NATIONAL STRATEGIC PLAN FOR TUBERCULOSIS CONTROL

2021 -2025

DEMOCRATIC SOCIALIST
REPUBLIC OF SRI LANKA

NATIONAL PROGRAMME FOR TUBERCULOSIS CONTROL AND
CHEST DISEASES, SRI LANKA

National Strategic Plan for Tuberculosis Control 2021 - 2025

National Programme for Tuberculosis Control and Chest Diseases, Sri Lanka

This Plan will guide Sri Lanka's efforts to reduce the burden of the tuberculosis epidemic in the next 5 years. It introduces entirely new activities to engage the private sector, provide care for the elderly and vulnerable, and expand preventive treatment to all ages, and it brings in new digital technologies to improve case finding, monitoring, and engagement of the health workforce. These innovative approaches will be added to the essential features of universal coverage, treatment with quality assured drugs to the end of the course, modern laboratory techniques, and robust evaluation systems. The Plan requires $29 million to treat over 50,000 people for active TB, including 3,000 children, and over 11,000 people annually to prevent TB. The impact will be a significant acceleration of the reduction of the burden of TB in the country and of the huge economic costs associated with it.

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ISBN 978-624-5719-05-1

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Acknowledgements

I would like to express sincere gratitude to Director General of Health Services for the support given to complete the Epidemiological Review, End Term Review and develop the revised National Strategic Plan. I am very thankful to Dr Paul Nunn (International Consultant) who has provided his expertise to develop this National Strategic Plan.

A special thank goes to Dr Arax Hovhannesyan, Dr A.I. Priyadarshani Samarasinghe, Dr Nirupa Pallewatte, Dr Mizya Cadre, Dr Dushani Jayawardana, Dr Sumudu Hewage, Dr C.M. Wickramaarachchi, Dr N.R. Liyanage, Dr Ruwan Perera, Dr Lakmal Rathnayake, Dr K. Rajapaksha, Dr A. Ramachandra Dr A.W.A.D.S.N. Abeysekara, Dr Awanthi Senadheera, Dr K. Sooriyarachchi, Dr Amali Senanayake, Dr S. Kajanan, Dr N. De Silva, Dr Aninthitha, Mr. Lasith Jayathunga, Mr. Janaka Thilakarathna, Mrs. I.W.S.A. Dissanayaka for their participation in Epidemiological Review of Tuberculosis Surveillance system Sri Lanka 2020. Drs. Marek Lali and Mari-Christine Bartens from the WHO headquarters.

I am very much thankful to Dr Aindralal Balasuriya, Dr Vineet Bhatia, Dr Shirani Chandrasiri, Dr Neranjan Dissanayake, Dr Vithal P Myneedu, Dr Shamini Prathapan and Dr Holger Sawert for their contribution to conduct the End Term Review of National Tuberculosis Control Programme of Sri Lanka 2020.

I would like to acknowledge with much appreciation the crucial role of Sri Lanka College of Pulmonologists, College of Microbiologists, District Tuberculosis Control Officers, General Practitioners, Representative from Private hospitals, Community Based Organizations, Non-Governmental Organizations and all others who helped in many ways to the complete this task.

My deepest appreciation goes to representatives from Family Health Bureau, Nutrition Division, Planning Unit, Human Resource Unit, Education, Training and Research Unit and National STD/AIDS Control Programme of Ministry of Health who participated in group discussions to identify issues in the programme. I sincerely appreciate the help of Staff of the National Programme for Tuberculosis Control and Chest Diseases during the process of development of National Strategic Plan for Tuberculosis Control 2021-2025.

Dr H.D.B. Herath

Director NPTCCD

Foreword

Tuberculosis is a major health problem in the globe, causing ill health for millions of people each year. TB ranks alongside HIV as a leading cause of death due to communicable diseases.

Sri Lanka is a country with a lower burden for TB. Nearly 8000-9000 patients of TB are detected each year. The incidence of TB in Sri Lanka remains static over the past years though there is a gap of 3,000-4,000 patients remaining undetected, between the WHO estimated burden and the number detected.

The revision of National Strategic Plan (NSP) 2021-2025 for Tuberculosis Control is a timely need for the TB control in Sri Lanka.It has been updated including important new indicators, cyber security, ePIMS system and introducing Latent TB, and monitoring and evaluation plan.

This NSP will serve as a guide for National Programme for Tuberculosis Control and Chest Diseases (NPTCCD) as well as enabling implementation of NTP policies in TB Control.

I appreciate the efforts taken by NPTCCD to revise this NSP and take this opportunity to wish the NPTCCD a success towards its journey in ending TB in Sri Lanka.

Dr Asela Gunawardena

Director General of Health Services

Ministry of Health

Preface

The previous National Strategic Plan for Tuberculosis Control was for the period of 2015 - 2020.There were many changes related to control of Tuberculosis locally as well as globally. With the COVID -19 pandemic, control of Tuberculosis was affected across the globe.

With the advancement of Tuberculosis diagnostics, diagnosing a patient with Tuberculosis was rapid. There were significant changes in the socio-economic, political, health aspects of the country. The Epidemiological Review and the End Term Review which were held in 2020 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 would also like to acknowledge the support rendered by the Director General of Health Services, Dr Asela Gunawardena and Deputy Director General (Public Health Services 1) during the development of this strategic plan. I am also very thankful to Dr Paul Nunn, the International Consultant, and the panel of writers. I also express my sincere thanks to the Global fund to Fight AIDS, Tuberculosis and Malaria for the financial support provided.

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

Dr H.D.B Herath

Director, NPTCCD

List of abbreviations

ACF	Active Case Finding
DCC	District Chest Clinic
DHS	Demographic Health Survey
DGHS	Director General Health Services
DOT	Directly Observed Treatment
DOTS	Directly Observed Treatment Short course
DRS	Drug Resistance Survey
DR TB	Drug Resistant Tuberculosis
DS TB	Drug Sensitive Tuberculosis
DST	Drug Sensitivity (susceptibility) Testing
DTCO	District TB Control Officer
ePIMS	electronic Patient Information Management System
ETR	End of Term Review, 2020
GDP	Gross Domestic Product
GLC	Green Light Committee
GOSL	Government of Sri Lanka
HIV	Human Immunodeficiency Virus
ITL	Intermediate TB culture Laboratory
LIMS	Laboratory Information and Management System
LTBI	Latent TB Infection
M & E	Monitoring and Evaluation
MC	Microscopy Centre
MDR-TB	Multi Drug-Resistant Tuberculosis
MLT	Medical Laboratory Technologist
MO	Medical Officer
MoH	Ministry of Health
MOH	Medical Officers of Health
MSM	Men who have Sex with Men
NCD	Non-Communicable Disease
NDDCB	National Dangerous Drugs Control Board
NGO	Non-Governmental Organization
NNP	National Nutrition Policy
NPTCCD	National Programme for Tuberculosis Control and Chest Diseases

NRDH	National Respiratory Disease Hospital
NSACP	National STD/AIDS Control Programme
NSP	National Strategic Plan
NTRL	National TB Reference Laboratory
OOPS	Out Of Pocket Spending
OPD	Outpatient Department
OR	Operational Research
PHC	Primary Health Care
PHI	Public Health Inspector
PHLT	Public Health Laboratory Technician
PHM	Public Health Midwife
PHW	Primary Health Care worker
PIMS	Patient Information Management System
PLHIV	People Living with HIV
PMDT	Programmatic Management of Drug-Resistant TB
PPA	Patient Pathway Analysis
PPD	Purified Protein Derivative
PPM	Public-Private Mix
PPP	Private part-time Practitioners
PR	Principal Recipient
PSM	Procurement and Supply Management
QA	Quality Assurance
RDHS	Regional Director of Health Services
RMO	Registered Medical Officer
SOP	Standard Operating Procedure
STRL	Supra-National TB Reference Laboratory
TB	Tuberculosis
TCAM	Traditional Complementary Ayurvedic Medical (practitioners)
WHO	World Health Organization
WHO-SEARO	WHO South East Asia Regional Office

Executive Summary

This National Strategic Plan (NSP) for tuberculosis (TB) significantly expands the ambition of National Programme for TB Control and Chest Diseases (NPTCCD) of Sri Lanka. At a total cost of US$ 29.2 million the Plan aims to respond to the urgent priority of finding more cases by successfully treating 50,000 citizens with TB between 2021 and 2025, including 3,000 children less than 15 years. To reach the global END TB targets of reducing TB incidence and mortality by 90% and 80%, respectively, by 2030 compared to 2015, this Plan also intends to expand provision of preventive treatment (TPT) to over 11,000 people annually, by 2025. To assist in reaching these goals, collaboration with the private sector will be significantly expanded, and the monitoring and evaluation of NTP activities modernised by the introduction of digital health interventions. To achieve these ambitious goals the Plan includes the filling of vacancies in NPTCCD staff, especially at consultant level, and enhancement of training of new and existing staff, as well as other improvements to the management and organisation of the Programme.

The previous NSP, 2015-2020, only partly achieved its objectives, and the reasons for this were spelt out by the End of Term Report (ETR), 2020, that reviewed the performance of the NTP. This NSP has taken the recommendations of the ETR fully on board and incorporated them in its interventions, backed up by an analysis of the epidemiology of TB in Sri Lanka also completed in 2020.

Case-finding (Objective 1) will be increased through wider use of the existing diagnostic algorithm which includes chest X-ray examination as a sensitive screening tool. Molecular diagnostic tools will be used as the first line diagnostic test in a pilot study in Gampaha, in the first instance, and expanded in the event of a positive result. Careful note will be taken of districts' performance in examining suspected cases and in making the diagnosis so that supervision by the Central Unit will be focused on those districts with the poorest performance. Active case finding will focus initially on contacts, prisoners and those with HIV infection, but will be expanded as information and operational research (Objective 5) identify other high-risk groups such as elderly. Since poor outcomes are associated with age and co-morbidities, inward facilities will be established in high burden districts to facilitate admission of elderly patients, or those with co-morbidities. In order to improve the diagnosis of childhood TB, close collaboration between paediatricians and maternal and child health care providers should be strengthened. Special emphasis should be given to children with malnutrition

For the first time in Sri Lanka, preventive treatment (Objective 2) will be expanded to all contacts, not just those under the age of five years, and the new drug, rifapentine, imported

to provide a significantly shorter course of treatment than was possible previously with isoniazid alone.

Recent information has also shown that patients with TB delay on average for a full three weeks before seeking medical help, and they make much greater use of the private sector than previously thought – 39% of them attend private providers. Unfortunately, private providers take twice as long as government hospitals to make the diagnosis, and more than 6 times as long as the district chest clinics (DCCs). Private part-time practitioners are the preferred first point of contact for 27% of all patients, yet they are completely disengaged from TB control activities, and provide inappropriate management. This Plan will engage these practitioners for the first time (Objective 3) and encourage referrals to the DCCs through the development of mobile technologies.

While the ETR surmised that the WHO's estimates of Sri Lanka's TB incidence might be excessive, the monitoring and evaluation component of the Plan (Objective 4) aims to conduct an inventory study to obtain more accurate estimates. It will also expand the utility of the ePIMS information system by making it fully operational, and, most importantly, link the results of laboratory investigations with the patients' data.

This Plan also aims to significantly improve the visibility, management and organization of the National Programme on TB (Objective 6). While the ETR recommended a National Commission on TB, the Programme has concluded that this is not feasible and that a national stakeholders meeting taking place every 6 months chaired by the Secretary, will be a good substitute. This Plan is also starting the move away from a top-down approach to provision of services to a more patient-centred approach with the establishment of Patient Groups of current and ex-patients to inform and advise districts. Crucially the Plan intends to recruit sufficient staff to fill the large number of vacancies in the NTP, and to train them to enable them to function productively, as recommended by the ETR. There will be a steady stream of policies and technical guidelines to keep up with the new tools and approaches that are coming. The laboratories will be supported with new infrastructure, equipment and technical assistance to achieve ISO standards. Smoking cessation activities will be introduced into routine TB management for the first time, with the aim of improving outcomes. Collaboration with the developing field of primary health care reform is envisaged.

Under the Monitoring and Evaluation Plan, coverage of the existing surveillance system will be expanded: staff will receive additional training to ensure that all cases found will be registered and all initial defaulters followed up. Prison TB data will be better managed and there will be a complete screening of the prison system every two years. The ePIMS will be expanded and the M&E system transitioned away from manual systems to a completely electronic system. All diagnostic lab data will be linked with ePIMS; the annual report will be

more analytical. The capacity of ePIMSto automatically produce graphs and analyses will be fully exploited to provide better data for decision-making. Use of data for decision-making will improve. Central staff supervisory visits will be more focused on districts in need of support; systems will be set up to enable data transfer from TB and HIV databases and improve NPTCCD/NSACP coordination. A catastrophic cost survey to help design interventions to help the poor with TB will be carried out. NPTCCD will conduct an inventory study to gain a more precise measure of TB burden in Sri Lanka. To facilitate assessment of progress in rolling out the Plan, the number of indicators has been reduced compared to the previous NSP.

The Technical Assistance and Operational Plans are straightforward. The biggest risk foreseen in the Emergency Preparedness Plan is that of a cyber-attack. Digital security of all NTP records will be rapidly and significantly increased.

This Plan recognises the impact to date of COVID-19, and that its impact on health service delivery will likely continue in the first year of the Plan or even beyond. Its impact on the national economy and societal behaviour may well persist for longer, adversely affecting resource availability, both human and financial. The preparation of this Plan has included work on prioritisation that will need to continue to adapt to a situation that is likely to fluctuate.

1. The Core Plan

1.1 The Plan and the Purpose

This National Strategic Plan (NSP) lays out the full expression of Sri Lanka's needs in controlling tuberculosis (TB) between 2021 and 2025 and describes the plan to meet those needs. It lays out in some detail **what** needs to be done, and **how** it should be done, as well as the rationale (the **why**) for change between the old NSP and this one. It will therefore guide the interventions that Sri Lanka will undertake to address its epidemic of TB taking into account the context of the national health system - both private and public sectors – and government health policies and strategies. It is backed by an up-to-date understanding of the epidemiology of TB in Sri Lanka, and the recommendations of the Sri Lanka End of Term Review Mission (ETR) conducted in October 2020.

This document contains the Core and the Monitoring and Evaluation components of the National Plan, and describes the global, regional, and national contexts for TB care, prevention and treatment in Sri Lanka. It lays out the national vision, mission and goal as well as the objectives and interventions to achieve that goal. It includes an assessment of all the main technical areas of TB control in the country, which contribute to an overall gap analysis. The Budget Plan brings together the costs of the Plan (the **how much**) and will be summarised at the end of this document. The details of the Budget Plan will be found in a separate excel file. The Technical Assistance, Emergency Preparedness, and Operational Plans (the **when**, **where**, and **who**) follow the Budget Plan.

1.2 What are the achievements of last National Strategic Plan– the baseline for 2021

1.2.1 Achievements by objective

The achievements are first summarised under the five objectives of the NSP, 2015-2020:

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

In practical terms, incidence cannot be directly measured, but it is estimated by WHO, Geneva, at 14,000 cases annually, a rate of about 64/100,000 people. Notifications have been trending down since at least 2011, and case detection, or coverage, was recorded as 61% in 2019. For reasons addressed in the epidemiological section (2.5.2), there are grounds for believing that incidence has been over-estimated, which would make case detection rather higher, but probably not so high as to reach the 2017 or the 2020 targets.

Objective 2: To improve the outcome of enrolled TB patients

a) **By achieving 90% treatment success in all forms of non-MDR-TB**
b) **By maintaining at least 75% of treatment success among MDR-TB cases by 2017**

Treatment success for the last few years has been around 85% of notified cases that are known, or have been shown to be, at least rifampicin susceptible. Treatment success for MDR-TB cases was 68% for the 2017 cohort, although it did succeed once in exceeding 75%, in 2015.

