers. However, a certain percentage of cases will require short-term hospitalization, either due to an initial presentation of the disease in a very advanced form, or due to the development of drug side effects during treatment.

To ensure the adequate management of patients requiring hospitalization, specific respiratory wards with isolation facilities will be set up at selected hospitals in all districts. They will be supervised by Respiratory Physicians. Staff at all levels of the health care system will receive training in the detection of severe forms of TB and severe complications during treatment, and standardized facilities for the transport of complicated cases to the chest wards will be available at all peripheral facilities.

Comorbidities such as diabetes present special challenges in the care for TB patients. To improve the management of cases with comorbidities, the NPTCCD will develop specific training material focusing on this aspect of TB control and will ensure training of staff at all levels of the healthcare system. All DCCs will be equipped with facilities for baseline haematological and biochemical assessment including blood glucose, liver function, renal function and haemoglobin level.

7.2.4 Develop standardized social support package for patients in need

Social support mechanisms for TB patients in terms of financial support for diagnostic procedures and follow up visits, as well as food support have been very effective in ensuring treatment success in some countries.

Under this strategy, models of patient support will be developed in collaboration with the Social Services Department, donor agencies and other civil society organizations. Conditional on a successful implementation in pilot areas, these models will be expanded across the whole country. The NPTCCD will take initiatives to revise the leave policy enabling private sector employee to obtain paid leave as in the government sector and also long term leave for MDR-TB.

7.2.5 Ensure adequate second line anti-TB drug supply

Second line anti-TB drugs are obtained from the Global Drug Facility (GDF) and will be placed every six months with the GDF.

To estimate the number of Xpert MTB/RIF tests required for the diagnosis of DR TB cases, and the number of MDR-TB cases to be treated, the following assumptions were used:

- an increase of the proportion of patients with presumptive MDR-TB receiving Xpert MTB/RIF to 100% by 2020
- a constant prevalence of MDR-TB among retreatment cases of 5%
- a constant proportion of TB cases without smear conversion after the initial phase of 1.5%
- a prevalence of MDR-TB among non-converters of 10%

The numbers of Gene Xpert tests and expected MDR cases resulting from these assumptions are summarized in the table below.

Table 8: Projected numbers of MDR-TB cases and required Gene Xpert MTB/RIF tests

Parameter	2015	2016	2017	2018	2019
No. of retreatment cases	494	516	537	559	580
Percentage receiving Xpert MTB/RIF	30%	40%	60%	80%	100%
No. of Xpert MTB/RIF tests required for retreatment. cases	148	206	322	447	580
Percentage MDR among retreatment cases	5%	5%	5%	5%	5%
No. of MDR-TB cases detected in retreatment cases	7	10	16	22	29
Percentage of new smear positive cases not converting	1.5%	1.5%	1.5%	1.5%	1.5%
No. of new smear positive cases not converting	75	78	81	85	88
Percentage of non- converters tested with Xpert	30%	40%	60%	80%	100%
No. of Xpert MTB/RIF tests required for non-converters	22	31	49	68	88
Percentage MDR among non-converters	10%	10%	10%	10%	10%
No. of MDR-TB cases detected in non-converters	2	3	5	7	9
Total No. of Xpert tests for MDR-TB Management	170	237	371	515	668
Total No. of MDR-TB Cases detected	9	13	21	29	38

7.2.6 Ensure adequate logistics for distribution of second line drugs

Logistics for the distribution of second line drugs have special requirements, such as temperature controlled drug storage facilities.

Under this activity, the establishment of an uninterrupted transport chain with adequate storage facilities at all levels will be ensured.

7.2.7 Strengthen laboratory capacity for diagnosis and follow-up of XDR-TB

The strategy will strengthen the network of culture laboratories, in particular for the required decentralized capacity for culture follow up, and strengthen the in-country capacity to perform SL DST. In addition to the culture facility at the National TB Reference Laboratory, six culture facilities will be maintained throughout the country. This include currently functioning Regional Culture Laboratories in Kandy and Ratnapura, culture laboratories under construction in Galle and Jaffna and two proposed laboratories in Batticaloa and Anuradhapura. LPA (Hain's) second line DST will be established as "rule in" test for resistance to fluoroquinolones and second line injectables at the NTRL.

7.2.8 Ensure adequate management of MDR-TB patients during Intensive and Continuation Phase of treatment

The treatment of MDR-TB cases requires hospitalization during the intensive phase of treatment.

To be able to cope with the expected increase of MDR-TB case numbers due to the countrywide implementation of routine Xpert MTB/RIF testing, the NPTCCD plans the implementation of one additional treatment facility in strategically important district, which will complement of the existing MDR-TB treatment facility at the National Hospital for Respiratory Diseases. After completion of the initial phase, the NPTCCD will ensure close supervision of all MDR-TB patients

during ambulatory treatment in the continuation phase through the development of a countrywide network of doctors and nurses specifically trained in the management of MDR-TB.

7.2.9 Develop standardized social support packages for all MDR-TB patients

Social support mechanisms for TB patients in terms of financial support for diagnostic procedures and follow up visits, as well as food support have been very effective in ensuring treatment success in some countries.

Under this strategy, models of patient support will be developed in collaboration with the Social Services Department, donor agencies and other civil society organizations. Conditional on a successful evaluation in pilot areas, these models will be expanded across the whole country. The NPTCCD will take initiatives to revise the leave policy enabling private sector employee to obtain paid leave as in the government sector and also long term leave for MDR-TB.

7.2.10 Ensure Infection Control for staff involved in MDR-TB activities

Adequate infection control is critically important at all facilities handling MDR-TB patients.

Under this strategy, the NPTCCD will ensure the provision of a comprehensive package of infection control activities at all facilities handling MDR-TB patients, based on the interventions described in the NPTCCD's new infection control guidelines

7.2.11 Ensure efficient programmatic management of drug resistant tuberculosis

The NPTCCD has identified one Medical Officer attached to the District Chest Clinic Gampaha as the PMDT Coordinator with clearly identified Terms of Reference. Coordination of all PMDT activities will continue through the PMDT Coordinator. A PMDT coordinating unit will be established at the premises of DCC Gampaha. One programme assistant will be recruited for secretarial and data management activities. This unit will be equipped with IT and communication facilities.

TA will be sought from TB Team for the revision of the PMDT Guidelines at the beginning of the NSP period (2015) and again three years after (2018). Revised PMDT Guidelines will be printed and disseminated to all MDR-TB treatment units.

7.2.12 Provide palliative care for patients without further treatment options

The NPTCCD will ensure the provision of palliative care as well as social support for all patients who will not respond to the MDR-TB treatment regimen. For planning purposes, the number of such cases was assumed not to exceed 5 by 2020.

7.3 STRATEGIC INTERVENTIONS FOR OBJECTIVE 3

Objective 3:
To integrate TB control activities into general healthcare system by establishing TB diagnostic and treatment services in 40% of all hospitals up to the level of Divisional Hospitals Type B or above by 2017 and in 80% by 2020

7.3.1 Ensure comprehensive capacity building of Divisional Hospital staff in TB detection and case management based on NPTCCD policies

The recent JMM identified the centralization of TB services at the DCC level with lack of access to services at more peripheral facilities as a key factor contributing to relatively low case detection levels in Sri Lanka.

Under this strategy, the NPTCCD will engage hospitals up to the Divisional Hospital Type B level in the provision of TB services. Specific training material targeting doctors at General, Base and Divisional Hospitals will be developed, and a comprehensive training programme will ensure that doctors at all hospitals in the country will be trained in TB management during the NSP duration. To increase the attractiveness of such training for clinicians, information on the integrated management of chest diseases will be included in the training package, based on the recently developed PAL guidelines.

7.3.2 Ensure access to TB diagnostic services at all hospitals up to the level of Divisional Hospital Type B

Access to laboratory services (both microscopy and Xpert MTB/RIF) will be ensured through the establishment of a regular sputum sample transport mechanism covering all hospitals. To establish this system, currently existing staff in hospitals and DCCs will be utilized. Doctors at peripheral hospitals will be able to make the diagnosis of TB on the basis of laboratory results.

7.3.3 Ensure regular monitoring of TB treatment activities up to the level of Divisional Hospitals

Drugs for the treatment of newly detected cases will have to be requested on an individual basis from the DCC, thus ensuring the registration and the monitoring of all cases through the DCC, for the full duration of treatment. Monitoring will be provided by regular monthly monitoring visits by a DCC staff (DTCO or PHI), to all hospitals.