Outcomes are discussed in Objective 5, but likely contributors to poor outcomes are old age, comorbidities and delays in obtaining treatment, which were, according to the patient pathway analysis (see below), significantly more likely in the private sector.

Objective 3: To integrate TB control activities into the 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.

Diagnostic services, in the form of microscopy centres, have been decentralised (see Objective 4) to about 180 sites, and GeneXpert access provided through sputum transport facilities to most large hospitals, although access is variable from base hospitals upwards. However, many large hospitals, especially teaching hospitals, do not yet have the policies or facilities to make a TB diagnosis from out-patients, in particular chest X-rays are not always made accessible to the patients who need them. In consequence, patients might require to be admitted for relatively simple investigations that could be carried out as an out-patient. Admission incurs considerable expense to the hospital (in the public sector), and some risk to the patient.

Registration of patients and initiation of TB treatment services have remained mostly restricted to DCCs. For inward patients, TB treatment is often initiated in hospitals. Continuation of treatment is provided through DOTS centres which are located in health institutions and through community DOTS providers.

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

Engagement of the private sector has not been systematically pursued by the NPTCCD, partly through poorly defined activities to engage private health care providers, and partly through lack of human resources with the appropriate skills. However, new data from the patient pathway analysis (see 2.5.4) shows that 39% of patients ultimately found to have TB went first to a private facility or practitioner, with significant delays in diagnosis well in excess of those in the public sector. These are key findings that this NSP addresses.

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

Quality TB services of the required standard are probably delivered at most DCCs, although not all District Tuberculosis Control Officers (DTCO) posts are currently filled (four are vacant), which will lower standards. However, only 9% of TB patients first attends the DCCs and a significant number of MOs in other government facilities, and the majority of doctors seen in private facilities, simply provide medicines and discharge the suspected patient. This suggests that there are problems in the training, attitudes, practices and/or supervision of staff. NPTCCD staff, prior to arrival in the Central Unit, are usually not trained in TB. Indeed, in the current health system, there is no provision to train doctors on any specific disease before being appointed to a specialized unit. The national appointment system for doctors does not appoint on merit or performance.

In summary therefore, objectives 3, and 5, and perhaps 2, have been partially achieved.

1.2.2 Activity analysis of the NSP, 2015-2020.

The implementation status of the 175 activities of the NSP, 2015-2020, was summarized in the ETR, November 2020.

There was a significant improvement in progress since 2017. However, only 58% of activities had been completed or were on track to be so by end 2020; 30% were partially completed but would not be completed by end 2020; and 10% were not achieved, and possibly not even started (Figure 1). As well as the lack of human resources, reasons also include the election, the Easter bomb attack in 2019, and the COVID-19 outbreak in 2020.

The results varied significantly by NSP objective: in objective 3, 70% of activities were only partially achieved, in objective 4 (engaging the private sector) 38% were not done. In objective 5, 56% were only partially completed or not done.

The ETR reported that there was a focus on meetings, establishment of groups, preparation of papers, etc. rather than implementation of anti-TB activities in the field. As observed in 2017, routine activities or operations were generally performed and completed, while anything innovative, or requiring collaboration with agencies or departments outside the Programme, risked being set aside and remaining incomplete. Attempts to catch up in 2020 were limited by COVID-19 related restrictions of movement.

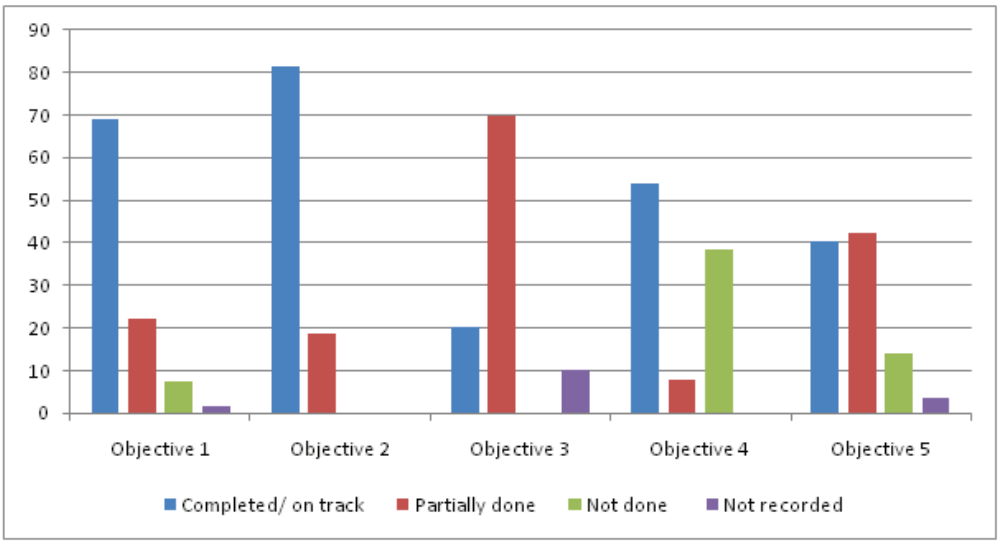

Figure 1: Status of the 175 activities of the NSP, 2015-2020, by percentages of each objective, October 2020

Challenges

The gaps identified include persistent insufficient NPTCCD staffing, and problems with management and organisation. It does not appear that these failures are due to a lack of funds. The Programme has largely failed to address those recommendations that require thinking or moving outside the box, even those that have been repeatedly made since 2010, e.g., to engage the private sector.

1.3 Results of the semi-remote ETR 2020 (summarised)

"This review was carried out by four national consultants, with the support of the NPTCCD staff, who were able to visit facilities in an around Colombo, Kegalle and Galle, and by four external consultants working remotely because of the COVID-19 pandemic.

The NPTCCD's predecessors brought down the burden of TB from a prevalence of 740 per 100,000 people in 1964 to an estimated incidence of 66/100,000 by the year 2000. However, there has been no further meaningful progress in the past 20 years – incidence was estimated at 64/100,000 for 2019. A golden opportunity to progress to TB elimination from 2000 has, thus far, been missed. Moreover, Sri Lanka is not on track to achieve the World Health Assembly End TB targets (95% and 90% reductions in mortality and incidence, respectively) for 2035, much less by 2025. Nor is it on track to reach the 2025 End TB milestones.

Sri Lanka has long been known for its "extensive health care infrastructure, low mortality rates, high life expectancy and literacy rates….".[1] The network of district chest clinics (DCCs) maintains basic TB control functions in the field and is largely responsible for Sri Lanka having the second lowest burden of TB in the Region. They diagnose 77% of all new cases

[1] Jones M. Policy innovation and policy pathways: TB control in Sri Lanka, 1948-1990. Medical History (2016), vol. 60(4), pp. 514–533.

within two visits - but only 9% of all patients first attends the DCCs. Well-trained consultant respiratory physicians (CRPs) are increasingly engaged in managing the more difficult cases, approving the diagnosis of bacteriologically negative cases, and starting treatment for drug-resistant TB and latent infection.

Sri Lanka has attracted US$ 23 million in support from the Global Fund since 2002, and also receives grants from SAARC, the World Bank and WHO.

A new diagnostic algorithm including chest X-ray as a first-line test, and GeneXpert for sputum smear negative cases has been distributed - but insufficiently implemented to date. The country has adopted recent WHO updates on treatment of drug-resistant TB. Since 2017, important work has improved the understanding of gender, human rights and stigma relating to TB, deaths while on treatment for TB, the burden of TB among cases of diabetes, and the pathway taken by patients to get a diagnosis, including the role of the private sector. A drug-resistance survey, completed in 2018, showed low levels of drug resistance.

Of the estimated 14,000 cases that occurred in 2019, only 8,434 were notified. Notifications have been declining by 3.7% annually. The review felt that, on balance, the evidence suggests the burden of TB is gradually declining, and the incidence has been over-estimated in recent years. Diagnostic technologies and clinical care have been improving, but, nevertheless, a significant number of cases was not diagnosed, or not reported.

Neither HIV-associated TB, nor multi-drug resistant TB, is a large problem in Sri Lanka. HIV testing was done in 91% of TB cases in 2019, and 77% of previously treated and 25% of new cases were screened for drug resistance in 2019. Childhood notifications for TB have dropped from 3.3% in 2013 to 2.9% of all cases in 2019.

The population of Sri Lanka is getting older, increasing the vulnerability to TB due to waning immunity and increasing co-morbidities, of which diabetes mellitus is one of the commonest, and the most associated with fatal outcomes. Case fatality is high, at 6.4-7.0% in the last 3 years, and associated with old age and comorbidities.

The recommendations of the 2017 mid-term review have been insufficiently implemented. The Review expressed serious concerns about the management of human resources: a Director with two other substantive posts, vacant consultant and mid-level posts, and overload of the remaining staff.

Active case finding in contacts and prisoners varies: the diagnostic algorithm used is not optimally sensitive, and there are no standard operating procedures for ACF in prisoners. About 50% of household contacts were screened in 2019, but less than 3% (268) of those identified were provided TB preventive treatment (TPT), as the current national policy includes only PLHIV, < 5-year-olds and few other groups. while WHO is recommending a

massive expansion of TPT, including those greater than 5 years of age, which would amount to about 11,500 cases to be treated annually by 2022 and beyond.

The patient pathway analysis shows that 39% of patients goes to the private sector initially, and 70% of these to private part-time practitioners who have no direct access to diagnostic tools.

Only 69% of the MDR-TB cases detected in 2017 were enrolled on treatment. Unsatisfactory outcomes of MDR-TB treatment are rising. This threatens Sri Lanka's historically low rates of drug resistance.

Although there is, on paper, a multi-sectoral National Advisory Committee on TB, its deliberations do not extend beyond health. The NPTCCD has engaged the private health sector and NGOs only in a most limited way, although the Review has concerns about the capacity of the NGOs.

Major recommendations

A step change is required in the management of anti-TB activities which requires far greater attention paid to TB by Ministry of Health decision makers at both central and provincial levels. Without stronger leadership from both the Ministry and the Programme, there is no chance of reaching the End TB targets in Sri Lanka. Therefore, this Review recommends that:

1. The Minister of Health (MOH) should establish a *National TB Commission*, chaired by the Minister, to raise the priority of TB, and ensure an urgent response to bring down the burden of TB in Sri Lanka, with clear targets and mechanisms to hold Ministry decision-makers accountable.
2. In addition, the Minister should ensure that:
    a. The vacant CCP and other positions in NPTCCD are filled by the end of Quarter 1, 2021. These appointments are essential to better collaborate with regional authorities, undertake expansion of programmes such as preventive treatment, engagement of the private sector and NGOs, maintaining the programmatic management of drug resistant TB cases, and working with teaching hospitals to ensure there is no large OPD in Sri Lanka that does not have capacity to diagnose TB within a few hours.
    b. Staff should be adequately trained, abroad, if necessary, in public health aspects of TB control, preferably before joining the Programme.
    c. Staff vacancies in the districts must be filled by end of Quarter 1, 2021.
3. The Minister of Health must ensure that the Director of NPTCCD has no substantive positions other than the Directorship of NPTCCD.
4. Case finding efforts should be urgently intensified through greater use of chest X-ray screening for symptomatic patients. The planned phased roll-out of GeneXpert as the

first-line diagnostic test should continue, supported by the establishment of an adequate specimen transport system. The Programme should also focus on increasing referrals to DCCs from all the initial points of contact, especially base hospitals and private practitioners. A plan should be developed for post-COVID catch up of lost notifications in consultation with all stakeholders. Active case finding (ACF) should only be undertaken with chest X-rays and GeneXpert, and Standard Operating Procedures should be developed for ACF, and their implementation monitored. Operational research should be conducted in other high-risk groups, e.g., estate workers, in order to identify further groups for routine ACF. At least one additional mobile unit, and 2 portable X-ray machines should be purchased. Drug-sensitivity testing should be done before the start of treatment.

5. To decrease death rates, respiratory wards should be designated, established, or constructed in all districts that do not have them, and high-risk patients (with advanced age and/or comorbidities) should be identified and admitted for specialised care in collaboration with other specialists.
6. The laboratory network should urgently (by mid-2021) set up a laboratory information management system, in conjunction with the ePIMS, or separately, as long as the two systems are inter-operable. "

1.4 How this Plan was developed

The NPTCCD assembled an NSP Preparation Team consisting of Programme staff and others, during the final stages of the ETR in October 2020 (Director & Deputy Director NPTCCD, Acting CCP, Senior Registrar in Health Informatics, Consultant Microbiologist, Consultant Respiratory Physician, Deputy Regional Director of Health Services, Kalutara and former DTCO, Colombo). Starting on October 29th, the team met once or twice weekly by remote calling with Dr Paul Nunn, the external consultant, based in the UK. Between calls the national staff discussed Plan components in smaller groups, starting with the Core Plan, carried out searches, and assembled documents. The overall structure was rapidly agreed, and necessary pieces of work identified, with those responsible for doing them. These were performed in the following days and presented, discussed and refined at the next call.

The goal of the NSP and the objectives were formulated based on the findings of the epidemiological assessment and ETR, and numerical targets were set for the goal and the first three objectives. Brainstorming sessions and discussions were held with Consultant Respiratory Physicians, DTCOs, activity coordinators of NPTCCD and GFATM project staff to identify activities under each objective. Country dialogues were held with NGOs and community-based organizations (CBO) working at grass root level, Estate Medical Assistants (EMA), laboratory consultants working in private laboratories, officers in charge of major

private hospitals, full time private practitioners, and part time practitioners for further identification of specific activities.

The draft activity plan was drawn up and presented to the College of Respiratory Physicians, DTCOS and all activity coordinators for further improvement and finalisation. A Google Drive was set up for remote access to all contributory materials. Dr Nunn took the approved contributions, edited them and added them to the relevant document. Documents were circulated for comments and additions and re-edited. Contentious issues were discussed and resolved in the weekly calls.

The budget specialist, brought in to support the costing of the activity plan and other budget-related grant making documents, was selected after advertising in the Ministry and NPTCCD websites. She began work on November 23rd with the draft list of activities and sub-activities. Unit costs were obtained, discussed, finalised and entered into the Budget Plan. At the same time, the supportive documents needed for costing were collected. Needs assessments were carried out to identify quantities of equipment and commodities required to meet service demands. Quantification and budgeting were carried out with the help of the project accountant and activity coordinators in the formats prepared by the budget consultant. The completed budget was again discussed with all activity coordinators including the microbiologist, PMDT coordinator and Chief Pharmacist. The finalised document was shared with the NSP and budget consultants.

The Monitoring and Evaluation (M&E), Technical Assistance (TA) and Emergency Preparedness Plans were drafted by Dr Nunn and submitted to the NSP Team for revision in mid-December. These underwent the same iterative process of review, comments and revision as the Core Plan. The Operational Plan (for 2021) expanded on the detailed activities in the Budget Plan with additional columns to describe the steps necessary to operationalise the interventions during 2021 and was prepared by the NPT in late December.

The complete set of documents was shared in January 2021, and final revisions were made.

2. Background

2.1 Global TB context

2.1.1 Global epidemiology of TB

Globally, an estimated 10.0 million (95% uncertainty interval, 8.9 –11.0 million) people fell ill with TB in 2019[2]. There has been a slow decline in incidence, in absolute numbers, of 1.6% per year since about 2002. In contrast, notifications have been rising, and in 2019, 7.1 million were detected and officially notified. Men accounted for 56% of the cases, women for 32%, and children, 12%. Eight countries are responsible for two-thirds of the cases, three of which, India, Indonesia and Bangladesh (in descending order of number of cases) are in the South East Asia Region of the World Health Organization (WHO), which alone accounts for 44% of the world's burden of TB.

TB is a fatal disease if left untreated, and until COVID-19 came along, it was the top infectious killer worldwide, causing more deaths than HIV/AIDS. About 1.4 million people are estimated to have died with TB in 2019, of whom over 200,000 were infected with HIV. Mortality is falling significantly faster than incidence. Drug resistance is perceived as a major threat, with about half a million cases of rifampicin resistance in 2019, of whom 78% would have had multi-drug resistant (MDR) TB. China, India and Russia account for half of these.