7.3.4 Ensure adequate management capacity at DCCs for supervision and monitoring up to the level of Divisional Hospitals

To enable the intensive monitoring activities required for the integrated TB management system, the urgent filling of all established cadre posts at the DCC level (including medical officers, nurses, laboratory staff and PHIs), is an integral component of this strategy. Filling all currently vacant positions will enable the DTCO to fully concentrate on managerial and supervision activities, which are currently neglected at many DCCs due to the heavy clinical workload of DTCOs. In several DCCs with high numbers of peripheral hospitals, additional DTCO posts will be established to ensure the adequate supervision of all facilities.

7.4 Strategic Interventions for Objective 4

Objective 4:
To improve the accessibility to TB treatment and care by engaging 30% of all private health care providers (hospitals and General Practitioners) in TB control by 2017, and 50% by 2020

7.4.1 Undertake research to establish baseline figures on TB management in private sector

This strategy will increase the knowledge base on TB management in the private sector. Studies will include mini surveys of treatment seeking pathways and diagnostic delays, and surveys to identify areas (e.g., urban vs. rural) with higher private sector participation in TB case management. Study findings will be used by the PPM working group to develop PPM interventions based on the specific situation in Sri Lanka.

7.4.2 Strengthen collaborative activities between the NPTCCD and private providers

This strategy will include activities to strengthen the capacity of the NPTCCD to engage all care providers including private laboratories and pharmacies through collaboration and regulation. Activities will focus on the provision of regular training and periodic follow-up sessions for private providers, with the aim of achieving a substantial increase in the total programmatic coverage.

The strategy will also strengthen collaboration with NGOs and professional associations to strengthen the engagement of private practitioners and pharmacies. Surveillance and supervisory systems to monitor contribution of non-NPTCCD care providers to TB care and control will be developed. Regular PPM working group meetings will be ensured. To improve monitoring and evaluation of PPM, the schedule for visiting the engaged private providers will be formalized and documented so there is regular education, advocacy and monitoring, and the percentage of actively referring private providers can be calculated.

The strategy will also include the optimization and expansion of the engagement of large hospitals (public and private). Screening for TB in hospital OPDs presents an important opportunity to identify additional patients with presumptive TB. Activities will focus on the training of doctors employed in OPD settings, the production and distribution of desktop reference material to increase awareness about diagnostic opportunities for TB, and the establishment of microscopy facilities and DOTS coordination facilities in large hospitals. All TB laboratory facilities in the private sector will receive regular quality control through the NTRL. The rational use of anti-TB medicines and standards of medical practice will be developed through promoting ISTC among private doctors and hospitals. For this purpose, a distant learning package based on the ISTC will be developed.

7.4.3 Develop accreditation/certification mechanism for Private Providers providing TB services

This strategy aims at formalizing the relationship between the NPTCCD and ensuring that the provision of TB care in the private sector adheres to NPTCCD and international standards. The PPM working group will develop certification criteria for private providers, including knowledge about ISTC, a commitment to use NPTCCD diagnostic algorithms, and a commitment to DOT.

A certification mechanism will be established and communicated to all private providers. Private providers passing the certification process will be eligible for free diagnostics and drugs provided

through the NPTCCD. In return, they will accept regular monitoring through the NPTCCD and submit data on case finding and treatment outcomes.

7.4.4 Develop legislation for TB services in the private sector

Under this strategy, the NPTCCD will seek to facilitate the collaboration with private providers through the promotion of legal regulations related to TB control. Under the guidance of the PPM Working Group, the NPTCCD will ensure implementation of the mandatory notification of all TB cases. The NPTCCD also will develop legal proposals for the prohibition of the sale of anti-TB drugs in the private sector.

7.4.5 Ensure recording and reporting for TB cases managed in the private sector

Realizing the time constraints prevalent in the private sector, the NPTCCD will develop a simplified recording and reporting package to ensure the collection of essential data on TB case detection and treatment outcomes from all private providers.

7.5 Strategic Interventions for Objective 5

Objective 5:
Ensure that quality TB services in line with current international standards are provided by qualified and regularly supervised personnel at 100% of all implementation sites by 2017

7.5.1 Ensure technical oversight of NPTCCD activities

The implementation of TB control activities are guided by the technical advisory committee as well as regular technical reviews.

Under this strategy the technical advisory committee will meet regularly and comprehensive technical review meetings will be held including partners in government, and the civil society.

7.5.2 Revise and update national manuals

The NSP contains several strategies that imply important changes in the structure and organization of NPTCCD services, such as the integration of services to the hospitals at the level of Divisional Hospital Type B or above, and the countrywide implementation of Xpert MTB/RIF testing for MDR-TB. Under this strategy, an updated version of the National Guidelines for TB Control will be prepared that reflects all strategies described in the NSP.

7.5.3 Ensure adequate staffing at all levels to implement the NSP

Staffing levels of health workers currently involved in the implementation of TB control activities will be reviewed. Additional staffing needs (number and categories) will be identified at all levels to implement high quality TB programme activities and services (including peripheral hospitals, EQA, national reference laboratory services, services related to the programmatic management of MDR-TB and TB/HIV at peripheral and central level, etc.).

Under this strategy, a human resource development plan for TB will be developed specifying staff requirements and job descriptions for all levels of health care services (central and district levels). Based on the human resource plan, cadre positions at the DCCs, NTRL and NPTCCD central level will be revised.

7.5.4 Strengthen staff capacity at Central and district level

The implementation of the revised TB control strategy under strict quality control criteria poses immense managerial demands for the NPTCCD. To enable the NPTCCD's central level to cope with these managerial demands, six assistant staff at graduate level will be employed to assist the existing MOs covering various managerial areas of the NPTCCD. In addition, one Programme Officer will be recruited to coordinate the ACSM and operational research programs. This PO will be fluent in Tamil to ensure adequate communication between the NPTCCD central level and the Tamil-speaking parts of the country.

The NPTCCD will strengthen its advocacy to the health administration at the central and provincial levels to ensure that all established cadre positions (including MOs, PHIs, nurses and laboratory staff) at the DCCs are urgently filled. This will be a crucial requirement to ensure that DTCOs and PHIs are freed up to be able to concentrate on managerial and supervision tasks at the district level. In several DCCs, additional cadre DTCO posts will be established to account for increased managerial requirements due to a large number of peripheral hospitals.

The central management capacity of NPTCCD will be strengthened by sending relevant staff to selected international training courses and by obtaining support from WHO or other relevant agencies for organizing leadership and management courses and technical training programmes in-country.

7.5.5 Ensure that all staff involved in TB control at all levels of the health system have the competencies needed to perform their roles and responsibilities

Findings during the JMM indicate that there is limited systematic and ongoing training needs assessment followed by needs based planning of training. There is also very limited availability of standardized training material. Gaps in the implementation of all components of the NPT also indicated gaps in competencies.

To ensure that all staff involved in TB control at all levels of the health system have the competencies needed to perform their roles and responsibilities according to their job descriptions, the NPTCCD will develop revised training packages for different provider types (DCC staff, Divisional Hospital staff, CHWs) based on the revised NPTCCD Manual. Taking into account the different training requirements of staff at various levels of the healthcare system, the NPTCCD will develop targeted sets of training modules emphasizing practical aspects of TB control for Central and DCC level staff, for doctors and public health staff at peripheral hospitals, and for PHWs.

The initial training and regular retraining of all staff involved in NPTCCD activities is a key requirement for the successful and quality controlled implementation of TB control activities. Under this strategy, the NPTCCD will ensure that staff at all facilities will receive intensive training on the basis of the newly developed training modules. In addition, the regular continued education sessions of all staff will be ensured.

7.5.6 Ensure adequate supervision of staff at all levels

The regular supervision of staff at all healthcare facilities implementing TB control activities will be ensured through the training of staff at the central and district levels in supervisory requirements based on the new National Guidelines and training modules and standardized checklists. The NPTCCD will ensure the availability and regular maintenance of the required transport facilities at

all levels, as well as the regular provision of financial support for meal costs and fuel to ensure the conduct of supervision activities in regular intervals as specified in the National Guidelines.

7.5.7 Implement a revised recording/reporting system based on WHO's 2013 revision

WHO has published guidelines for a revised TB recording and reporting system in 2013. The revised guidelines contain important changes concerning definitions of case types and treatment outcomes.

The NPTCCD will include the revised recording and reporting system in the revised National Guidelines. Under this strategy, the NPTCCD will ensure the countrywide implementation of the revised R&R system through the provision of revised recording and reporting forms to all healthcare facilities, as well as a comprehensive training programme based on the new recording and reporting requirements that will cover healthcare providers at all levels of healthcare facilities.

7.5.8 Ensure countrywide implementation of revised electronic recording/reporting system

Electronic recording and reporting has been identified by WHO as an important requirement for quality assured TB control activities. The NPTCCD has already implemented an electronic recording and reporting system, however the implementation is on a limited scale.