Eighty-five per cent of new cases were successfully treated, but only 57% of those with MDR or rifampicin resistant (RR) TB. Of those people living with HIV (PLHIV), 3.5 million started on TPT in 2019 as well as 433,000 children of less than 5 years of age (about 33% of those eligible), and 105,000 older contacts.

Globally the main drivers of TB, in descending order, were reported to be undernourishment, responsible for 2.2 million cases, HIV infection (0.8 million), alcohol use disorder (0.7 million), tobacco smoking (0.7 million), and diabetes (0.4 million).

Of the $13 billion required annually for TB prevention, care and diagnosis, only a half was available, of which 85% was from domestic resources.

COVID-19 has seriously disrupted TB control efforts in 2020, reducing notifications, contact-tracing work, and adherence to treatment. These are likely to have negative impacts on TB epidemiology, although social distancing and infection control measures may have a more positive effect. Funding for TB work is being diverted to COVID-19.

2.1.2 Global political response

At the 2014 World Health Assembly in Geneva, Sri Lanka committed to the End TB Strategy, which aims to end the global TB epidemic, with targets to reduce TB deaths by 95% and to cut new cases by 90% between 2015 and 2035, and to ensure that no family is burdened

[2] WHO, 2020. Global Tuberculosis Report. WHO, Geneva.

with catastrophic expenses due to TB. It sets interim milestones for 2020, 2025, and 2030 (Table 1).

Similarly, Sri Lanka is signed up to the United Nations' (UN) Sustainable Development Goals whose Goal 3 addresses health, and aims by 2030, to end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases[3]. In November 2017, Sri Lanka attended the Moscow Ministerial Conference organised by WHO to increase commitment globally to reduce the burden of TB. The comment of the WHO's Director-General was especially apt for Sri Lanka: "One of the main problems has been a lack of political will and inadequate investment in fighting TB," added Dr Tedros. "Today's declaration must go hand-in-hand with increased investment."[4]

Table 1: The WHO End TB Strategy main indicators, milestones, and targets

INDICATORS	MILESTONES		TARGETS	
	2020	2025	2030	2035
1. Reduction in TB incidence rate compared with 2015 (%)	20%	50%	80%	90%
2. Reduction in number of TB deaths compared with 2015 (%)	35%	75%	90%	95%
3. Percentage of TB patients and their households facing catastrophic costs due to TB	Zero	Zero	Zero	Zero

The Ministerial Conference was followed, in September 2018, by the unprecedented UN High Level Meeting on TB (UNHLM), during the General Assembly in New York. Heads of States and Governments committed to several actions through endorsement of a political declaration which is expected to lead to ending the public health menace of TB - if fully implemented. Governments committed to increase financing for TB, establish robust multi-sectoral responses to the fight against TB, increase identification and treatment of TB to narrow and then eliminate TB case finding gaps, and to increase funding for research into discovery of new tools (diagnostics, medicines and vaccines) and new delivery systems through operational research.

Sri Lanka was a signatory to the declarations that were made at both the Ministerial Conference and the UNHLM. This NSP will therefore aim to achieve the 2035 targets of the End TB Strategy.

[3] United Nations Sustainable Development Goals. http://www.un.org/sustainabledevelopment/health/ Accessed November 13, 2019.
[4] WHO. News Release, 17 November, 2017. https://www.who.int/en/news-room/detail/17-11-2017-new-global-commitment-to-end-tuberculosis Accessed November 13, 2019.

2.2 Regional Context

The South East Asia Region may account for 44% of the world's burden of TB, but Sri Lanka and the Maldives stand out as the two countries in the region with the lowest TB burdens with estimated incidence below 100/100,000. However, several other countries in the Region have established much stronger collaborations than Sri Lanka has between the national TB Programmes (NTPs) and both the private sector[5] and non-governmental or community-based organisations[6], although with varying degrees of success.

2.3. National context

2.3.1 Economic

Sri Lanka has been a functioning democracy for almost its entire post-independent history. It has inherited a well-functioning bureaucracy, a highly regarded judiciary, and a vibrant civil society. Over time, however, these strengths have tended to erode, particularly during periods of conflict and authoritarian rule. There has been a trend toward overstaffing in the public sector, buttressed by powerful trade unions. Conditions of employment in the public sector have generally declined, resulting in an exodus of talent from the public sector and the country as a whole[7].

The Gross Domestic Product (GDP) of Sri Lanka increased from US$ 16 billion in 2000 to over US$ 84 billion in 2019 – an unprecedented economic expansion (Figure 2). Slow economic performance between 1960 and 1977 was thought to be the fault of a focus on education, health and nutrition, and, economically, on import substitution. Liberalising reforms to the economy in 1977 led to greater emphasis on exports which increased the annual expansion of GDP up until 2000, although this was limited by ongoing ethnic tensions and civil war. Recent increases in GDP have been mostly due to expansions in foreign direct investment aimed at building infrastructure. However, the World Bank expects Sri Lanka's economy to

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[5] **Ramya Ananthakrishnan, M. D'Arcy Richardson, Susan van den Hof, Radha Rangaswamy, Rajeswaran Thiagesan, Sheela Auguesteen, and Netty Kamp. Successfully Engaging Private Providers to Improve Diagnosis, Notification, and Treatment of TB and Drug-Resistant TB: The EQUIP Public-Private Model in Chennai, India. Glob Health Sci Pract. 2019 Mar 22; 7(1): 41–53. Published online 2019 Mar 22. doi: 10.9745/GHSP-D-18-00318. PMCID: PMC6538134**

And: S S Lal [1], S Sahu, F Wares, K Lönnroth, L S Chauhan, M Uplekar. Intensified scale-up of public-private mix: a systems approach to tuberculosis care and control in India. Int J Tuberc Lung Dis. 2011 Jan;15(1):97-104.

[6] **Alvin Kuo Jing Teo,[1] Kiesha Prem,[1,2] Sovannary Tuot,[3] Chetra Ork,[3] Sothearith Eng,[3] Tripti Pande,[4] Monyrath Chry,[5] Li Yang Hsu,[1,6] and Siyan Yi. Mobilising community networks for early identification of tuberculosis and treatment initiation in Cambodia: an evaluation of a seed-and-recruit model. ERJ Open Res. 2020 Apr; 6(2): 00368-2019. Published online 2020 May 4. doi: 10.1183/23120541.00368-2019**

[7] Asian Development Bank. https://www.adb.org/sites/default/files/publication/373316/sri-lankan-economy.pdf Accessed 23rd November, 2020.

contract by 3.2% in the financial year 2020–21, with the COVID-19 pandemic impacting the country's tourism industry, which had already faced a downturn following the 2019 Easter bombing attacks[8].

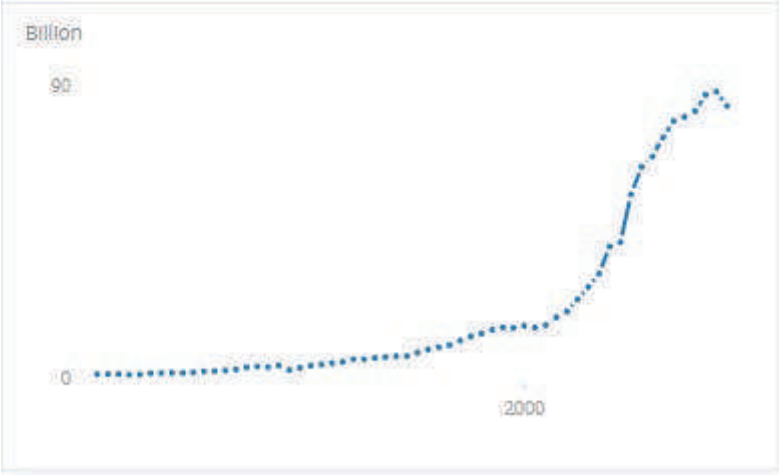
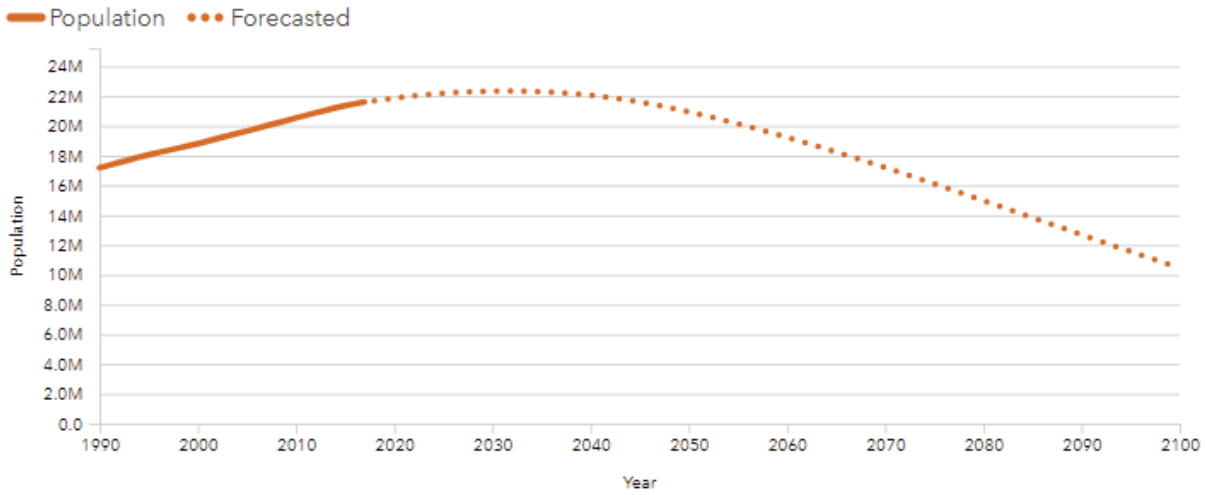


Figure 2: National GDP in current US $, 1960-2019

Source: The World Bank, https://en.wikipedia.org/wiki/Demographics_of_Sri_Lanka

2.3.2 Demographic

The 2020 mid-year population of Sri Lanka was estimated at 21.4 million[9], and is projected to reach a maximum of about 22.5 million people around 2030 (Figure 3).



	1990	2017	2100
Population	17.2M	21.6M	10.5M

Figure 3: Population of Sri Lanka by year, actual 1990-2017, and forecast 2018-2100, based on Global Burden of Disease estimates, 2017

[8] The World Bank. https://data.worldbank.org/country/LK Accessed November 23, 2020.
[9] "Total Population - Both Sexes". *World Population Prospects, the 2019 Revision*. United Nations Department of Economic and Social Affairs, Population Division, Population Estimates and Projections Section. June 2019. Retrieved 17 June 2019 Accessed 23rd November, 2020

Source: Institute for Health Metrics and Evaluation[10]

The massive upswing in the economy in the last 20 years has been paralleled by unprecedented changes to the age distribution of the population. Falls in fertility after independence began to reduce the numbers of children being born so that by 1985 roughly equal numbers of babies had been born in each of the previous 10 years (Figure 4). Between 1985 and 1995, however, the birth rate contracted further, possibly as a result of the civil war, possibly as part of a secular trend. For the next 15 years, until about 2010, it increased once more, only to contract again quite markedly in recent years. From 2007 to 2019 the crude birth rate fell from 19.2/1,000 to 14.6/1,000[11], and the population of children <10 years of age fell by almost 20% between 2005 and 2019. This marked reduction may well have relevance to the anticipated rate of TB in children.

More importantly, the population has been ageing over the past 30 years, and those 65 years or more now constitute 8.8% of the population compared to 6.2% in 2000. This is relevant because the incidence of TB rises with age, and markedly so in the over 65s.

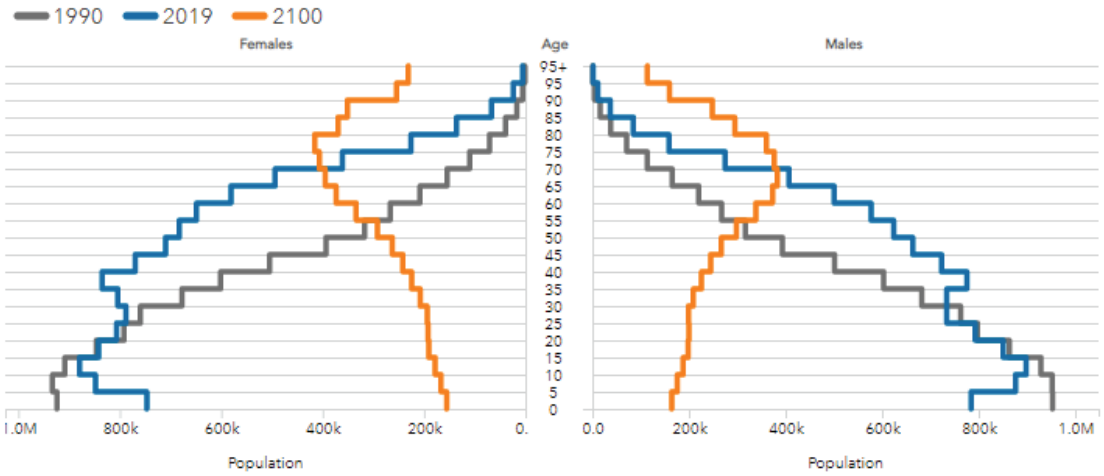
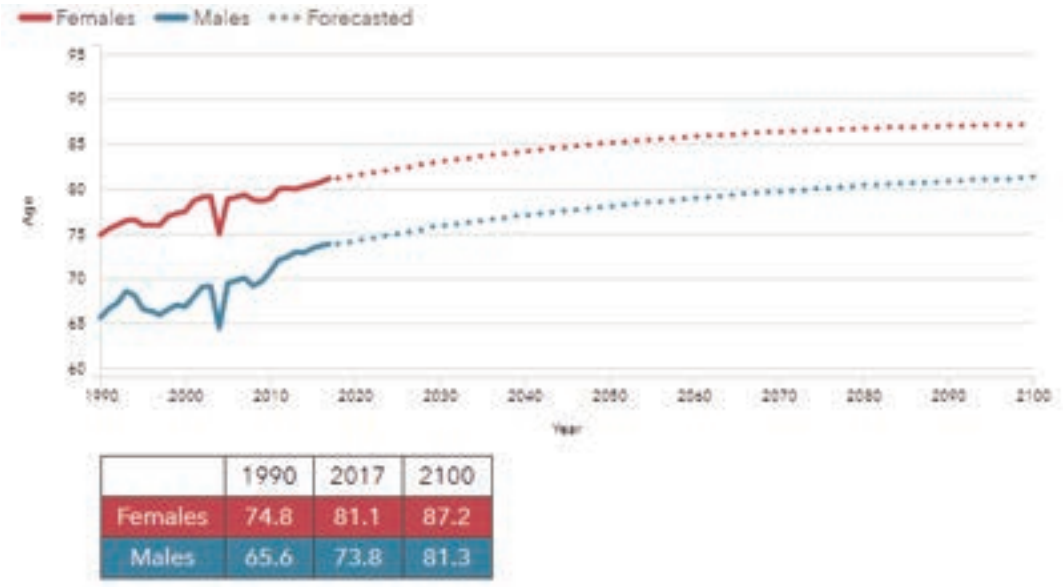


Figure 4: Population age structure for males and females in 1990, 2019, and 2100

Source: Institute for Health Metrics and Evaluation[12]

The increase in the proportion of the total population that is elderly is a consequence of an increase in life expectancy, probably due to better nutrition, cleaner drinking water, universal vaccination against infectious diseases of childhood, and better medical and obstetric care. Life expectancy of females at birth was 81 years in 2017, and nearly 74 years for males, with expectations that the length of an average life will continue to increase (figure 5).

[10] IHME. http://www.healthdata.org/sri-lanka Accessed 18th November, 2020.
[11] Wikipedia. https://en.wikipedia.org/wiki/Demographics_of_Sri_Lanka
[12] IHME. http://www.healthdata.org/sri-lanka Accessed 18th November, 2020.



	1990	2017	2100
Females	74.8	81.1	87.2
Males	65.6	73.8	81.3

Figure 5: Life expectancy at birth, 1990–2100. Forecast data based on Global Burden of Disease 2017 results

Source: Institute for Health Metrics and Evaluation[13]

2.4 National health system

2.4.1 Overview of public health provision

The success of Sri Lanka's health sector is largely due to its effective public delivery system, which provides both preventive and curative care at low cost. Government-provided healthcare is free for all citizens and accounts for almost all preventive care and most in-patient treatment. However, the public health sector has inadequate capacity, limited access to specialist treatment and inconsistent service standards[14]. OPDs in large hospitals are over-run by thousands of patients each morning, resulting in low quality care, exacerbated by the lack of medical records, although there is a recent initiative to provide these in OPDs. In addition to a disparity in the available care between rural and urban areas, the health infrastructure in the North and East of the country was badly damaged in the civil war although it is reported that most health facilities have been repaired or rebuilt.

Health care provision in Sri Lanka comes from two parallel services: preventive health services and curative health services. Preventive services focus mainly on maternal and child health, communicable and non-communicable diseases based on health promotion strategies. Also known as MOH areas, they are managed by a medical doctor, supported by public health field staff and are currently 354 in number. The curative services consist of 604 divisional hospitals providing both hospitalization and ambulatory services and 499 Primary

[13] IHME. http://www.healthdata.org/sri-lanka Accessed 18th November, 2020.
[14] Economist Intelligence Unit. Sri Lanka's health care challenges. 2014. http://country.eiu.com/article.aspx?articleid=1502512534&Country=Sri+Lanka&topic=Economy&subtopic=Forecast Accessed 23rd November 2020.

Medical Care units providing only ambulatory care which function with non-specialist medical doctors and other staff.

The present decentralized pyramidal system was established in 1989[15] with three levels of health care. First, there are the primary health care services, devolved to provincial councils. At the secondary level, 81 basic hospitals and 20 district general hospitals provide diagnosis and treatment facilities. At the tertiary level the central authority manages the National Hospital, the teaching hospitals and 10 larger specialist hospitals together with the procurement of drugs, recruitment and deployment of staff and training.

This system has many positive aspects, not least that the continuing government commitment ensures a good standard of free healthcare from government services. With the abolition of user fees in 1977, healthcare was financed by general taxation and delivered by graduate and post-graduate health personnel, trained at government expense. Other factors having a positive effect on health include the free, universal education system, which has facilitated female empowerment and promoted the health seeking behaviour of mothers, who are the chief health providers of the family. In addition, the permission given to government health personnel to work in the private sector after duty hours has improved retention of personnel in rural areas by compensating for low salaries. It has also improved access to health services at all hours, even though this out of hours service is not free.

However, there are problems: decentralisation has contributed to an unequal distribution of health resources, exacerbated by the emphasis on expanding specialised services. This has reduced funding for primary care and the quality of primary level services. Alongside the lack of a gatekeeping system to filter access to specialized services, these effects have accentuated the by-passing of primary level care. Inefficiency is thus built into the system. Furthermore, chronic diseases are difficult to fit into an appropriate health package; the present system does not yet cater for them, and the patient is left to negotiate his/her own way through this problem entailing much out of pocket expenditure.

In 2008–2013 the policy unit at the Ministry of Health undertook an analysis with pilot studies and discussions with Sri Lankan experts on a suitable model for reform. The consensus was that the existing model should be expanded to absorb chronic care needs rather than setting up a parallel structure for NCDs at the primary level. An important aspect of this will be a transition from the present episodic type of patient management to a continuing personalised and family centred care which is much more appropriate for NCDs.

[15] Perera S. Primary Health Care Reforms in Sri Lanka: Aiming at Preserving Universal Access to Health. In: Medcalf A, Bhattacharya S, Momen H, et al., editors. Health For All: The Journey of Universal Health Coverage. Hyderabad (IN): Orient Blackswan; 2015. Chapter 10. Available from: https://www.ncbi.nlm.nih.gov/books/NBK316262/

In addition, the principles of family medicine will be integrated into health training so that attitudes and practices of primary level personnel are in line with this approach. The availability of essential drugs and basic laboratory tests for NCDs in primary settings will be increased in order to limit the necessity to by-pass primary level units. Lastly, there will be an emphasis on community education to reduce risk and improve health seeking behaviour.

In order to provide a quality primary health care service that will provide ongoing care and reduce the need for hospital admissions, two separate, but linked approaches are being taken. First is the Primary Healthcare Systems Strengthening Project (PSSP), funded by the World Bank and implemented by the Planning Unit of the MOH, in all 26 districts. It has set up a new organizational structure, termed the Shared Care Cluster System. Services are grouped around a hospital providing specialist care at the apex hospital, which is a Base hospital, with surrounding primary care curative institutions at divisional and primary level. The cluster system is designed to bring about a system of accountability for care as it has a defined catchment area and areas of responsibility within the existing system. The objective is to provide universal access to continuing care that makes the best use of the existing system and the optimum use of resources. While it is hoped that the new system will rationalise care, and make government allocation more efficient and effective, there are concerns about the ongoing financing of this system after the World Bank involvement is reduced.

Secondly there is the Health System Enhancement Project (HSEP), a primary health care development project financed by ADB, from 2019 to 2023, which is being implemented in all nine districts of Central, North Central, Uva and Sabaragamuwa Provinces. It expects to further inform and operationalize government PHC reform initiatives by providing more comprehensive services, including for NCDs, developing a referral system, and functionally integrating preventive and curative services.

There is also a future plan to introduce medical health records with a unique identification number which will enable access to a patient medical record anywhere in the country, and to share the patient's information among the different levels of health care: primary, secondary and tertiary. The patient management system will be integrated with the hospital management system, the disease surveillance and notification system, and a Geographic Information System (GIS). This will allow to improve public health interventions and prevent diseases and outbreaks more efficiently.

PHC reforms support the prevention of TB among communities by improving the capacities of primary care MOs in the detection and management of TB through distance education programmes and expanding the number of Primary Medical Care Units (PMCU) and laboratories with facilities for TB detection and management in the periphery. The NPTCCD has been working with the Ministry in helping to design the new PHC reform and will

continue to do so. Expansion of PHC reforms will likely increase referrals to the DCCs, at least in the short term.

2.4.2 Overview of private health provision

The availability of complex surgical procedures and specialist care in the public sector is limited to the National Hospital of Sri Lanka in Colombo, 10 specialist hospitals and teaching hospitals. The waiting list for this type of care can be long. Private healthcare facilities therefore have focused so far on the provision of curative, rather than preventive care, and are predominantly centred in Colombo and other major cities, where disposable incomes are highest. Individual private GPs and part time practitioners, however, are now available island wide. In general, the private sector provides around half of outpatient curative care and around 5–10% of inpatient care, although this is not quite true of TB (see 2.5.4). Private involvement in the country's healthcare sector began in the 1980s when government employed doctors were permitted to consult privately on their own time. The number of private hospital beds increased by 70% between 2006 and 2013 and is likely still doing so.

Healthcare spending is likely to increase owing to changes in lifestyles and demographics. The share of the population aged 65 years or older is rising (see 2.3.3 above). As the population ages, the demand for healthcare is increasing and requiring changes to the current system, which until now has been heavily geared to improving maternal and child health and fighting infectious diseases.

The increase in non-communicable diseases (NCDs) is placing demands on the existing system and challenging the government's continued ability to deliver universal low-cost healthcare. There has been a rise in obesity, hypertension, smoking and alcoholism (Figure 6) which increase the risk of NCDs such as heart disease, diabetes, cancers, asthma and chronic obstructive lung disease (COPD) (Figures 7 and 8), which are becoming more frequent as the population ages, incomes rise, urbanisation becomes more prevalent, and lifestyles become more sedentary. Smoking, diabetes, and alcoholism are risk factors for TB, and COPD can be a confounding diagnosis.

The current public healthcare system is struggling to provide the long-term care associated with the treatment of NCDs, and it is unclear to what extent the government will be able in the future to meet the growing costs of treating them. Shortages and maldistribution of skilled medical professionals are further constraining factors faced by the healthcare sector, and the NPTCCD.

Figure 6: The top-ten risk factors contributing to DALYs, 2009-2019, all ages combined

Source: Institute for Health Metrics and Evaluation

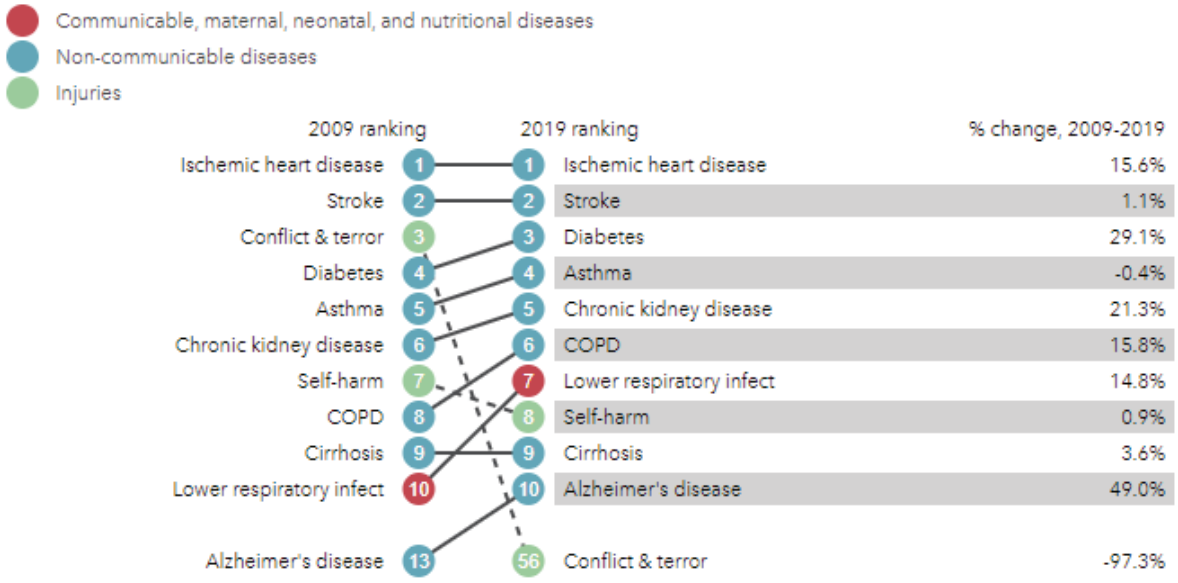


Figure 7: The major causes of death and their ranking, 2009 to 2019

Source: Institute for Health Metrics and Evaluation

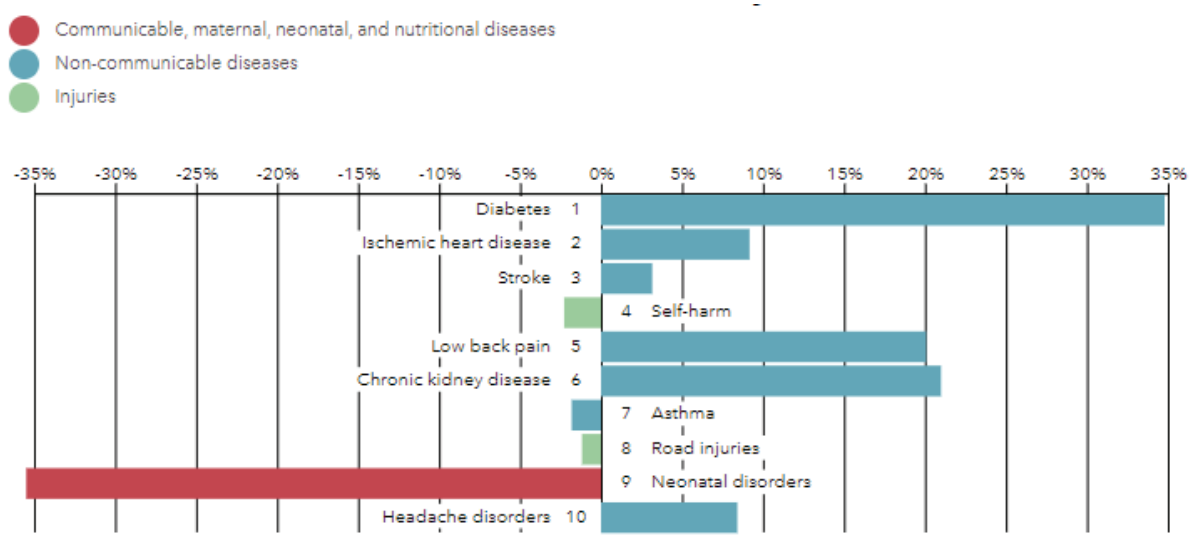


Figure 8: Top 10 causes of death and disability (DALYs) in 2019 and percent change 2009–2019, all ages combined

Source: Institute for Health Metrics and Evaluation

2.4.3 National Health Policies

The mission of the new National Health Policy, 2016-2025, is to "contribute to the social and economic development of Sri Lanka by achieving the highest attainable health status through promotive, preventive, curative, and rehabilitative services of high quality made available and accessible to people of Sri Lanka." This will be achieved through five broad strategic directions (Figure 9), which together with two other objectives to strength evidence-based service delivery, and to reduce out of pocket spending (OOPS), are aimed at creating a truly patient-centred health system.

Under the strategic direction of "a) Strengthening service delivery to achieve preventive health goals", TB is mentioned once in the 12th objective (out of 26) – "to enhance active case detection and preventive measures to minimise TB transmission". The remaining strategic directions list a further 41 objectives, covering most needs within the health system.

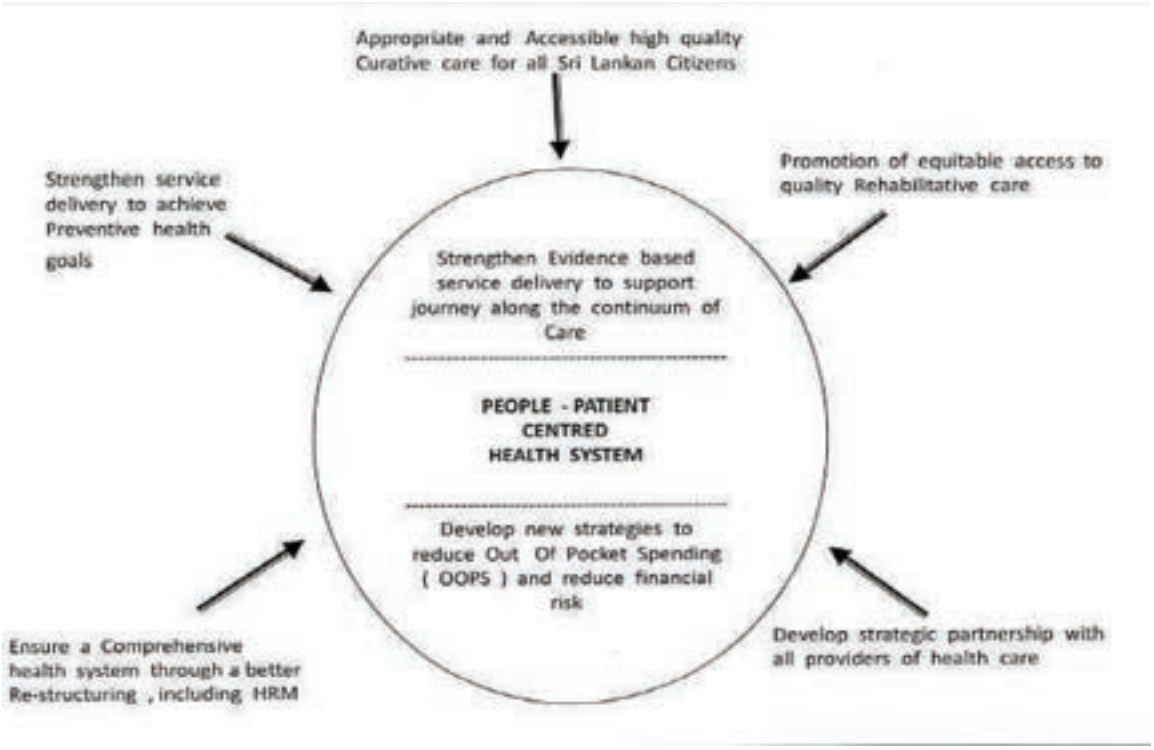


Figure 9: Broad strategic directions of the NHP 2016-2025

Source: MoHNIM[16]

2.4.4 Health funding

Health expenditure per person was going up fairly steadily, at least until 2017 (Figure 10). Given the fall in overall GDP since 2017, expenditure may have been falling more recently.