Under this strategy, the NPTCCD will ensure that the existing system is revised in line with the updated recording and reporting formats published by WHO in 2013. After revision, the NPTCCD will ensure the countrywide implementation of the new electronic recording and reporting system through the provision of the required equipment and Internet access to all DCCs, as well as intensive training and supervision for all personnel involved in the management of TB data. The NPTCCD also will do mapping of all TB patients based on GIS software.

7.5.9 Ensure determination of baseline for impact analysis

Impact analysis will form an important component of the NPTCCD's monitoring strategy. To establish an empirical baseline for the determination of the impact of NPTCCD activities on TB prevalence, a reassessment of the epidemiological situation is planned for 2014. A drug resistance survey will be planned for 2015.

7.5.10 Ensure effective OR activities

Regular operational research focusing on key programmatic issues is an important requirement for the continuing improvement of TB control activities.

Under this strategy, the NPTCCD will establish an Operational Research Committee at the central level. The committee will manage an operational research budget, which will be replenished annually. Access to operational research funds will be open to all care providers (public and private) engaged in TB control though the submission of research proposals for review by the Operational Research Committee

7.5.11 Implement comprehensive infection control policy at all facilities

The NPTCCD has taken an important step towards improving TB infection control at healthcare facilities through the development of the national infection control plan and establishing infection control committees at DCC level.

In line with these activities, the NPTCCD, through TA will develop a comprehensive infection control guidelines. In this strategy, the NPTCCD will ensure that all components of the new TB infection control strategy will be implemented at all healthcare facilities through the implementation of a comprehensive training programme focusing on TB infection control issues, as well as financial support for the development of individual infection control plans based on the new national policy at all facilities.

7.5.12 Strengthen planning and budgeting capacity at district level to improve financial sustainability

Annual health budgets available at provincial and district levels are currently rarely utilized for TB control. A key limitation is that DCC staffs do not have the capacity to prepare comprehensive annual work plans and budgets.

Under this strategy, the NPTCCD will ensure that DCC staff will receive adequate training to prepare successful annual work plans and budgets. These budgets should result in a greater resource allocation for TB control at provincial and district level, and thus contribute to the future sustainability of the program.

7.5.13 Ensure adequate technical support

Technical support for the interventions proposed in this NSP will be of key importance to ensure their successful implementation.

Under this strategy, the NPTCCD will ensure the continuation of the long term collaboration with WHO, including the provision of short term consultants to address specific technical issues.

7.5.14 Ensure coordination of all partners

The civil society participation in TB control activities is very poor in Sri Lanka. The NPTCCD has initiated establishing collaboration with several civil society partners to involve in TB control. The continuation and further development of these partnerships will be of key importance for the further strengthening of TB control activities in Sri Lanka.

Under this strategy, the NPTCCD will ensure the further development of partnership activities through the implementation of regular partnership meetings focusing on the evaluation of the TB control situation as well as the discussion of strategic directions for future developments of TB control activities. TB technical working group will be key body to ensure these coordination of the partners through the regular meetings.

7.5.15 Ensure regular programme evaluation

To ensure that all NPTCCD activities are technically sound and implemented in the most effective way, the NPTCCD will continue regular programme evaluation activities. These include the conduct of a joint monitoring mission and an epidemiological assessment of the TB situation once in every three years.

The three remaining strategic interventions under this objective are essential to the overall management and implementation of activities.

7.5.16 Ensure procurement of vehicles and consumables and their maintenance

7.5.17 Ensure cost allocation for use of existing MH infrastructure

7.5.18 Maintain existing GF project management capacity

8 DETAILED ACTIVITIES FOR STRATEGIC INTERVENTIONS

The tables on the following pages summarize key activities planned for each strategic intervention listed above.

Table 9: Activity Plan

Objective 1: To improve the TB control by detecting at least 80% of incident TB cases (all forms) by 2017 and 90% of incident cases by 2020	
Strategic Intervention	**Activity**
1.1. Use PHWs, other field level government officers, NGOs and volunteers functioning at MOH level for community awareness and referral for sputum microscopy	1.1.1. Ensure commitment from FHB (central level MCH) to include TB awareness and referral of people with symptoms suggestive of TB for sputum microscopy in the routine activities of the PHWs
	1.1.2. Ensure commitment from local government and selected NGOs to include TB awareness and referral of people with symptoms suggestive of TB for sputum microscopy in the activities
	1.1.3. Prepare SOPs for community awareness and referral
	1.1.4. Develop community education material (flash cards and leaflets) on TB for use by PHW/community workers
	1.1.5. Training of PHWs and other field workers including NGOs on community awareness and referral
	1.1.6. Ensure regular meeting are held at MOH level for monitoring and evaluation of TB activities
1.2. Conduct targeted screening activities for high-risk groups	1.2.1. Prepare SOP for screening/active case finding among high risk groups
	1.2.2. Ensure screening of all high risk groups i.e. estate workers and families, people living in underserved settlements in urban areas, elderly persons, drug addicts and other high risk groups
	1.2.3. Ensure case finding among migrant population, asylum seekers and IDPs
	1.2.4. Improve prison health services and infrastructure facilities for TB screening, diagnosis and treatment
	1.2.5. Ensure regular entry screening, annual mass screening, routine symptomatic screening for prisoners
	1.2.6. Establish a mobile screening facility at central level to be used in districts.
	1.2.7. Assess cost-effectiveness of various targeted interventions for TB under NPTCCD (TA from a Health Economist)
1.3. Ensure screening of all case contacts	1.3.1. Develop guidelines and SOPs for contact tracing
	1.3.2. Ensure capacity building of all relevant staff at DCCs and range PHIs in contract tracing
	1.3.3. Ensure regular monitoring and evaluation of contact screening activities

1.4. Intensify collaboration with NCD programmes to increase detection of TB cases with NCD risk factors	1.4.1. Ensure identification and referral of presumptive TB cases by staff involved in care of people with NCD
	1.4.2. Capacity building of health staff involved in NCD management on presumptive TB screening
	1.4.3. Ensure regular monitoring and evaluation of collaborative activities between NPTCCD and NCD programmes
1.5. Expand implementation of PAL	1.5.1. Implement comprehensive training programme for doctors at private and government hospitals to ensure integrated management of all patients with chest diseases in view of increasing TB case detection among symptomatics
1.6. Intensify collaboration with the Medical Association, professional colleges, medical faculties and paramedical staff training units	1.6.1. Include/revise/improve TB related content in medical undergraduate curricula
	1.6.2. Include/revise/improve TB related content in curricula of paramedical staff training
	1.6.3. Include Medical Association and academia in PPM working group
	1.6.4. Promote use of International Standards of TB Care through the PPM work group
1.7. Ensure high quality laboratory services at all DCCs and MCs	1.7.1. Ensure sustained quality assurance of microscopy services
	1.7.2. Establish a Laboratory Information Management system
	1.7.3. Ensue international accreditation of NTRL
	1.7.4. Decentralize culture services and introduce molecular diagnostics services
	1.7.5. Revise/ update existing laboratory manual, SOPs and standards
	1.7.6. Strengthen and further expansion of laboratory network
	1.7.7. Procure laboratory consumables and other equipment
	1.7.8. Ensure adequate staffing of the laboratory network
	1.7.9. Ensure capacity building of all staff in order to perform assigned tasks and functions

1.8. Ensure access to Xpert MTB/RIF at all diagnostic centers (including hospitals up to district level)	1.8.1. Ensure countrywide access for all health care facilities to the Xpert MTB/RIF technology
	1.8.2. Revise/update the existing laboratory manual including Xpert MTB/RIF
	1.8.3. Ensure capacity building of laboratory staff on Xpert MTB/RIF technology
	1.8.4. Design and implement a new “Presumptive TB case register”
1.9. Ensure adequate diagnosis of smear-negative cases at all facilities	1.9.1. Ensure access to X-ray diagnostic facilities
	1.9.2. Revise NTP Manual to include diagnostic algorithms for smear negative diagnosis up to Divisional Hospitals, including Xpert
	1.9.3. Ensure training of all relevant health staff in new algorithms
1.10. Ensure improved diagnosis of extra-pulmonary cases	1.10.2. Revise NTP Manual to include diagnostic algorithms for EPTB including Xpert
	1.10.2. Ensure all diagnostic facilities pertaining to EPTB is available at all levels
	1.10.3. Train all relevant health staff in the use of the new algorithms
1.11. Ensure adequate screening for MDR-TB suspects	1.11.1. Revise NTP Manual to include MDR-TB screening algorithms including Xpert
	1.11.2. Train all relevant health staff in the use of new algorithms
1.12. Ensure adequate diagnosis and management of TB in children	1.12.1. Procure, supply and distribute tuberculin PPD for skin testing (by NPTCCD)
	1.12.2. Establish a working group for Childhood TB and ensure its regular functioning
	1.12.3. Update the National Guidelines for Childhood TB
	1.12.4. Ensure all relevant staff are competent to implement of the updated guidelines based on their roles and responsibilities
	1.12.5. Ensure that monitoring and evaluation of all activities related to TB in children are included in regular review meetings and supervision at all levels
	1.12.6. Ensure that surveillance of childhood TB is adequately covered in the routine recording and reporting system
	1.12.7. Ensure advocacy, communication and awareness activities to the general population and health staff about TB in children

1.13. Ensure implementation of all components of WHO's TB/HIV strategy	1.13.1. Ensure continued close collaboration with NSACP
	1.13.2. Strengthen the mechanisms for integrated TB and HIV service delivery
	1.13.3. Decrease the burden of HIV in patients with presumptive and diagnosed TB
	1.13.4. Decrease the burden of TB in people living with HIV
1.14. Conduct intensified advocacy and communication activities for the general population	1.14. 1. Organize celebration of Annual World TB Day
	1.14.2. Implement KAP survey
	1. 14.3. Develop ACSM plan based on the results of KAP survey
	1.14.4. Develop and implement a comprehensive TB information package including billboards, posters, flipcharts and pamphlets targeted at the general public
	1.14.5. Ensure a renewed commitment of political leadership and policy makers towards TB control through well targeted advocacy
	1.14.6. Implement targeted communication interventions (community awareness, advocacy meetings press briefings etc.)
	1.14.7. Ensure orientation/information on TB to school children
1.15. Intensify Social Mobilization and Partnership Activities on TB	1.15.1. Ensure the revised TB Manual includes guidelines to increase the engagement of NGOs and other civil society organizations in community-based TB activities
	1.15.2. Ensure collaboration with locally active civil society organizations willing to be involved in TB control
1.16. Assess gender issues in TB case detection	1.16.1. Ensure that gender is not a determining factor for unequal care between males and females
	1.16.2. Develop a gender assessment tools based on new WHO guideline
1.17. Involve traditional medicine practitioners in TB case detection	1.17.1. Prepare SOPs for involvement of traditional medicine practitioners
	1.17.2. Ensure TB awareness and referral of people with symptoms suggestive of TB for sputum microscopy are included in the routine activities of traditional medicine practitioners

Objective 2: To improve the outcome of enrolled TB patients **a) By achieving 90% treatment success rate of all forms of non MDR-TB patients and;** **b) To maintain at least 75% of treatment success rate among MDR-TB cases by 2017**	
Strategic Intervention	**Activity**
2.1. Ensure uninterrupted anti-TB drug supply at all treatment facilities	2.1.1. Strengthen the procurement, distribution, drug quality assurance and monitoring system
	2.1.2. Procure quality assured first line anti-TB drugs through GDF
	2.1.3. Ensure relevant staffs at all levels of the health system have the capacity for management of anti-TB drugs based on their roles and responsibilities
2.2. Use PHW at MOH level (and NGOs) for DOT	2.2.1. Revise NTP Manual to include policies and strategies for DOT, provision of anti-TB drugs to DOT providers, supervision of DOT providers and monitoring and evaluation DOT provision
	2.2.2. Ensure all relevant staffs have the capacity to implement the policies and strategies for DOT
	2.2.3. Ensure that DOT providers (non-health staff) have the capacity to implement DOT
	2.2.4. Ensure that monitoring and evaluation of DOT provision are included in regular meetings and supervision at all levels
2.3. Ensure adequate management of complicated cases, including hospitalization when necessary	2.3.1. Revise TB Manual to provide instructions on management of complicated cases
	2.3.2. Assess hospitalization capacity in each district for allocation of necessary resources
	2.3.3. Ensure TB patients with comorbidities and complications are properly managed
2.4. Develop standardized social support package for patients in need	2.4.1. Develop sustainable mechanism for patient support in collaboration with the Social Services Department, donor agencies and other civil society organizations.
2.5. Ensure adequate second line anti-TB drug supply	2.5.1. Strengthen the procurement, distribution, drug quality assurance and monitoring system
	2.5.2. Procure quality assured second line drugs

	2.5.3. Ensure relevant staffs at all levels of the health system have the capacity for drug management based on their roles and responsibilities
2.6 Ensure adequate logistics for distribution of second line anti-TB drugs	2.6.1. Ensure the establishment of an uninterrupted transport chain with adequate storage facilities at all levels at all levels of the system
2.7. Strengthen laboratory capacity for diagnosis and follow-up of XDR-TB	2.7.1. Ensure availability of quality assured first line DST
	2.7.2. Ensure provision for follow-up investigations in MDR-TB patients under management
2.8. Ensure adequate ambulatory management of MDR-TB patients during Intensive and Continuation Phase of treatment	2.8.1. Ensure regular meetings of the National PMDT Committee and PMDT Site Committees
	2.8.2. Procurement of auxiliary drugs for managing side effects
	2.8.3. Ensure close supervision of all MDR-TB patients during ambulatory treatment in the continuation phase
	2.8.4. Ensure capacity building of relevant health care workers on PMDT or community volunteers for support of PMDT patients
2.9. Develop standardized social support package for all MDR-TB patients	2.9.1. Develop a sustainable mechanism for patient support in collaboration with the Social Services Department, donor agencies and other civil society organizations
2.10. Ensure adequate infection control for staff involved in MDR-TB activities	2.10.1. Ensure the provision of a comprehensive package of infection control measures at all facilities handling MDR-TB patients, based on the interventions described in the NPTCCD's infection control guidelines
2.11. Ensure efficient programmatic management of drug resistant TB	2.11.1. Strengthen the PMDT management unit
	2.11.2. Develop and implement annual work plan by PMDT coordinator
	2.11.3. Ensure disseminations of PMDT guidelines

2.12. Provide palliative care for patients without further treatment option	2.12.1. Ensure the provision of palliative care for all patients who does not respond to MDR-TB regimens.

Objective 3: To integrate TB control activities into general healthcare system by establishing TB diagnostic and treatment services in 40% of all hospitals up to the level of Divisional Hospitals Type B or above by 2017 and in 80% by 2020	
Strategic Intervention	**Activity**
3.1. Ensure comprehensive capacity building of Divisional Hospital staff in TB detection and case management based on NPTCCD policies	3.1.1. Ensure commitment of hospitals up to the Divisional Hospital Type B level in the provision of TB services
	3.1.2. Implement comprehensive capacity building activities on management of TB for all relevant hospital staff
3.2. Ensure access to TB diagnostics at all hospitals up to divisional level Type B	3.2.1. Establish sputum sample collection and transport mechanism
	3.2.2. Strengthen existing TB microscopic laboratories when relevant
3.3. Ensure regular monitoring of TB treatment activities at Divisional Hospitals	3.3.1. Ensure the availability of anti-TB drugs for the initiation of treatment at hospitals with integrated treatment facilities
	3.3.2. Ensure close collaboration between integrated treatment facilities at hospitals and the DCCs for the coordination of treatment of TB patients
	3.3.3. Ensure regular monitoring and supervision from DCC to Divisional Hospitals
3.4. Ensure adequate management capacity at DCCs for supervision and monitoring of Divisional Hospitals	3.4.1. Fill all existing unfilled cadre posts at DCC
	3.4.2. Ensure capacity building of supervisory category of staff on monitoring and supervision of integrated facilities
	3.4.3. Organize regular review meetings conducted at regional level

Objective 4: To improve the accessibility to TB treatment and care by engaging 30% of all private health care providers (hospitals and General Practitioners) in TB control by 2017, and 50% by 2020	
Strategic Intervention	**Activity**
4.1. Undertake research to establish baseline figures on TB management in private sector	4.1.1. Establishment and maintenance of database on private providers
	4.1.2. Coordinate OR on care seeking behavior (several settings in urban and rural areas)
4.2. Strengthen collaborative activities between the NPTCCD and private providers	4.2.1. Appoint two PPM coordinators at central level
	4.2.2. Sensitize private practitioners working in both western and indigenous Medicine
	4.2.3. Implement Urban PPM
	4.2.4. Organize In-service training of medical officers and nursing officers in the private sector
	4.2.5. Involve private laboratories in TB diagnosis and ensure regular quality control through the National TB Reference Laboratory
4.3. Develop accreditation/certification mechanism for private providers providing TB services	4.3.1. Establish a coordinating body at district level
	4.3.2. Define quality standards to be fulfilled by PPs (Promote use of International Standards of TB Care)
	4.3.3. Provide care package (free diagnosis, free drugs) for patients managed by certified PPs
	4.3.4. Train DCC staff on assessment of quality criteria in private facilities
4.4. Develop legislation for TB services in the private sector	4.5.1. Develop draft legislation for prohibition of drug sales in private sector
4.5. Ensure recording and reporting for TB cases managed in the private sector	4.6.1. Implementation of simplified recording/reporting package based on new mandatory notification law