[16] MoHNIM: http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/policiesUpto2016/policiesForPublicOpinion/NHP2016-2025draft.pdf Accessed 23rd November 2020.

As a proportion of GDP, however, health expenditure has seen a slight but steady decrease from 4.4% to 3.8% (Figure 11). It was healthy economic growth that kept up the health spending per person – at least until 2017. Domestic OOPS rose from around 40% in the early 2000s to around 50% since 2009, probably in parallel with the rise in private health sector provision (Figure 12). By 2017, therefore, OOPS on health was the biggest single contributor to overall health spending, followed by government contributions, pre-paid contributions, which are mostly health insurance schemes for government employees, and development assistance (Figure 13).

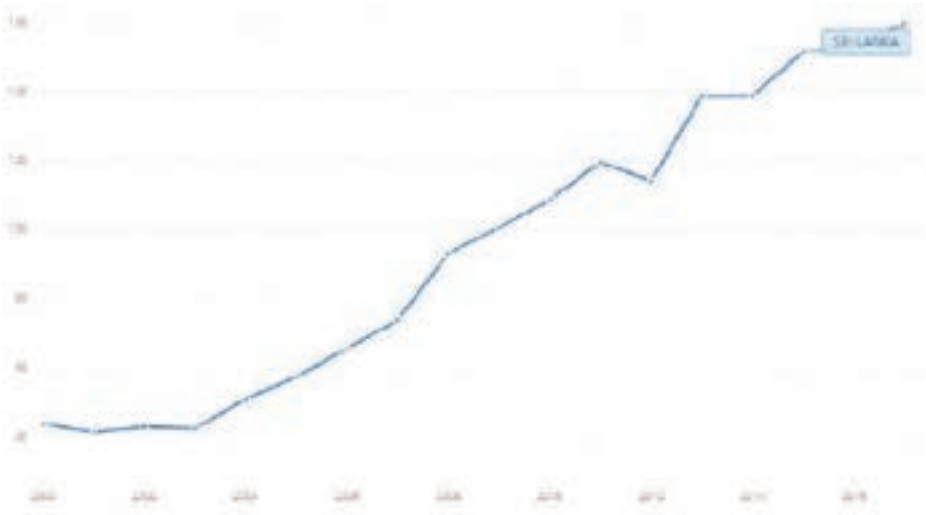


Figure 10: Health expenditure per capita, Sri Lanka, 2000-2017, in current US$

Source: World Bank[17]

[17] World Bank. https://data.worldbank.org/indicator/SH.XPD.CHEX.GD.ZS?end=2017&locations=LK&start=2000 Accessed 24th November 2020.

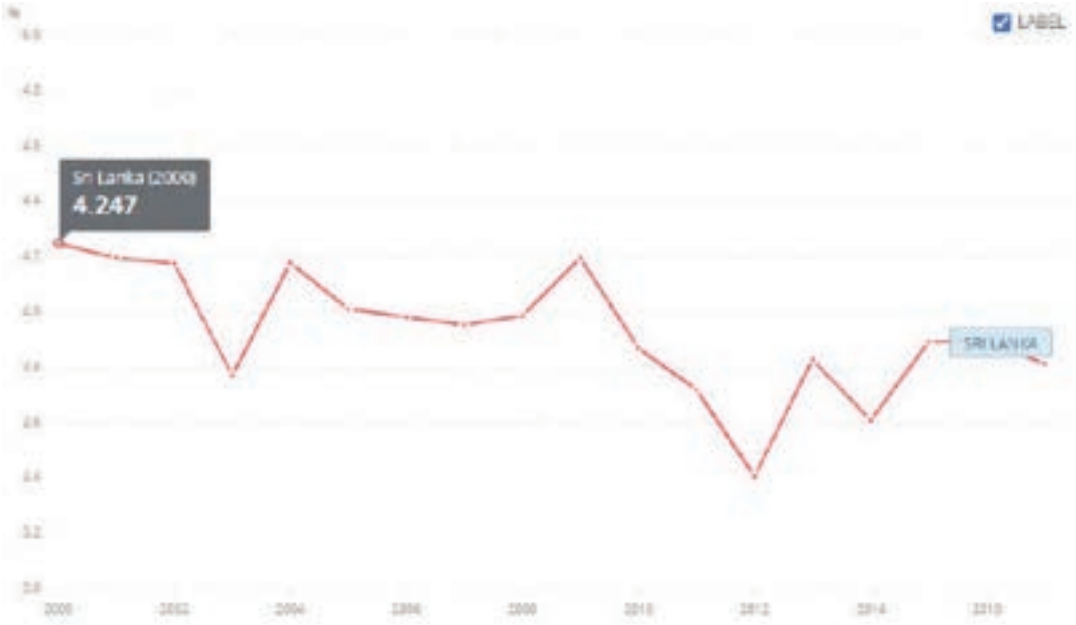


Figure 11: Current health expenditure as a proportion of GDP, 2000-2017

Source: World Bank

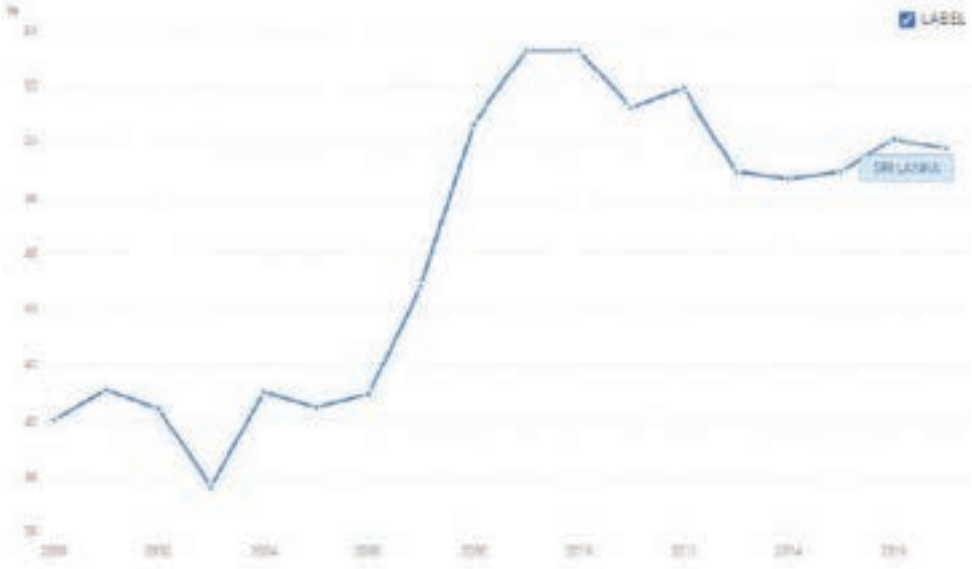


Figure 12: Domestic out of pocket spending on health, as a proportion of current health expenditure, 2000-2017

Source: World Bank

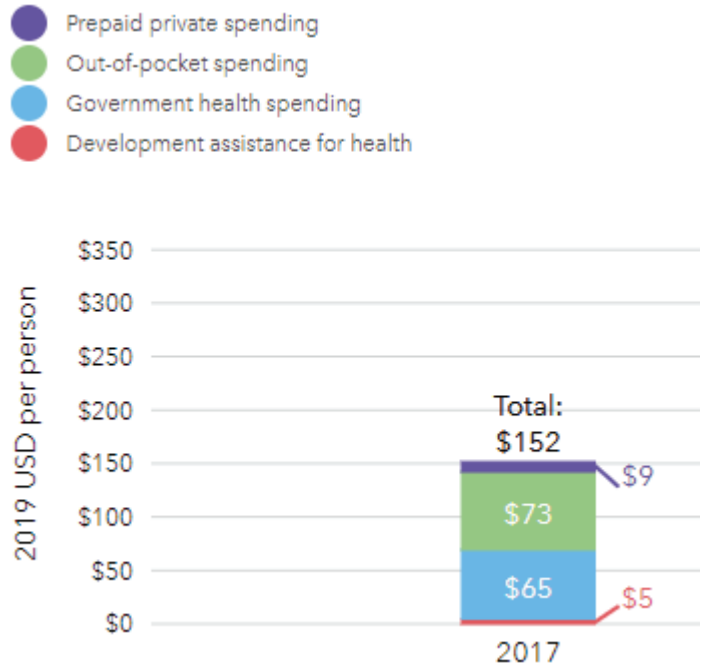


Figure 13: Sources of health expenditure, 2017

Source: Institute for Health Metrics and Evaluation

2.4.5 Social protection for health

The Department of Social Services offers provision of welfare to various groups of mostly low-income persons through approaches such as the Samurdhi (prosperity) poverty reduction scheme, and social assistance to TB and leprosy patients and disabled people. The Department carries out welfare activities through 331 Divisional Secretaries in the island to ensure welfare, and for post treatment support of hospitalized low-income patients. Welfare support payments differ according to the province, and the range is wide, starting from Rs. 500 to Rs 5000. Payments vary according to the disease. The diseases that are considered for support include thalassemia, chronic kidney disease and any disease resulting in permanent disability, as well as tuberculosis. TB is the only curable disease where support is given throughout the treatment period. The payment is provided at the local post office. A TB patient who is lost to follow up, could also be collecting the payment.

The Department of Social Services has more than 8,500 elderly people and more than 341 homes for the elderly under their care, of which five are under the central government and the others are under governing councils or NGOs. Medical care is not provided at the homes, unless requested and brought in, and diseases like TB are not usually screened for, although some DTCOs do provide screening. Although there is a law that an officer has to visit these facilities to ensure standards, there are no punishments in place for a facility that does not achieve them, nor a policy to enable the Department to take legal action.

The Department also has many vocational services, in which there are risk groups like mental retardation, substance abuse etc. The Director of the Department is also involved in the National Substance Abuse Prevention Programme at the Ministry of Health. The Department does not receive monthly names and addresses of patients with TB.

2.4.6 Regulatory frameworks

Notification of a number of communicable diseases is mandatory in Sri Lanka, including TB. However, there is no punishment for not adhering to this legal requirement. Once a TB patient is diagnosed, he is notified to the relevant MoH office through the *H816 A* form by the DCC. This is done mainly to ensure case investigation and patient follow-up, confirmation of the address of the patient, and contact screening.

All patients notified through the *H816 A* are entered in the "*TB notification register (TB-18)*" maintained at the office of the MoH and handed over to the range PHI. Once household contacts are investigated and screened, the investigation outcome details are recorded in the "TB investigation register (TB-19)" maintained by the range PHI. In addition, details of investigation of each index case are reported back to the DCC using "*Response to notification H 816 B form*". The ePIMS contains fields for all these data.

2.4.7 COVID-19 situation

As of 31st December, Sri Lanka had reported over 43,000 cases of COVID-19, the great majority occurring in the second wave of infections that started in early October 2020. Until that date, however, only 199 deaths had been reported, which is very low compared to most European and American countries.

Sri Lanka's second wave of coronavirus has shown the highest number of cases to be in the Western Province which is also the province with the highest number of TB cases. The new cases have been mostly attributed to two clusters - a garment factory and a fish market located in Gampaha district, but cases appear to have spread to the Colombo Municipal Council area. At present, COVID-19 cases have been reported from all districts in Sri Lanka, in varying degrees. A quarantine curfew was imposed on 7th October 2020 in Gampaha district. Later it was expanded to the whole Western province and only lifted on 9th of November. Depending on the reported COVID-19 caseload, lockdown of police divisions happens from time to time. Tourist and business flights have been almost completely suspended.

Sri Lanka had already joined the Global Alliance for Vaccines and Immunisation (GAVI) and the government was making efforts to make the COVID-19 vaccine available to 20 percent of Sri Lanka's population initially, which amounts to 4.2 million citizens. Sri Lanka is part of the global vaccine procurement coalition, COVAX, led by WHO, GAVI and the Centre for

Epidemic Preparedness Innovations (CEPI) which will facilitate the equitable access and distribution of Covid vaccines to protect people in all countries.

The impact of COVID-19 on TB service delivery is addressed in 2.5.8 below. The impact continues to evolve.

2.5 National tuberculosis situation

2.5.1 Structure and function of the NPTCCD and DCCs

National TB control efforts are directed by the National Programme for Tuberculosis Control and Chest Diseases (NPTCCD), which is a control programme of the Ministry of Health, often referred to as "The Campaign". It has a national level directorate, technical and general support staff, as well as project staff to manage the Global Fund support (See organogram below).

The national directorate implements its activities through a network of DTCOs and District Chest Clinics (DCC) which carry out TB control functions in the field, as well as the follow up of other chest conditions. Except in Colombo and Gampaha where the Central Chest Clinic (CCC) and DCC Gampaha come directly under the NPTCCD, the DCCs report to the RDHS. The DTCO is responsible for implementation of all tuberculosis control activities of his/her district and, depending on the size of the district, is supported by a team of medical officers (MOs), Public Health Inspectors (PHI), nurses, pharmacist or pharmacy assistant, Medical Laboratory Technologists (MLT) Public Health Laboratory Technician (PHLT) and/or Tuberculosis Assistant, Data Entry Officer and other general staff to run the clinic and investigations in the district. With this team, he/she is responsible for the diagnosis of TB patients, screening contacts, examining referred patients from other hospitals and the private sector, attending monthly conferences of the Medical Officer of Health (MOH), and training of other MOs and public health staff.

The DTCOs outside Colombo and Gampaha are therefore responsible for the programmatic, public health-related TB activities, and report to the regional (district) and provincial authorities, and not directly to the NPT, although they are accountable to the NPT for sending reports and records. Correspondingly, much of the resources - staff, buildings, maintenance etc - needed for their work are provided by local authorities. The NPTCCD organises the procurement and distribution of the necessary commodities - diagnostic material, Xpert cartridges, drugs - for all institutions under their administrative purview, DCCs and some other institutions as well. It requires surveillance data to be reported quarterly to the Programme. DTCOs also regularly notify patients with TB to the Medical Officers of Health for contact tracing.

It was reported in the ETR that some DTCOs engage too much in clinical work, neglecting their public health duties. Management of their staff by DTCOs is sometimes a concern.

MOs often do not work all the hours for which they are contracted. DTCO positions are left vacant for too long, their teams are understaffed, and the facilities in which they operate are not always in good condition. DTCO appointments are made by the Ministry of Health following advertisement in the annual transfers list, a system which introduces significant delay. DTCOs may also be appointed without any qualifications in chest disease, while holders of the Diploma in Tuberculosis and Chest Diseases are working in unrelated areas.

Increasingly, the clinical work at the DCCs is carried out by well-trained consultant respiratory physicians who manage the more difficult cases, approve the diagnosis of bacteriologically negative cases prior to registration and treatment, initiate treatment of drug-resistant TB, and exclude active TB in contacts or others who are being assessed for TB preventive treatment (TPT) in doubtful situations. The consultants therefore act as gatekeepers for the provision of key TB services.

The network of DCCs is supported by a countrywide network of teaching hospitals, provincial general hospitals, district general hospitals, base hospitals and district hospitals. Base hospitals and above are equipped with X-ray facilities, microscopy, bacteriology (in hospitals with a consultant microbiologist), and other laboratory facilities, while divisional hospitals usually have microscopy facilities. The Programme is further supported by the dedicated National Hospital for Respiratory Diseases (NHRD) at Welisara, Gampaha and separate tuberculosis and/or isolation wards in some, but not all, of the larger hospitals listed above. Whenever a TB patient is diagnosed, he or she will be referred to the DCC for treatment, regardless of the type of hospital. This is even the case in many private facilities since the provision of anti-TB drugs is almost entirely through the NPTCCD. Private hospitals are provided with drugs from the national programme when functioning as a DOT center for a specific registered patient.

2.5.2 Current epidemiological status (including drivers of the epidemic)

As a result of the recent epidemiological review, the NPT has an up-to-date summary of the epidemiological situation indicating important priority areas for this NSP. The following is summarised from that report[18].

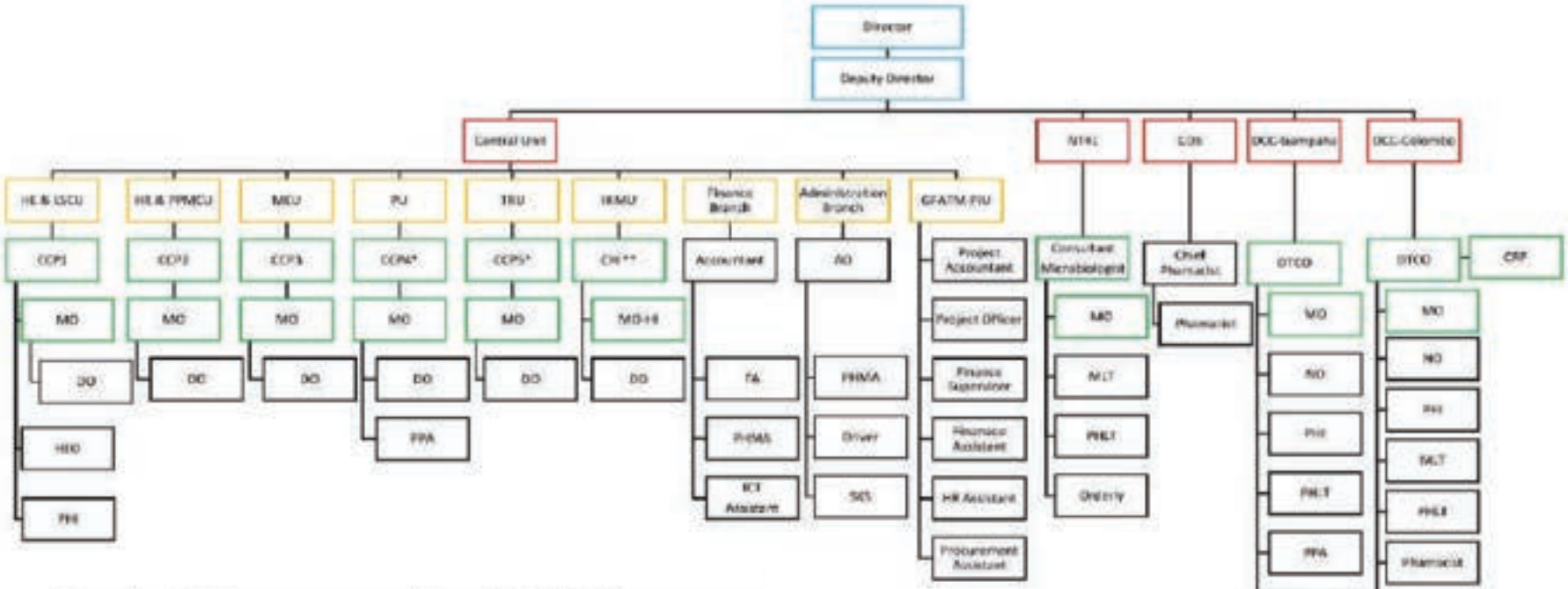
As discussed in the introduction (Sections 1.2 and 1.3), the estimated incidence rate of TB in Sri Lanka has decreased only slightly since 2000, and is now about 64 per 100,000, or 14,000 cases annually. Notifications of TB in 2019, reported to WHO, were 8,434, including re-treatment cases. The TB notification rate was therefore about 39 per 100,000 in 2019 and has been steadily decreasing at an average 3.7% per year between 2015 and 2019 (Figure 14). Therefore, if the estimated incidence is accurate, 5,500 cases were either not

[18] Hovhannesyan A and Samarasinghe A. Tuberculosis epidemiological review in Sri Lanka, August 2020. Available from the NPTCCD.

diagnosed, or not reported, in 2019. The review itself found that 8.4% of cases in a sample of laboratory registers were not reported in the treatment registers. However, this correction, if it applied nationally, would still only yield 9,207 notifications.

Therefore, the question is whether the WHO estimates are correct, or an over-estimation. If it is an over-estimation, then the decline in notifications in the last 20 years might indicate the true picture to overall TB incidence. In favour of the decline in notifications representing a true reduction of TB burden in the population are:

- A constant decline in sputum smear positive TB cases over time (on the reasonable assumption that sputum smear microscopy has, overall, not deteriorated – see Objective 4 in the ETR for further details);
- A faster decline in the age-specific notification rate among younger age groups compared to those of older age groups – the average patient is becoming older (see below);
- Routine notification data at national and subnational level are internally consistent;
- Trends of decline across subnational areas, and when disaggregated by sex, and site of disease are consistent.



AO	Administrative Officer	MEU	Monitoring and evaluation Unit
CCP	Consultant community Physician	MLT	Medical Laboratory Technician
CDS	Central Drug Stores	MO	Medical Officer
CHI	Consultant Health Information	MO-HI	Medical Officer-Health Informatics
CRP	Consultant Respiratory Physician	NO	Nursing Officer
DCC	District Chest Clinic	NTRL	National Tuberculosis Reference Laboratory
DO	Development Officer	PHLT	Public Health Laboratory Technician
DTCD	District Tuberculosis Control Officer	PHI	Public Health Inspector
FA	Finance Assistance	PHMA	Public Health Management Assistant
GFATM PIU	GFATM Project Implementation Unit	PU	Planning Unit
HEO	Health Education Officer	PPA	Planning and Programme Assistant
HE & LSCU	Health Education and Laboratory Service Coordination Unit	SKS	Saukya Kariya Sahayaka
HMIU	Health Information Management Unit	TBA	TB Assistant
HR & PPMCU	High risk and Public Private Mix Coordination Unit	TRU	Training and Research Unit
ICTA	Information and Communication Technology Assistant		

* Five CCPs for the five units is planned and cadre will be requested accordingly

** Cadre is to be filled within next 03 years> Acting CHI will be requested till filled

Figure 14: Organogram of the NPTCCD

However, the following observations indicate that some TB cases are either not detected by health systems, or are detected, but are not reported, in other words provide evidence that the decline in notifications may not be a true reflection of the decline in burden:

- Implausibly high bacteriological confirmation in several districts and the prison system combined with low Gene-Xpert testing coverage and high positivity of GeneXpert testing – meaning that smear-negative cases are likely to be missed,
- A comparatively faster decline of paucibacillary forms of TB (clinically diagnosed TB) over time compared to sputum smear positive TB cases (Figure 15) most likely due to changes in diagnostic practice; (an alternative, more optimistic interpretation, is that given by the consultant physicians who claim that EPTB and clinically diagnosed cases are falling more steeply than smear positive cases because they are increasingly applying more modern diagnostic techniques (GeneXpert, broncho-alveolar lavage, etc) which increase the proportion of smear negative cases that is GeneXpert or culture positive, while correctly excluding those smear negative cases who do not have TB, but who would in previous years have been diagnosed as TB);
- The low proportion of child TB cases is externally inconsistent (but this may be the result of demographic changes which are reducing the number of children born each year);
- Initial loss to follow-up was observed in facilities visited, which were not addressed by health systems.

On balance, the ETR believed that the available evidence, including the assessment of the impact of ageing on TB (below), suggests that the current estimates of incidence over-estimate the burden, and in fact the burden of TB (incidence) is likely to have been gently falling. The extent of the over-estimation is impossible to measure at this point (apart from the 8.4% under-reporting discussed above).

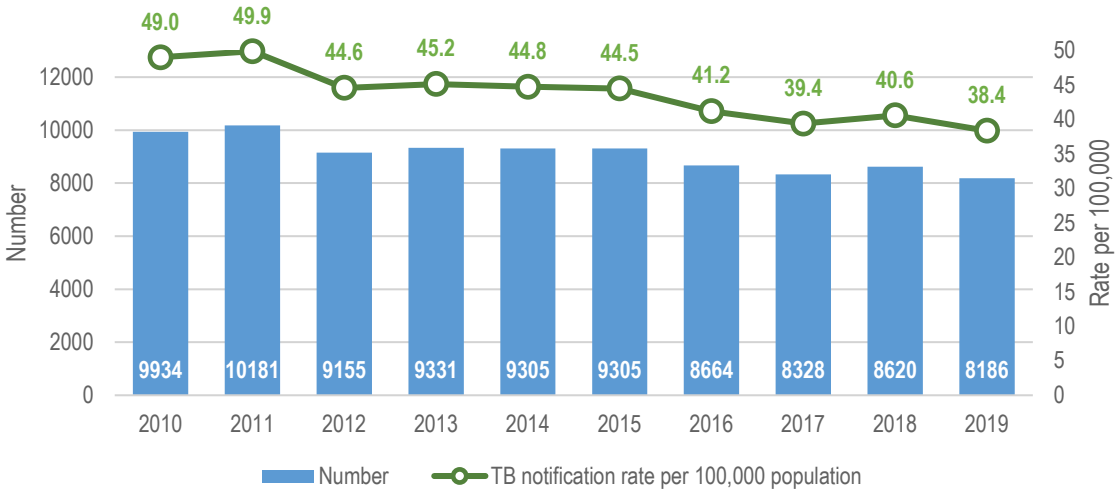
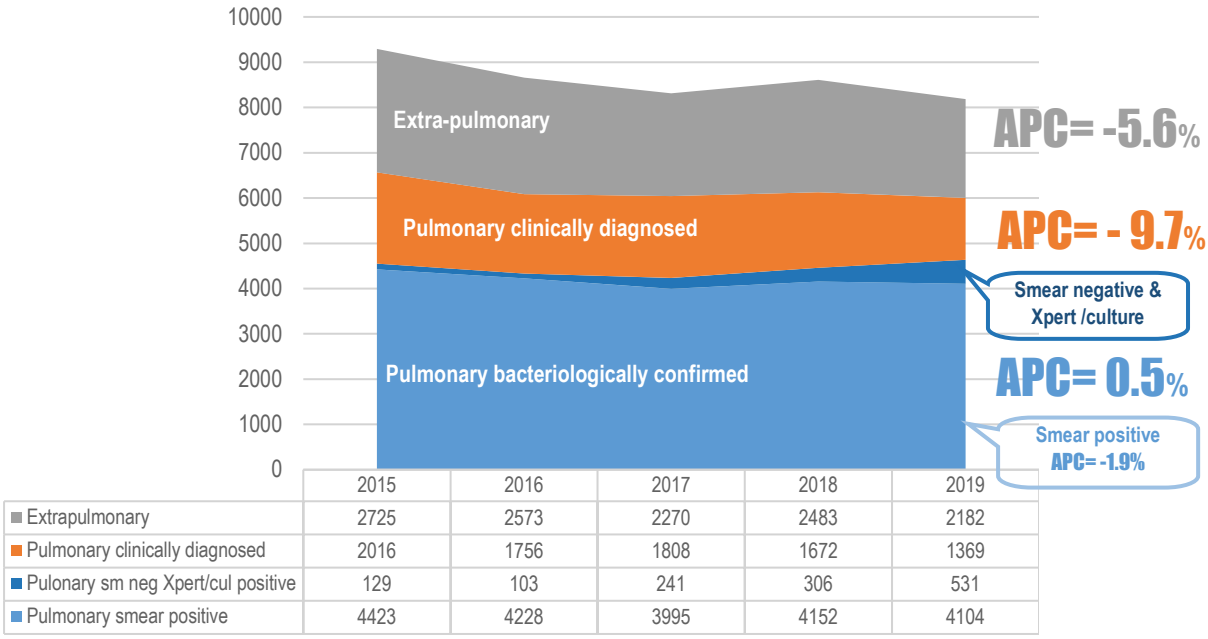


Figure 15: Trend of TB notification numbers and rates, 2010-2019 (new and relapse)

Source: NPTCCD data



	2015	2016	2017	2018	2019
Extrapulmonary	2725	2573	2270	2483	2182
Pulmonary clinically diagnosed	2016	1756	1808	1672	1369
Pulonary sm neg Xpert/cul positive	129	103	241	306	531
Pulmonary smear positive	4423	4228	3995	4152	4104

Figure 16: Notification of new and relapse TB by laboratory confirmation and localization, 2015–2019

Source: NPTCCD data and reference 5.

District analysis showed a majority of districts consistent with the national picture of a gentle downward trend. The Epidemiological Review was, however, hampered by lack of data on the number of presumed cases and the number of diagnostic tests performed, nationally and by district. These data were made available to the ETR, and national data are considered under Objective 4. Such data are crucial for telling if the performance of a district is most likely deteriorating (diagnostic testing is falling), and this is the reason for the decline in case notifications, or whether the district performance is good (diagnostic testing stable or increasing) and case notifications are falling in spite of increasing, or stable, amounts of diagnostic testing.

The external factors that contributed to drive the TB epidemic downwards are addressed in detail in the epidemiological report and include health system strengthening (decrease in under-5 mortality); economic growth, improved nutrition of population, low HIV prevalence, access of population to health care.

The main factors that are likely to moderate the decline of TB burden in the population include: limited coverage with more sensitive diagnostic techniques (e.g., Gene Xpert, chest Xray, culture), modest coverage of contact tracing and TPT, suboptimal treatment success rates, as well as increases in diabetes and ageing of the population.

Ageing and TB

Because many low-income countries, including Sri Lanka, are experiencing an ageing of their populations, and yet are not specifically addressing TB in the elderly, this issue needs to be addressed in this NSP. In addition, the analysis of TB by age and time yields further evidence for a real decline in TB burden.

In Sri Lanka both the absolute and relative number of TB notifications increase with age, in a linear pattern (Figure 16). Among children and those aged "15-24 years" TB notification rates are comparable among males and females. Above the age of 25, the sexes diverge and the male to female disparity of TB burden gradually increases (M:F ratio=1.7) up to the elderly age group (M:F ratio=2.1).

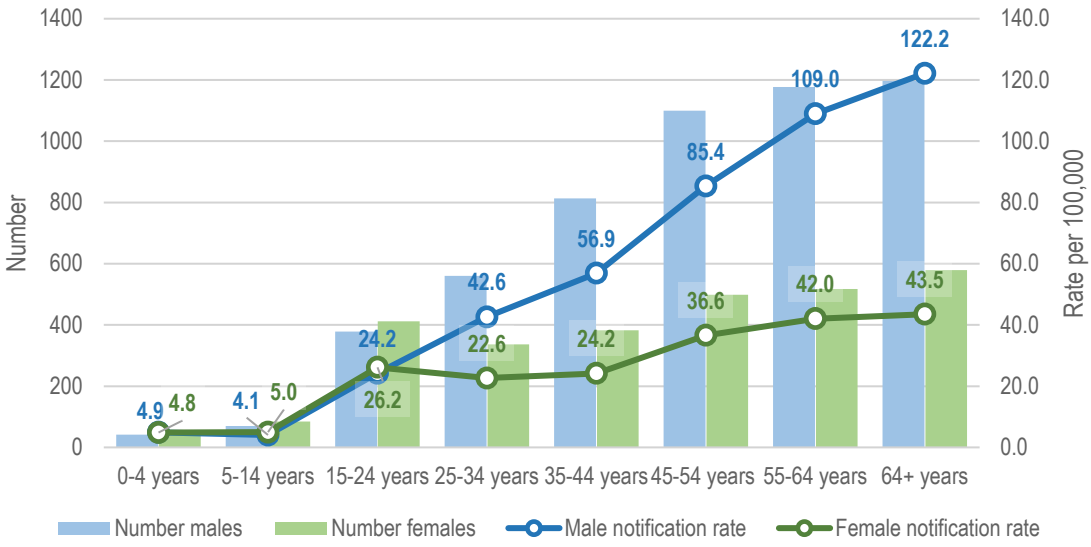


Figure 17: Notification of number and rates of new and relapse TB patients by age and sex, 2019

Source: NPTCCD and reference 5 source

Figure 17 shows the trends in notification rates for new and relapse TB cases disaggregated by age group. Between 2013 and 2019, the TB notification rate declined for all age groups, but the magnitude of decline was less in the older age groups, as can be seen from the annual percent change (APC) in each age group. This pattern of temporal change is consistent with "ageing of the epidemic", which is generally held to be a sign of the decline of the TB burden in the population. Because TB in the elderly mostly results from the reactivation of latent infection, the decline in transmission rate has less of an effect on TB incidence in this age group. In contrast, TB in younger age groups is more the result of recent infection and falling TB notifications in these groups suggests a decline in the annual risk of infection, or in other words, falling transmission, which indicates a reduction in the TB burden.