Objective 5: Ensure that quality TB services in line with current international standards are provided by qualified and regularly supervised personnel at 100% of all implementation sites by 2017	
Strategic intervention	**Activity**
5.1. Ensure technical oversight of NPTCCD activities	5.1.1. Organize regular TB Advisory committee meetings
	5.1.2. Organize regular technical review meetings
5.2. Revise and update national manuals	5.2.1. Revise and update national manuals
5.3. Ensure adequate staffing at all levels to implement the NSP	5.3.1. Develop and implement a human resource plan for TB specifying staff requirements and job descriptions for all levels of health care services
5.4. Strengthen staff capacity at central and district level	5.4.1. Fill all existing unfilled cadre posts at central level NPTCCD
	5.4.2. Strengthen the advocacy to the health administration at central and provincial levels to ensure that all established cadre positions are filled
	5.4.3. Ensure continuing capacity building of staff through attending international conferences and workshops
5.5. Ensure that all staff involved in TB control at all levels of the health system have the competencies needed to perform their roles and responsibilities	5.5.1. Develop and implement a plan for capacity building activities (including regular training, but not limited to) in close collaboration with partners
	5.5.2. Do a needs assessment by each DCC area (for staff that needs updating based on new policies and guidelines and staff that has not received any training) based on revised job descriptions
	5.5.3. Update capacity building modules for MOs/ DTCOs/Divisional Hospital staff/laboratory staff/nurses/PHIs/CHWs/DOT providers, based on the revised job descriptions and the revised TB Manual
	5.5.4. Develop new material based on needs assessment and ensure material developed is competency based
	5.5.5. Develop competency based evaluation systems for all training programmes
	5.5.6. Develop detailed plan for specific training activities and other capacity building activities
	5.5.7. Train course facilitators with particular attention to technical and educational competencies
	5.5.8. Ensure capacity building activities are implemented in close collaboration with other programmes relevant to TB
	5.5.9. Review capacity bundling activities during regular meetings at DCC, with DTCOs and during supervisory visits

5.6. Ensure adequate supervision of staff at all levels	5.6.1. Organize quarterly DTCO review meetings
	5.6.2. Organize annual review meeting at district level
	5.6.3. Ensure quarterly review meetings (organized by the district level)
	5.6.4. Ensure supervision from Central Unit to districts (including NTRL supervision to laboratories)
	5.6.5. Ensure supervision from District Chest Clinics to DOT centres, Microscopy centres and health institutions
5.7. Implement revised recording/reporting system based on WHO's 2013 revision	5.7.1. Print registers, recording and reporting formats
	5.7.2. Ensure maintenance of the NPTCCD website
	5.7.3. Publish annual reports and disseminate to partners
5.8. Ensure countrywide implementation of revised electronic recording/reporting system	5.8.1. Ensure telephone and internet connectivity at central level
	5.8.2. Ensure maintenance of Patient Information Management Systems
	5.8.3. Ensure adequate HR for monitoring and evaluation (HR plan)
	5.8.4. Ensure capacity building of the data entry staff in use of updated software
5.9. Ensure determination of baseline for impact analysis	5.9.1. Perform epidemiological assessment of TB burden using "indirect" methodologies
	5.9.2. Undertake Drug Resistance Survey
5.10. Ensure effective OR activities	5.10.1. Implement research projects annually
	5.10.2. Organize regular meetings of operational research steering committee
	5.10.3. Organize training of trainers on operational research methodology
	5.10.4. Organize capacity building workshop for stakeholders on research methodology and critical analysis of studies

5.11. Implement comprehensive infection control policy at all facilities	5.11.1. Develop and print the infection control policy and guidelines, for TB
	5.11.2. Establish functioning IC committees at all levels
	5.11.3. Develop and print TB IC training material
	5.11.4. Ensure capacity building of all categories of health staff on TB IC
	5.11.5. Implement TB IC policy at all levels
	5.11.6. Provide personal protective equipment
	5.11.7. Develop and print IC ACSM material
	5.11.8. Ensure community mobilization for TB IC
	5.11.9. Conduct IC assessment visits by TB IC coordinator to districts and microscopy centres
	5.11.10. Appoint a coordinators (MO/Civil engineer/Architect) for TB IC control at national level to monitor/perform maintenance and certification of bio-safety (for five years)
5.12. Strengthen planning and budgeting capacity at district level to improve financial sustainability	5.12.1. Ensure the development of strategic, budgeted plans at DCCs
	5.12.2. Ensure ongoing capacity building for district level public health staff in planning/budgeting
5.13. Ensure adequate technical support	5.13.1. Prepare annual plan for TA requirements according to NSP
	5.13.2. Coordinate with partners and ensure that required TA is available
5.14. Ensure coordination of all partners	5.14.1. Organize regular partnership meetings focusing on the evaluation of the TB control situation as well as discussions of strategic directions for future development of TB control
	5.14.2. Regularly assess needs for including new key partners in the partnership
5.15. Ensure regular programme evaluation	5.15 1. Ensure the organization of joint monitoring mission and an epidemiological assessment of the TB situation once in every three years

5.16. Procure and maintain Infrastructure	5.16.1. Maintain/replace vehicles at NPTCCD and DCC
	5.16.2. Purchase office equipment, consumables and other logistics and maintain
5.17. Ensure cost allocation for use of existing MOH infrastructure	5.17.1. Ensure adequate budget allocation for TB control at NPTCCD, Provinces, NHRD
5.18. Maintain existing GF Project Management capacity	5.18.1. Ensure all categories of PIU staff (Project Accountant, Project Officer, Procurement officer, Finance Assistant, Finance Supervisor, IT officer, M&E officer, Programme Assistant) are duly filled
	5.18.2. Ensure the availability of funding for the cost for Programme and Project Management

9 BUDGET

A detailed budget for the NSP has been developed using the WHO standard TB planning and budgeting tool. Summary tables for the cost calculations are provided below. The detailed calculations are available in the corresponding Excel file, which form an integral part of the NSP.

Table 10: NSP Budget: Yearly totals by objective

Objective No	Year 01 Budget (Rs.)	Year 02 Budget (Rs.)	Year 03 Budget (Rs.)	Year 04 Budget (Rs.)	Year 05 Budget (Rs.)	Year 01 - 05 Budget (Rs.)
01	328,336,674.75	249,043,759.00	301,196,607.74	292,404,227.34	313,403,285.67	1,484,384,554.51
02	281,792,815.00	196,740,813.25	137,951,647.41	141,700,057.28	170,574,603.02	928,759,935.97
03	118,058,950.00	111,198,097.50	117,393,042.38	124,971,348.99	130,125,960.82	601,747,399.69
04	31,529,658.00	13,299,175.50	31,689,221.45	14,648,769.65	34,024,035.25	125,190,859.85
05	1,118,349,134.38	1,029,995,206.61	1,069,118,076.07	1,114,256,361.08	1,142,424,700.00	5,474,143,478.14
Total	**1,878,067,232.13**	**1,600,277,051.86**	**1,657,348,595.05**	**1,687,980,764.36**	**1,790,552,584.75**	**8,614,226,228.15**

Table 11: NSP Budget: Yearly totals by intervention

Activity Description	Total Amount Y1 (Rs.)	Total Amount Y2 (Rs.)	Total Amount Y3 (Rs.)	Total Amount Y4 (Rs.)	Total Amount Y5 (Rs.)	Total Amount Y1- Y5 (Rs.)
Objective 01						
Use PHW, other field level government officers, NGOs and volunteers functioning at MOH level for community awareness and referral for sputum microscopy	24,487,550.00	28,984,200.00	32,638,410.00	31,955,080.50	33,552,834.53	151,618,075.03
Conduct targeted screening activities for high-risk groups	19,245,086.00	18,820,155.90	17,330,481.95	17,617,035.92	20,657,284.89	93,670,044.66
Conduct community awareness and screening campaigns in high-burden areas	18,845,500.00	4,202,100.00	4,412,205.00	8,501,598.00	8,926,677.90	44,888,080.90
Ensure screening of all case contacts	2,381,200.00	3,200,715.00	3,360,750.75	3,528,788.29	3,705,227.70	16,176,681.74
Intensify collaboration with NCD programs to increase detection of TB cases with NCD risk factors	2,523,350.00	2,572,290.00	2,700,904.50	2,835,949.73	2,977,747.21	13,610,241.44
Intensify collaboration with the Medical Association and Medical Colleges	2,892,300.00	3,036,915.00	3,188,760.75	3,348,198.79	3,515,608.73	15,981,783.26
Ensure high quality laboratory services at all DCC and MCs	155,635,488.75	114,048,978.10	155,641,241.42	116,725,046.92	124,883,676.02	666,934,431.22
Ensure access to Xpert MTB/RIF at all diagnostic centers (including hospitals up to district level)	29,240,000.00	7,854,000.00	8,246,700.00	15,790,005.00	12,835,746.00	73,966,451.00
Ensure adequate diagnosis of smear-negative cases at all facilities	2,600,000.00	5,118,750.00	8,957,812.50	15,425,353.13	20,542,055.63	52,643,971.25
Ensure adequate screening for MDR-TB suspects	6,900,000.00	-	-	-	-	6,900,000.00
Ensure adequate diagnosis and management of TB in children	7,034,550.00	2,274,615.00	2,388,345.75	2,507,763.04	2,633,151.19	16,838,424.98

Activity Description	Total Amount Y1 (Rs.)	Total Amount Y2 (Rs.)	Total Amount Y3 (Rs.)	Total Amount Y4 (Rs.)	Total Amount Y5 (Rs.)	Total Amount Y1- Y5 (Rs.)
Ensure implementation of all components of WHO's TB/HIV strategy	3,919,300.00	4,361,280.00	4,579,344.00	4,808,311.20	5,048,726.76	22,716,961.96
Conduct intensified advocacy and communication activities for the general population	51,439,950.00	54,569,760.00	57,751,651.13	69,361,096.84	74,124,549.12	307,247,007.08
Assess gender issues in case detection	797,300.00	-	-	-	-	797,300.00
Involve traditional medicine practitioners in case detection	395,100.00	-	-	-	-	395,100.00
Sub Total - Objective 01	**328,336,674.75**	**249,043,759.00**	**301,196,607.74**	**292,404,227.34**	**313,403,285.67**	**1,484,384,554.51**
Objective 02						
Ensure uninterrupted anti-TB drug supply at all treatment facilities	58,023,525.00	39,154,421.25	43,781,735.81	42,092,778.85	47,357,734.05	230,410,194.96
Use PHW at MOH level (and NGOs) for DOT	375,000.00	393,750.00	413,437.50	434,109.38	455,814.84	2,072,111.72
Ensure adequate management of complicated cases, including hospitalization when necessary	148,600,000.00	73,290,000.00	71,442,000.00	74,782,575.00	96,511,196.25	464,625,771.25
Develop standardized social support package for patients in need	11,282,250.00	-	-	-	-	11,282,250.00
Ensure adequate second line anti-TB drug supply	10,457,440.00	10,817,812.00	11,196,202.60	11,593,512.73	12,010,688.37	56,075,655.70
Ensure adequate logistics for distribution of second line anti-TB drugs	4,500,000.00	-	-	-	-	4,500,000.00
Strengthen laboratory capacity for diagnosis and follow-up of XDR-TB	42,700,000.00	45,622,500.00	3,803,625.00	3,993,806.25	4,193,496.56	100,313,427.81
Ensure adequate ambulatory management of MDR-TB patients during Intensive and Continuation Phase of treatment	4,704,600.00	4,939,830.00	5,186,821.50	5,446,162.58	5,718,470.70	25,995,884.78

Activity Description	Total Amount Y1 (Rs.)	Total Amount Y2 (Rs.)	Total Amount Y3 (Rs.)	Total Amount Y4 (Rs.)	Total Amount Y5 (Rs.)	Total Amount Y1- Y5 (Rs.)
Establish additional MDR-TB treatment facility	250,000.00	16,012,500.00	275,625.00	578,812.50	607,753.13	17,724,690.63
Develop standardized social support package for all MDR-TB patients	900,000.00	1,260,000.00	1,852,200.00	2,778,300.00	3,719,449.13	10,509,949.13
Provide palliative care for patients without further treatment options	-	5,250,000.00	-	-	-	5,250,000.00
Sub Total – Objective 02	**281,792,815.00**	**196,740,813.25**	**137,951,647.41**	**141,700,057.28**	**170,574,603.02**	**928,759,935.97**
Objective 03						
Ensure comprehensive training of Divisional Hospital staff in TB detection and case management based on NPTCCD policies	8,276,400.00	8,690,220.00	9,124,731.00	9,580,967.55	10,060,015.93	45,732,334.48
Ensure access to TB diagnostics at all hospitals up to divisional level Type B	14,172,000.00	2,116,800.00	2,857,680.00	4,709,218.50	3,850,723.80	27,706,422.30
Ensure regular monitoring of TB treatment activities at Divisional Hospitals	160,000.00	168,000.00	176,400.00	185,220.00	194,481.00	884,101.00
Ensure adequate management capacity at DCCs for supervision and monitoring of Divisional Hospitals	95,450,550.00	100,223,077.50	105,234,231.38	110,495,942.94	116,020,740.09	527,424,541.91
Sub Total – Objective 03	**118,058,950.00**	**111,198,097.50**	**117,393,042.38**	**124,971,348.99**	**130,125,960.82**	**601,747,399.69**
Objective 04						
Undertake research to establish baseline figures on TB management in private sector	700,000.00	-	771,750.00	-	-	1,471,750.00
Strengthen collaborative activities between the NTP and private providers	27,767,308.00	10,629,918.00	27,784,001.07	11,705,913.26	30,523,802.67	108,410,943.01

Activity Description	Total Amount Y1 (Rs.)	Total Amount Y2 (Rs.)	Total Amount Y3 (Rs.)	Total Amount Y4 (Rs.)	Total Amount Y5 (Rs.)	Total Amount Y1- Y5 (Rs.)
Develop accreditation/certification mechanism for private providers providing TB services	2,724,850.00	2,669,257.50	2,802,720.38	2,942,856.39	3,089,999.21	14,229,683.48
Ensure recording and reporting for TB cases managed in the private sector	337,500.00	-	330,750.00	-	410,233.36	1,078,483.36
Sub Total – Objective 04	**31,529,658.00**	**13,299,175.50**	**31,689,221.45**	**14,648,769.65**	**34,024,035.25**	**125,190,859.85**
Objective 05						
Ensure technical oversight of NTP activities	597,000.00	626,850.00	658,192.50	691,102.13	725,657.23	3,298,801.86
Revise and update national manuals	4,745,650.00	-	-	5,447,783.25	-	10,193,433.25
Strengthen staff capacity at Central and district level	19,133,278.90	20,092,180.75	20,860,690.99	21,665,626.78	22,508,809.39	104,260,586.80
Develop revised training packages for different provider types (DCC staff, Divisional Hospital staff, PHWs)	3,635,550.00	-	-	-	-	3,635,550.00
Implement comprehensive training program	59,451,300.00	8,348,865.00	8,766,308.25	9,204,623.66	11,561,044.60	97,332,141.51
Participation for the International meeting/ workshops on TB Control	4,160,000.00	4,368,000.00	4,586,400.00	4,815,720.00	5,056,506.00	22,986,626.00
Ensure adequate supervision of staff at all levels	6,915,700.00	7,261,485.00	7,624,559.25	8,005,787.21	8,406,076.57	38,213,608.04
Implement revised recording/reporting system based on WHO's 2013 revision	4,654,750.00	4,887,487.50	5,131,861.88	5,388,454.97	5,657,877.72	25,720,432.06
Ensure countrywide implementation of revised electronic recording/reporting system	27,631,996.00	18,175,999.50	18,489,350.25	18,812,515.61	19,145,986.32	102,255,847.68
Ensure determination of baseline for impact analysis	16,000,000.00	420,000.00	-	18,985,050.00	-	35,405,050.00
Ensure effective OR activities	10,443,212.50	11,008,738.13	11,559,175.03	12,137,133.78	8,489,718.60	53,637,978.04

Activity Description	Total Amount Y1 (Rs.)	Total Amount Y2 (Rs.)	Total Amount Y3 (Rs.)	Total Amount Y4 (Rs.)	Total Amount Y5 (Rs.)	Total Amount Y1- Y5 (Rs.)
Implement comprehensive infection control policy at all facilities	18,847,700.00	12,570,810.00	13,535,613.00	15,260,044.28	15,664,472.15	75,878,639.42
Strengthen planning and budgeting capacity at district level to improve financial sustainability	480,700.00	504,735.00	529,971.75	556,470.34	584,293.85	2,656,170.94
TA to study aspects of counterpart funding in Sri Lanka for TB control	6,500,000.00	-	-	-	-	6,500,000.00
Ensure regular programme evaluation	-	-	10,319,400.00	-	-	10,319,400.00
Procure and maintain Infrastructure	101,538,750.00	69,205,250.00	52,540,962.50	35,208,835.63	39,180,739.91	297,674,538.03
Ensure Cost allocation for use of existing MOH infrastructure	807,672,911.00	848,056,556.55	890,459,384.38	934,982,353.60	981,731,471.28	4,462,902,676.81
Maintain existing GF Project Management capacity	25,940,635.98	24,468,249.19	24,056,206.30	23,094,859.86	23,712,046.39	121,271,997.72
Sub Total – Objective 05	**1,118,349,134.38**	**1,029,995,206.61**	**1,069,118,076.07**	**1,114,256,361.08**	**1,142,424,700.00**	**5,474,143,478.14**
Grand Total	**1,878,067,232.13**	**1,600,277,051.86**	**1,657,348,595.05**	**1,687,980,764.36**	**1,790,552,584.75**	**8,614,226,228.15**