The major recommendations of the Epidemiological Report were to address under-reporting, by ensuring that all people with TB are registered, whether or not they are treated; to conduct an inventory study (data audit) to quantify estimates of under-reporting of TB cases; to introduce automated connectivity solutions of data generated by Gene Xpert machines to ensure electronic registration of positive cases; a plan to optimize and upgrade ePIMS so that it can generate reports on programme key indicators, and introduce data validation algorithms.

The ETR also recommended that the new NSP should address TB in the elderly, namely, to more fully understand how and where TB occurs in the elderly, the role of elderly care institutions in transmission or reactivation, the role of co-morbidities, and the impact of TB on older people and their families.

Drivers of the TB epidemic

According to WHO estimates 920 (8-4,800) TB cases notified in 2018 in Sri Lanka were attributable to tobacco smoking, 920 (36-3,900) attributable to alcohol use, 2,200 (range: 1,900-3,400) attributable to under-nutrition and around 450 (67-1,100) cases were attributable to diabetes[19]. Only 8 cases were estimated to be due to HIV.

Homelessness and substance misuse were also recognised as drivers of the epidemic in the NSP discussions, as well as being a problem with treatment.

Most of these drivers are not within the remit of the NPT to address directly, for example, under-nutrition requires a focus on ways of alleviating poverty, child-feeding and agricultural practices, identifying stunting and under-weight and providing food supplements. These are outside the control of the NPT, but there are areas of overlap with these drivers where the NPT can make a difference and intends to do so. These include:

- Addressing malnutrition through food supplementation for the malnourished patients with TB;
- Piloting tobacco cessation in order to evaluate the utility of internationally recommended approaches to smoking cessation in Sri Lanka;
- Exploring ways of working with diabetic clinics that takes into account the raised, but still relatively low prevalence of TB found in diabetic patients in the recent TB: diabetes survey;
- Expanding the TB/HIV collaboration even though HIV-associated TB is a relatively rare event;

[19] Global TB database. [online]. https://www.who.int/tb/country/data/download/en/ accessed on 24th November 2020

- Focusing an intervention on the homeless and people who use drugs (PWUD) in order to pick up cases that might otherwise be missed in these vulnerable groups;

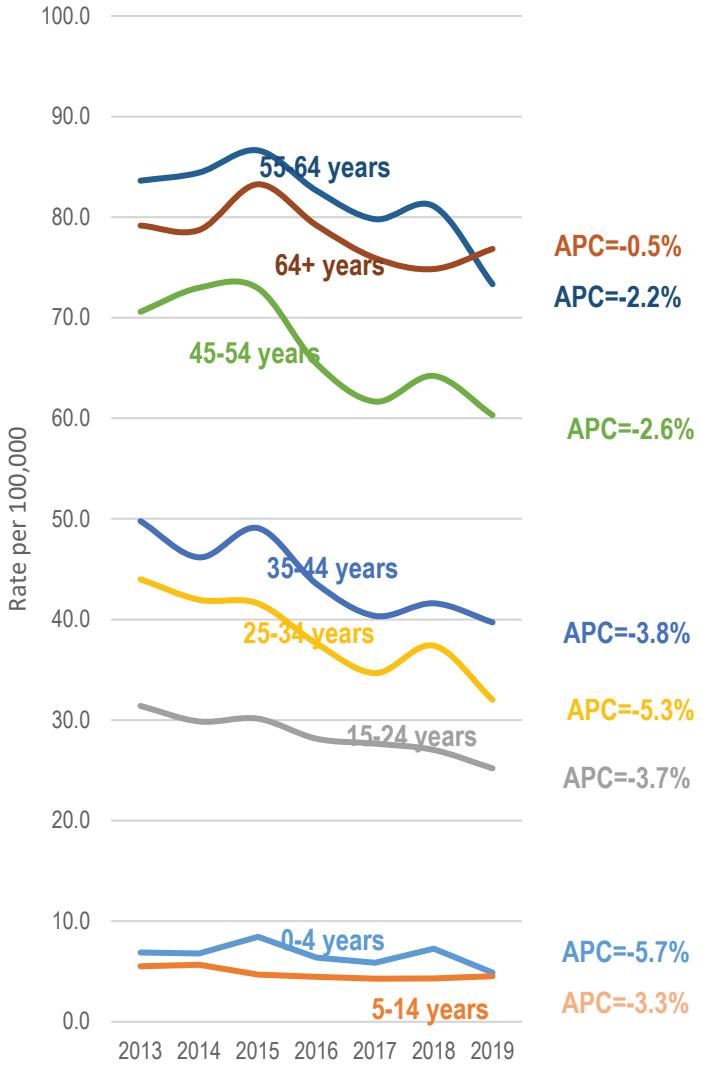


Figure 18: Trend in age-specific notification rate of new and relapse TB cases per 100,000

Source: NPTCCD and Tuberculosis Epidemiological Review in Sri Lanka

2.5.3 District analysis and implications for the NSP

As stated above, district analysis showed a majority of districts consistent with the national picture of a gentle downward trend of notifications. However, as shown by Dr Shibu Balakrishnan's End TB Mission (Table 2), there are different patterns of relationship between the rate of diagnostic tests

performed per 100,000 and the rate of cases notified in each district, which illustrate the level of performance of the district - and can provide a guide as to where to prioritise central level support to the districts. The changes in red mark those districts that have reduced their case finding efforts in the interval between 2008 (the data available to Dr Balakrishnan) and 2018, and the NPT has brought the analysis up to date in comparing the interval from 2008 to 2019. This is an illustration of the tools that will be used by the NPT to focus supervision efforts and raise the performance of the districts that are lagging behind in case finding with the intention of increasing national case finding.

Table 2: Presumptive testing rates for 2012, 2017 and 2019, and case notification rates for 2008, 2018 and 2019, with changes in presumptive TB testing, 2012-2018 (%) and 2012-2019 (%), and in case notifications 2012-2018, and 2012-2019

District	Presumptive TB tested/ 100000 population in 2012	Presumptive TB tested/ 100000 population in 2017	Presumptive TB tested/ 100000 population in 2019	Case Notification Rate 2008	Case Notification Rate 2018	Case Notification Rate 2019	% Change in presumptive TB testing (2012/2018)	% Change in case notification (2012/2018)	% Change in presumptive TB testing (2012/2019)	% Change in case notification (2012/2019)
Batticaloa	1034	361	248	27	24	25	-65%	-12%	-76%	-7%
Nuwara-Eliya	140	76	90	23	31	25	-46%	35%	-36%	+9%
Vavuniya	612	292	465	52	30	24	-52%	-42%	-24%	-54%
Kilinochchi	690	937	563	24	41	47	36%	70%	-18%	+96%
Kurunegala	593	577	515	33	21	24	-3%	-35%	-13%	-27%
Kegalle	811	780	706	62	38	35	-4%	-38%	-13%	-44%
Kalmunai	854	NA	849	63	39	36	NA	-38.1%	-1%	-43%
Galle	499	113	505	43	34	33	-77%	-22%	1%	-23%
Matale	638	702	691	52	32	33	10%	-39%	8%	-37%
Ampara	654	NA	731	37	40	32	NA	8.1%	12%	-14%
Trincomalee	341	66	402	46	24	24	-81%	-47%	18%	-48%
Hambantota	190	192	228	29	20	19	1%	-31%	20%	-34%
Polonnaruwa	990	1666	1223	35	34	34	68%	-4%	24%	-3%
Mannar	402	343	497	28	27	18	-15%	-1%	24%	-36%
Badulla	855	837	1080	34	28	30	-2%	-16%	26%	-12%
Ratnapura	435	469	563	55	36	33	8%	-34%	29%	-40%
Gampaha	210	350	288	43	44	41	67%	3%	37%	-5%
Colombo	891	NA	1238	79	79	75	NA	NA	39%	-5%
Puttalam	199	121	301	19	22	20	-39%	14%	51%	+5%
Kalutara	269	256	486	56	45	38	-5%	-19.6%	81%	-32%
Anuradhapura	208	282	390	63	27	24	35%	-56%	88%	-62%
Kandy	191	371	363	58	40	41	95%	-31%	90%	-29%
Matara	229	339	438	33	24	20	48%	-28%	91%	-39%
Jaffna	363	728	742	65	46	43	-22%	-28%	104%	-34%
Monaragala	540	1312	1457	22	26	24	143%	17%	170%	+9%
Mullaitivu	131	370	536	3	28	22	183%	752%	309%	+633%

Need immediate action to improve case finding effort and notification

Need action to improve case finding effort and notification

Need to continue the attention given to case finding effort and notification

High percentages may be due to low number of cases

2.5.4 Preliminary results of the patient pathway analysis

One major achievement of the NPTCCD is to have carried out the patient pathway analysis (PPA) in the past year and almost completed its analysis[20]. This work contains important original data and yields essential insights for the Programme, including, as was intended, observations on the role of the private sector in TB control activities.

First, the analysis of the pathways of 743 patients shows that 39% of patients goes to the private sector initially (Figure 18). This is less than the previous "rule of thumb" that 50% of out-patients goes to the private sector, but is nevertheless, a significant amount. Vitally, 70% of those attending the private sector, go to private part-time practitioners (PPPs). Moreover, the single most popular first point of contact in both public and private sectors, is the PPP, accounting for fully 27% of initial consultations. And the PPPs have no direct access to diagnostic tools. As a result, 70% of their patients were, initially, given medicines without further investigations, resulting in significant diagnostic delay.

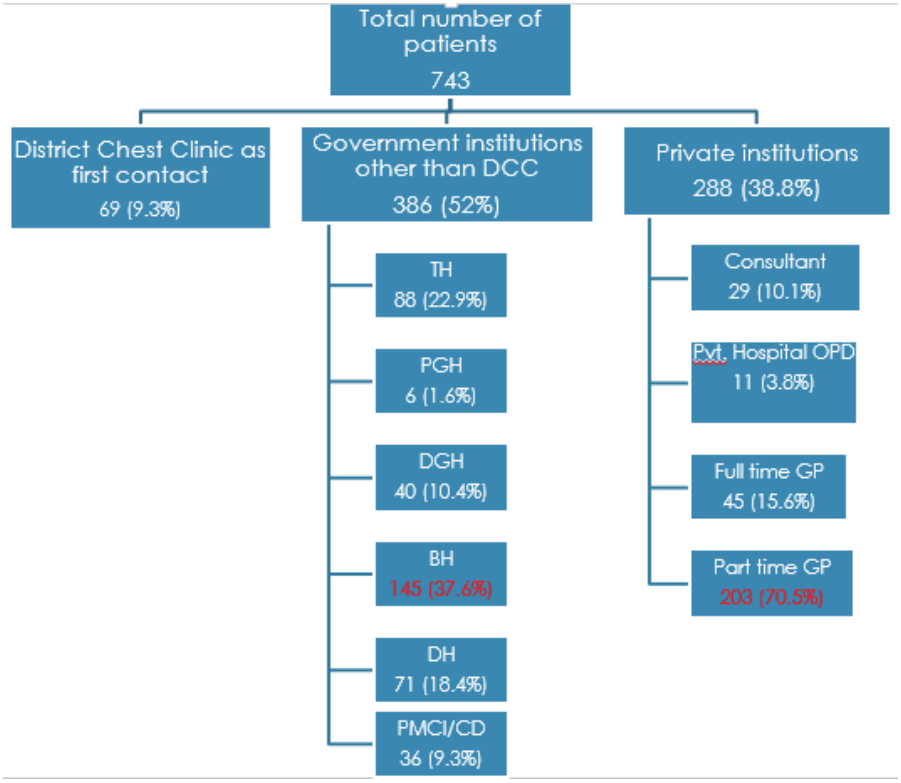


Figure 19: Pathway analysis for 743 patients who eventually were diagnosed as TB in Sri Lanka, 2018-19

Source: PPA[25]

Second, 71% of patients attended government facilities, including DCCs, but only 9% of patients attended the DCCs initially. Thus, 52% of all the patients went to other government facilities, particularly base hospitals, where 36% were admitted to hospital, and 32% were

[20] Care pathways, care delays and correlates of care delays among pulmonary tuberculosis patients attending District Chest Clinics in Sri Lanka. Unpublished data. 5th October, 2020

given medicine without testing. The DCCs were the most efficient at making the diagnosis (77% of all cases within two visits) but only a small proportion went there first. This high rate of admission in order to make the diagnosis suggests a major inefficiency for the management of a disease that can normally be diagnosed as an outpatient. In addition, admission to hospital is a significant health risk for the elderly, and 42% of TB patients in Sri Lanka are 55 years of age or over.

The PPA also quantified diagnostic delay: it showed patient delays were very significant - a median 21 days (range, less than 1 week to 2 years), and mean health system delays of 4 days for DCCs, 13 for government hospitals, and 26 days for private providers (Table 3).

Table 3: Health system delays in making the diagnosis

First Contact Point	Mean (Days)	Median (Days)	Range (days)
DCC	4	2	1-60
Governmant Hospitals	13	7	1-180
Private Providers	26	14	1-360

Source: reference 25.

This NSP will therefore address those areas where action is needed, including the managerial and clinical deficiencies especially in the private sector, but also in government institutions. Innovative ways of encouraging referral for diagnosis by the PPPs will be explored, as well as of accelerating the diagnostic process in base hospitals.

2.5.5 Modelling

WHO, SEARO has commissioned epidemiological modelling exercises for all 11 of the countries in the region, which assist readers to see what might be achieved with feasible if ambitious levels of expansion of existing interventions, or applications of new interventions that could well arrive in the near future. This approach has been applied to Sri Lanka with:

- Incidence and mortality projections based on historical data
- A set of parameters, identifying the modelled intensity/coverage of each intervention (Table 4)
- Final model results will also include uncertainty intervals on model projections

Key interventions modelled

- *Engagement of non-NTP sector* to ensure that patients treated in that sector receive same standard of care as described by NTP. The modelling takes into account 'additional' engagement of non-NTP sector. The current model, however, predated the PPA and assumed that involvement of the private sector in TB service provision was

"minimal". We now know that is not the case, and a request will be formally made to update the model accordingly.