ANNEX 1: CONTRIBUTORS FOR NSP DEVELOPMENT

Country Dialogue: Hotel Galadari, 21st July 2014

No	Participant	Designation & Institute
1	Dr. P.G. Mahipala	DGHS, Ministry of Health
2	Dr. Sarath Amunugama	DDG (Public Health Services I), Ministry of Health
3	Dr. Sunil Settinayake	Former DDG (Public Health Services), Ministry of Health
4	Dr. Holgar Sawert	Consultant, WHO
5	Dr. Neelamani Rajapaksha Hewageegana	Director, Health Education bureau
6	Dr. R.M.G. Rathnayake	Director, Estate Health, Ministry of Health
7	Dr. Kanthi Ariyarathne	Director, Private Health Sector Development, Ministry of Health
8	Dr. Luckshmi Karunathilaka	Young, Elderly and Disabled Populations, Ministry of Health
9	Dr. C. de Silva	Deputy Director, Maternal and Child Health, Ministry of Health
10	Sandun Ganegoda	Director, National Dangerous Drugs Control Board
11	Dr. S. Arul Kumaran	PDHS, Eastern Province
12	Dr. Deepthi Perera	PDHS, Western Province
13	Dr. S. Samaranayake	PDHS, Uva Province
14	Dr. E. Devanesan	Deputy PDHS, Northern Province
15	Dr. N. Fareed	PDHS office, Kegalle
16	Dr. U.I. Ratnayake	RDHS, Kalutara
17	Dr. Paul Rangith	RDHS, Puttalam
18	Dr. E.A.L.C.K. Edirisinghe	RDHS, Kurunegala
19	Dr. T.C.M. Tennekon	RDHS, Badulla
20	Dr. G. Wijesuriya	Director, NHRD
21	Dr. Saman Kularathne	CRP, NHRD
22	Dr. Eshantha Perera	CRP, TH Kurunegala
23	Dr. S. Muhunthan	CRP, TH Galle
24	Dr. A. Sadikeen	CRP, Chest Clinic Colombo
25	Dr. Amitha Fernando	CRP, Chest Clinic Colombo
26	Dr. R.D. Wijetunga	CRP, TH Batticaloa
27	Dr. Susil Herath	CRP, DGH Matara
28	Dr. Geethal Perera	CRP, DGH Puttalam
29	Dr. M.M.N. Masaima	CRP, DGH Kalutara
30	Dr. M.D. Peiris	CRP, DGH Kegalle
31	Dr. Neranjan Disanayake	CRP, DGH Nuwara Eliya
32	Dr. D. Vidanagama	Consultant Microbiologist, NTRL
33	Dr. R.D.S. Ranasinghe	CCP , RDHS office, Sabaragamuwa
34	Dr. P. Samarasinghe	CCP, PDHS office, Western Province
35	Dr. Deepa Gamage	Epidemiologist
36	Dr. Chandrika Wickramasooriya	Venereologist, NSACP
37	Dr. Kapila Sooriyarachchi	Health Education Specialist, Health Education Bureau
38	Dr. Jagath Amarasinghe	Epidemiologist
39	Dr. K.C.S. Dalpathadu	DGH, Trincomalee
40	Dr. Gamini Senevirathne	Director, NPTCCD
41	Dr. Sudath Samaraweera	Deputy Director, NPTCCD

42	Dr. Nirupa Pallewatte	CCP , NPTCCD
43	Dr. Pramil Liyanage	MO (Health Informatics), NPTCCD
44	Dr. Ramya de Silva	MO, NPTCCD
45	Dr. Harshani Vitharana	MO, NPTCCD
46	Dr. Shyamalee Rathnayaka	MO, NPTCCD
47	Dr. Wasantha Perera	MO, NPTCCD
48	Dr. M.A. Iffthikar	Director, HSS Project
49	Dr. Shanka Peiris	International Organization for Migration
50	Dr. N. Janakan	National Professional Officer, WHO
51	Dr. Rala Somasundara	Colombo South Teaching Hospital
52	Dr. A. Ramachanran	MO, Chest Clinic, Colombo
53	Dr. R. Manivasakan	DTCO, Jaffna Chest Clinic
54	Dr. K. Sudharshan	DTCO, Mullaitivu Chest Clinic
55	Dr. M. Maheshika Kodithuwakku	DTCO, Kilinochchi Chest Clinic
56	Dr. A.T.N.D. Patabendige	DTCO, Matara Chest Clinic
57	Dr. S.S. Gamage	DTCO, Kalmunai Chest Clinic
58	Dr. D. Waidyarathne	DTCO, Anuradhapura Chest Clinic
59	Dr. K. Thayakanthan	DTCO, Batticaloa Chest Clinic
60	Dr. N.B. P.K. Nanayakkara	DTCO, Kandy Chest Clinic
61	Dr. H.A.C.W. Appuhami	DTCO, Nuwara Eliya Chest Clinic
62	Dr. K.A.S. Gunaratne	DTCO, Gampaha Chest Clinic
63	Dr. K.M.D. Punyasoma	DTCO, Kegalle Chest Clinic
64	Dr. R.R.G. Wimalarathne	DTCO, Kurunegala Chest Clinic
65	Dr. U.P.M. Chandrakumara	DTCO, Hambantota Chest Clinic
66	Dr. R.D.S. Rajugamuwa	DTCO, Matale Chest Clinic
67	Dr. S.P.W. Jayathilake	DTCO, Galle Chest Clinic
68	Dr. S.M.M. Thasleem	DTCO, Puttalam Chest Clinic
69	Dr. Ruwani Perera	DTCO, Colombo Chest Clinic
70	Dr. M.B.D.G. Gunawardana	DTCO, Ratnapura Chest Clinic
71	Dr. M.G.S. Gamage	DTCO, Monaragala Chest Clinic
72	Dr. Khema Wijayasundara	DTCO, Kalutara Chest Clinic
73	Dr. J.N. Salwathunarachchi	MO (In Charge), Kandy Chest Clinic
74	Dr. M. Ganga Theswaran	DTCO, Badulla Chest Clinic
75	Dr. R. Vasavan	DTCO, Mullaitivu Chest Clinic
76	Dr. G.J. Tiskumara	MO (In Charge), Prison Hospital, Welisara
77	Anuradha Jayasinghe	Project Officer, GFATM
78	S.H.S.K. Ranathunga	Project Officer, GFATM
79	P.A.N. Weerawardana	Central Drug Stores, NPTCCD
80	M.M. Muthukuda	GFATM Project
81	Y.M.S.K.Y. Bandara	GFATM Project
82	Arunie Liyanage	GFATM Project
83	R. Pushpakumara	GFATM Project
84	Dr. A. Balasooriya	Kotelawala Defense University
85	Prof. Jenifer Perera	Faculty of Medicine, University of Colombo
86	Prof. R. Fernadupulle	Kotelawala Defense University
87	Dr. J.S.P. Liyanage	Consultant, Organic Environmental Rural System Foundation
88	Mahesh Perera	Alliance Development Trust

89	S.P.I. Niroshan	Lanka Plus
90	Swarna Kodagoda	Alliance Lanka
91	E.M. Chandrasekara	Project Coordinator, Uva Farmers Development Foundation
92	Kusum Wasala	Foundation of Social Welfare and Cultural Development
93	Princey Mangalika	Positive Women's Network
94	R.B. Bandara Siribaddana	Ceylon National Association for the Prevention of Tuberculosis
95	Dr. R. Nanayakkara	Plantation Human Development Trust
96	I.A.M. Fernando	Employers' Federation of Ceylon
97	Dilka Peiris	World Vision
98	P.C. Samual	World Vision
99	Dr. Yoganathan	Country Coordinating Mechanism, Sri Lanka
100	R.M.G. Rathnayake	Country Coordinating Mechanism, Sri Lanka
101	Chanaka Walawwaththa	Country Coordinating Mechanism, Sri Lanka
102	Premachandra Jayathilaka	Country Coordinating Mechanism, Sri Lanka

Stakeholder Meeting: NPTCCD Auditorium, 23rd July 2014

No	Participant	Designation & Institute
1	Dr. Gamini Senevirathne	Director , NPTCCD
2	Dr. Sudath Samaraweera	Deputy Director , NPTCCD
3	Dr. Nirupa Pallewatte	CCP , NPTCCD
4	Dr. Ramya de Silva	MO, NPTCCD
5	Dr. Harshani Vitharana	MO, NPTCCD
6	Dr. Pramil Liyanage	MO, (Health Informatics) , NPTCCD
7	Dr. Wasantha Perera	MO, NPTCCD
8	Dr. Thushara Ambagahage	MO, NPTCCD
9	Dr. Amitha Fernando	CRP, Colombo
10	Dr. Eshantha Perera	CRP, TH , Kurunegala
11	Dr. Geethal Perera	CRP, Puttalam
12	Dr. Saman Kularathne	CRP, NHRD
13	Dr. D. Vidanagama	Consultant Microbiologist , NTRL

Stakeholder Meeting: NPTCCD Auditorium, 28th July 2014

No	Participant	Designation & Institute
1	Dr. Sarath Amunugama	Deputy Director General (Public Health Services I)
2	Dr. Gamini Senevirathne	Director , NPTCCD
3	Dr. Sudath Samaraweera	Deputy Director , NPTCCD
4	Dr. Nirupa Pallewatte	CCP , NPTCCD
5	Dr. Ramya de Silva	MO, NPTCCD
6	Dr. Harshani Vitharana	MO, NPTCCD
7	Dr. Pramil Liyanage	MO (Health Informatics) , NPTCCD
8	Dr. Shyamalee Rathnayaka	MO, NPTCCD
9	Dr. Thushara Ambagahage	MO, NPTCCD
10	Dr. G.W.K. Perera	MO, NPTCCD
11	Dr. Amitha Fernando	CRP, Colombo
12	Dr. D. Vidanagama	Consultant Microbiologist , NTRL
13	Dr. Geethal Perera	CRP, Puttalam
14	Dr. P. Samarasinghe	CCP , Western Province
15	Dr. Deepthi Perera	Provincial Director of Health Services , Western Province
16	Dr. A. Balasuriya	Senior Lecturer, Kotelawala Defense University
17	Dr. Sunil Settinayake	Former Deputy Director General (Public Health Services)
18	Dr. Susantha De Silva	Former Deputy Director General (Planning)

Country Dialogue: Hotel Cinnamon Grand, 31st July 2014

No	Participant	Designation & Institute
1	Dr. P.G. Mahipala	DGHS, Ministry of Health
2	Dr. Sarath Amunugama	DDG (Public Health Services I), Ministry of Health
3	Dr. Jayasundara Bandara	DDG (Planning), Ministry of Health
4	Dr. Sunil Settinayake	Former DDG (Public Health Services) Ministry of Health
5	Dr. Susantha De Silva	Former DDG (Planning), Ministry of Health
6	Dr. Furdosi Rustom Mehta	WHO Representative for Sri Lanka
7	Dr. Holger Sawert	Consultant, WHO
8	Dr. Kanthi Ariyarathne	Director, Private Health Sector Development, Ministry of Health
9	Dr. Sisira Liyanage	Director, NSACP
10	Dr. Gamini Senevirathne	Director, NPTCCD
11	Dr. Sudath Samaraweera	Deputy Director, NPTCCD
12	Dr. Susie Perera	Director, Organization & Planning, Ministry of Health
13	Dr. G. Wijesooriya	Director, NHRD
14	Dr. M.D. Senanayake	PDHS, Uva Province
15	Dr. A.H. Allaudeen	RDHS, Kalmunai
16	Dr. Kumar Wettasinghe	RDHS, Kegalle
17	Dr. A.M.Y. Ariyaratne	Deputy RDHS, Galle
18	Dr. Kumari Navarathne	Senior Health Specialist, World Bank
19	Prof. Amala de Silva	Health Economist, University of Colombo
20	Dr. N. Janakan	National Professional Officer, WHO
21	Prof. N. Gunawardana	Professor in Community Medicine, University of Colombo

22	Dr. Nirupa Pallewatte	CCP , NPTCCD
23	Dr. Saman Kularathne	CRP, NHRD
24	Dr. Eshantha Perera	CRP, TH Kurunegala
25	Dr. Batuwantudawa	CCP , Health Education Bureau
26	Dr. Jagath Amarasekara	Epidemiologist, Ministry of Health
27	Dr. K.A. M. Ariyaratne	Veneriologist, NSACP
28	Dr. Amitha Fernando	CRP, Colombo Chest Clinic
29	Dr. R.D. Wijetunga	CRP, TH Batticaloa
30	Dr. Geethal Perera	CRP, PGH Puttalam
31	Dr. Neranjan Disanayake	CRP, PGH Nuwara Eliya
32	Dr. P.A.S. Nandasiri	CRP, PGH Hambantota
33	Dr. Wijitha Senaratne	CRP, NHRD
34	Dr. Bandu Gunasena	CRP, NHRD
35	Dr. H.A. Ubeysekara	CCP , Southern Province
36	Dr. Manil Peris	CRP, PGH Kegalle
37	Dr, W.N. Sadeekan	CRP, Colombo Chest Clinic
38	Dr. K.M.G.K. Bandara	CCP , Central Province
39	Dr. C. P. G. Liyanage	Regional Epidemiologist – Kalutara
40	Dr. Ramya de Silva	MO, NPTCCD
41	Dr. Harshani Vitharana	MO, NPTCCD
42	Dr. Shyamalee Rathnayaka	MO, NPTCCD
43	Dr. Wasantha Perera	MO, NPTCCD
44	Dr. Pramil Liyanage	MO (Health Informatics), NPTCCD
45	Dr. G. T. Thiskumara	MO (In Charge), Prison Hospital
46	Dr. R. Manivasakan	DTCO, Jaffna
47	Dr. K.Sudharshan	DTCO, Mullaitivu
48	Dr. R.S.S.B. Hallaliyadda	DTCO, Kilinochchi
49	Dr. A.T.N.D. Patabendige	DTCO, Matara
50	Dr. Ramachandran	MO, CCC
51	Dr. D. Waidyarathne	DTCO, Anuradhapura
52	Dr. N.B. P.K. Nanayakkara	DTCO, Kandy
53	Dr. H.A.C.W. Appuhami	DTCO, Nuwara Eliya
54	Dr. K.A.S. Gunaratne	DTCO, Gampaha
55	Dr. K.M.D. Punyasoma	DTCO, Kegalle
56	Dr. R.R.G. Wimalarathne	DTCO, Kurunegala
57	Dr. S.M. Thasleem	DTCO, Hambantota
58	Dr. R.M.G. Ratnayake	MDR-TB Coordinator, NPTCCD
59	Dr. R.D.S. Rajugamuwa	DTCO, Matale
60	Dr. S.P.W. Jayathilake	DTCO, Galle
61	Dr. Ruwani Perera	DTCO, CCC
62	Dr. M. Ganga Theswaran	DTCO, Badulla
63	Dr. R. Vasavan	DTCO, Mullaitivu Chest Clinic
64	P.A.N. Weerawardana	CDS, NPTCCD
65	Dr. M.A. Iffthikar	Director, HSS Project
66	Dr. Ruwan Wijemuni	Chief Medical Officer of Health, Colombo Municipal Council
67	Dr. P.D.S. Ratnathilake	MO, Plantation Human Development Trust
68	K.A.D.H. Lakmini	Research Officer, National Dangerous Drugs Control Board

69	Sadun Ganegoda	Assistant Director, National Dangerous Drugs Control Board
70	Shanthi Gunathilake	Coordinator – OER foundation Galle
71	Maneesha Anthony	Programme Officer, World Vision, Lanka
72	E. Abeyratne	EMACE
73	A. Alahakoon	EMACE
74	Ashanthi L. Edirisinghe	Project Coordinator – Seva Lanka Foundation
75	Swarna Kodagoda	Alliance Lanka
76	E.M. Chandrasekara	Uva Farmers Development Foundation
77	Anuradha Jayasinghe	Project Officer, GFATM
78	S.H.S.K. Ranathunga	Project Officer, GFATM
79	M.M. Muthukuda	GFATM Project
80	Y.M.S.K.Y. Bandara	GFATM Project
81	Arunie Liyanage	GFATM Project
82	R. Pushpakumara	GFATM Project
83	Dr. Yoganathan	Country Coordinating Mechanism, Sri Lanka
84	Chanaka Walawwatte	Country Coordinating Mechanism, Sri Lanka
85	Dr. Sharika Peris	International Organization for Migration