- *Laboratory expansion* – Increased availability of diagnostic centres over and above the existing centres. A 10% expansion is assumed for Sri Lanka.
- *Newer Diagnostics* – gradual replacement of microscopy with rapid molecular tests – up to 80% by 2025.
- *HHC for treatment*: the model assumes that for every index TB case, at least *0.25* additional cases are found in the household that increases patients initiated on treatment. This seems high for Sri Lanka.
- *ACF + reduced delay*: The model assumes there is a pre-care seeking delay, which we now know to be a median 21 days before first contact with a healthcare provider. It also assumes this will be reduced by 60%. This could involve active case-finding in vulnerable populations including asymptomatics, other contacts, and also demand-generation measures such as awareness generation, stigma reduction, etc. In Sri Lanka the biggest impact might be obtained from accelerating referral for appropriate diagnostic testing of cases by PPPs and base hospitals.
- *TPT*: assuming increased uptake of TPT amongst household contacts (HHC) and PLHIV, as per existing WHO guidelines
- *Other prevention:* TB prevention is extended to the general population, to reduce the average rate of reactivation of latent TB infection (LTBI), by *10*%. Such measures could involve inter-sectoral efforts like addressing malnutrition, *or* risk-targeted preventive therapy.
- *Mass prevention*: From 2025 onwards, it is assumed that biomarker-based mass preventive treatment or a new vaccine will be available. This is in alignment with End TB Strategy, according to the SEARO analysis, but it should be emphasized that these interventions have not yet been invented/discovered.

Table 4: Assumptions made by the modelling exercise for Sri Lanka

Interventions	By 2025
Engage non-NTP providers	Minimal (underestimate)
Expansion of lab facilities	10% (achievable)
Accelerated substitution of smear by rapid molecular test, etc	80% (achievable)
Treatment completion	90% (achievable)
To reduce care seeking delay by x%	60% (difficult but achievable)
TPT as per WHO guidelines	90% (achievable)
Cutting reactivation by y% (nutritional support etc)	10% (difficult but achievable)
Contact tracing yield	0.25

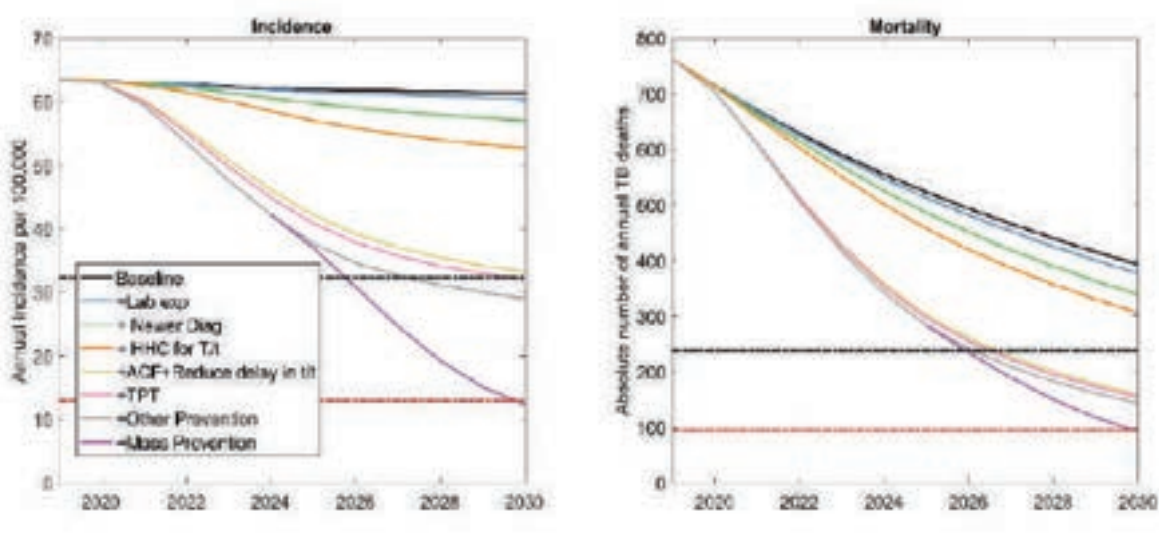


Figure 20: The WHO-SEARO model applied to projections for Sri Lanka

Source: WHO SEARO – TB modelling

2.5.6 The key issues within TB service components

2.5.6.1 Case finding and notification

One key issue for this NSP is the gap between notifications and incidence, even allowing for the likelihood that incidence is over-estimated. Some districts appear to be under-performing in presumptive case testing. Presumptive case registers are not well filled. Initial loss to follow up has been observed. High notification rates of TB are occurring in the elderly (55 years or over) population without specific interventions for this population (other than

ad hoc screening of homes for the elderly by the DTCOs (NB 3 cases found in 190 screened in Gampaha elderly homes).

Active case finding (ACF) has been focused on the priority populations of household contacts, PLHIV, and prisoners. Unproductive ACF in several populations has been reduced since 2017, but not entirely stopped. 2019 data (Table 5) confirm TB in prisons and remand centres, and now show relatively high rates of TB notifications in estate workers in Kalutara (but not Galle or Kegalle), slums and a fishery in Kalutara, but not in homes for the elderly, except in Gampaha. The elderly and prisoners can be considered for annual screening programmes. The homeless and drug users are postulated as identifiable groups that may have high TB rates. A range of screening and diagnostic tools was used for ACF which makes interpretation of the results difficult, and emphasises the need, which will be addressed in this NSP, for standardisation and a clear policy on which vulnerable groups to carry out ACF. The diagnostic algorithm for ACF will be made as sensitive as possible. Given the overall relatively low incidence rate of all case finding, ACF will be expanded, but done logically and based on evidence. Portable Xray equipment will be required.

Three districts (Gampaha, Kegalle and, slightly later, Kalutara) were nominated as pilot districts, but the interventions prescribed were only partially implemented, if at all, because of obstacles within the health system, including HR deficiencies, as well as issues outside the health sector, curfews and elections, and these districts have not observed any increase in case notifications.

Coordination with the private sector on case-finding has been minimal, but the PPA (see 2.5.4) now shows significant delays in diagnosis in the private sector, especially in patients of private part-time practitioners, as well as inappropriate case management. The relatively good performance of the DCCs suggest that referral of presumptive patients from other facilities (including public facilities such as teaching hospitals, see 2.5.6.3 below) should be systematically encouraged.

Coordination with community-based organisations has also been minimal. Four NGOs were reviewed in the ETR and found to have substantial limitations for work beyond the very local level. Work with NGOs dealing with substance use, e.g., ADDIC, has been proposed and a Patient Advisory Group will be set up to get real opinions of patients. Progress will be reviewed in a year or two.

2.5.6.2 Contact tracing and TPT, childhood TB

Contact tracing has focused on those aged 5 years and under but has not found many cases (137 out of 12,660 screened in 2019), and opportunities for TB preventive treatment (TPT) have been missed (268 under 5s were given TPT in 2019) which will now be exploited in this NSP. The sensitivity of the screening/diagnostic algorithm for contacts will be enhanced (see

2.5.6.3). International targets now require a massive expansion of TPT to older age groups and this will be a major objective of the NSP.

Insufficient PLHIV are on TPT. The new TPT guidelines are almost finished. Sufficient HR are necessary at Central Unit and in DCCs before embarking on a huge programme aimed at treating more than 9,000 people annually for LTBI. Once such a programme is underway, and the elderly and prisoners screened for TB disease (see 2.5.6.1), those without disease can be considered for TPT.

Case-finding in children is thought to be low and may be a reflection of recent reductions in the birth rate, however more efficient contact tracing will likely yield more cases. Undernourishment is still present in the country and suggests case finding should also focus on nutrition clinics and paediatric wards.

2.5.6.3 Laboratory diagnosis

The new diagnostic algorithm (2018) is in place, but not always followed. Insufficient CXRs are performed on presumptive cases. Still, ten times more diagnostic sputum tests are carried out in DCCs than GeneXpert tests, although the number of GeneXpert tests is increasing and over 28,000 were carried out in 2019. GeneXpert as the first-line diagnostic will be tested in Gampaha district from January 2021. There are legitimate reasons for concern about the costs of using GeneXpert as the first-line diagnostic in all districts, especially given the economic impact of Covid-19 and the slow-down of the national economy even before the pandemic.

There are insufficient staff to mend broken equipment and carry out diagnostic work. More training is required. Four intermediate TB culture laboratories (ITLs) have been set up and are thought to provide advantages in reducing specimen transport costs, increasing access to culture, better distribution of workload on lab staff, and accelerating results to the patients.

Large OPDs remain foci of poor diagnostic practice. Service contracts for all major pieces of equipment are required. Universal DST remains a realistic target.

Processing of lab information remains a challenge and requires linking of the ePIMS with databases of lab test results, with rapid transmission of results to requesting clinicians, and even to patients in some cases.

2.5.6.4 Treatment and supervision

Treatment success is below international targets for both rifampicin susceptible (around 85% in recent years) and MDR-TB cases (68% for the 2017 cohort, although exceeding 75%, in 2015). High death rates (6.4-7.0 % in last 3 cohorts) are the major cause. Additional contributors to poor outcomes are old age, comorbidities and delays in obtaining treatment, significantly more likely in the private sector. Identification of high-risk patients with

prophylactic admission for in-patient care in collaboration with other specialists was recommended by the ETR, plus construction of respiratory wards or adaptation of parts of existing wards, to accommodate them.

The not evaluated rates are also high (>4% in last two cohorts) as a result of soluble administrative issues: they include those found to have another diagnosis, and those recorded each quarter as still on treatment (they would not still be on treatment at the end of the year). Systematic analysis of all deaths is required.

For this NSP, digital health innovations are key, and the Plan will include evaluations of new digital technologies, such as SMSs to patients, video DOT, 99 DOTS etc in the Sri Lankan context in order to chart a path forward.

Substance abuse is a problem for TB control, mostly in Colombo and Gampaha, which slows health seeking behavior, complicates treatment, increases transmission, delays diagnosis and leads to more serious disease. A need for separate places (halfway homes) in high-risk districts to ensure adherence to treatment and rehabilitate TB patients with substance abuse has been expressed, in collaboration with the National Dangerous Drugs Control Board (NDDCB) and NGOs such as ADIC[21], with screening for TB in substance abuse clinics and psychiatric units (poor mental health is a risk factor for TB elsewhere).

Nutritional supplements for the malnourished were recommended by the ETR.

[21] The Alcohol & Drug Information Centre (ADIC) Sri Lanka was established in 1990. ADIC is a well-recognized resource centre, promoting demand reduction of alcohol, tobacco and other drugs (ATOD) and advocating effective policy formulation for ATOD control nationally, regionally and internationally over the last 30 years. Their scientific approach recognizes the importance of preventing drug use through social change and effective education. ADIC provides services to government, non-government, civil society organizations and the public in general. ADIC has several programmes: **Policy Advocacy** which formulates and implements effective policies at national and local levels to discourage and control drug use, working through different structures; **Strategic Intervention (SI) Programme** which conducts different types of campaigns and awareness programmes island-wide with the participation and support of other individuals and organisations; **Social Mobilization Programme** which carries out community-based interventions at selected locations in all districts towards alcohol, tobacco and other drug prevention; **Programme for Heroin Users to be Free from Drugs** which includes various activities that support individuals with drug problems including maintenance of drop in Centre, one on one discussions with heroin users by field workers, low-cost community based camps, family and community support to become free of the drug and follow up with individuals in the various stages towards becoming free from drugs; **Psychological Counselling Programme** to prevent drug related problems in communities and rehabilitate users through individual counselling. In addition, ADIC conducts training of trainers (TOT) workshops for counsellors to build capacity of counsellors and other health professionals in effectively providing services for individuals with drug use problems; **Plantation Sector Programme** which aims to develop a sustainable process to reduce alcohol, tobacco and drug related problems in more than 100 estates and plantations; **Research and Evaluation Programme** which maintains ADIC as an innovative and scientific evidence-based resource centre for drug prevention nationally and internationally.

2.5.6.5 Drug-resistant TB

Drug resistance is low in Sri Lanka – only 20 cases RR/MDR of the 8204 (0.24%) new and relapse cases in 2019. Universal DST is due to be expanded to the remaining 16 districts "by" 2021.

Guidelines are outdated. Care is over – centralised. Contact investigation of DR patients inadequate. PMDT coordinator over-loaded. Insufficient isolation rooms. Infection control, pre-COVID, was insufficient.

2.5.6.6 TB and its major Comorbidities

a) HIV

Only 36 cases of HIV-associated TB were found in 2019. The key issues here are the concerns about the low rate of symptomatic screening of PLHIV each time they attend the clinic for ART or other reasons; relatively few coordination meetings at national and local levels of both NPTCCD and NASCP staff and local counterparts; low treatment success that is reported for TB among PLHIV which could partly be due to a failure to record HIV status properly owing to confidentiality concerns; TB infection risk among PLHIVs attending TB clinics for investigation; patient complaints of having to visit separate facilities for their TB and HIV care.

b) Diabetes mellitus

The recent study that screened for cases of TB among over 4,000 diabetic patients found only 6 additional cases of TB (132/100,000), while 13 had already been diagnosed and started on treatment. A high proportion of analysed deaths is associated with diabetes (66/198 (33%)).

This represents a challenge for case-finding of TB among diabetic patients – but this Plan intends to increase awareness among physicians treating diabetic patients and endocrinologists to have a low index of suspicion for requesting CXR, especially among those with the risk factors of age > 60 years, male sex and poorly controlled blood sugar.

2.5.6.7 Monitoring and Evaluation

Coverage of the existing surveillance system is inadequate. This includes, poor use of presumptive registers, failure to register all cases found (and eliminate initial defaulters), weak management of prison TB data, no links with the private sector, and no linkage between GeneXpert machines and an automatic alert system e.g., GxAlert and the ePIMS. The NSP views these issues as priorities.

The quality of the existing TB surveillance system will be improved in this NSP: manual data entry into ePIMS will be phased over into electronic systems which can rule out human error; the possibilities of ePIMS will be more fully exploited; entered data will be automatically validated; central staff supervisory visits will be more focused on districts in

need of support; TB and HIV databases will be merged or made possible to interrogate jointly and sufficient NPT/NSACP coordination will be established.

Use of data for decision-making will be improved. All diagnostic lab data will be linked with ePIMS and analysed in the annual report; the annual report will be more analytical; data quality audit will be introduced, linked with an inventory study to gain a more precise measure of TB burden in Sri Lanka; more OR based on ePIMS data will usefully predict unfavourable outcomes and help design targeted interventions (and help improve ePIMS data quality); a catastrophic cost survey will be carried out to help design interventions to assist the poor with TB.

2.5.6.8 Public/private mix

The PPA has illustrated the need for a public: private mix (PPM) approach to be properly established for TB and effectively led. The private sector sees 39% of initial consultations of patients who turn out to have TB but has diagnostic delays 6.5 times greater than DCCs and double those of public facilities. 70% of patients attending the private sector go initially to PPPs, and 70% of these are simply given medicines without a diagnostic test. Mechanisms to facilitate diagnosis and notification by these PPPs are an essential component in this NSP, followed by the other private facilities. Offering CXR screening, GeneXpert, culture and contact-tracing facilities, and anti-TB treatment in the public sector can be part of the public sector's offer in establishing a public:private mix (PPM) collaboration. Making clear the shortcomings of the private sector in managing cases of TB and delaying diagnosis will likely be needed, in order to make the case for urgent action. EQA of private labs by NTRL could also be offered.

For this NSP, digital health innovations are key, such as an app to facilitate notification from the private sector, and an app to record presumptive cases will be considered. Back referral to the GP will be maintained as an option, to minimise lack of cooperation from the PPPs. Simple TB messages by SMS to MOs, who work in both public and private sectors, may be useful, and if implemented, will be evaluated.

2.5.6.9 Procurement and supply management (PSM)

The ETR reported that PSM was generally working well, but distribution problems, especially the availability of vehicles, were occurring. Funding shortages may cause problems in the near future as PSM goes over to Government of Sri Lanka (GOSL) funding. The ETR recommended that GOSL should continue to procure anti- tuberculosis drugs through the Global Drug Facility and this is assumed in this NSP.

2.5.6.10 Research/Innovation

Recent research (PPA, TB/DM, death analysis and gender and human rights survey) has benefitted the NPT with essential new data coming to light. This will continue and skilled

staff at central unit will be recruited to lead this effort and train the junior staff in OR methodologies. The ETR contains many other recommendations which are all dependent on this one, and which are addressed in the NSP.

2.5.7 TB and smoking cessation

According to WHO estimates, 1,100 (8-4,800) TB cases notified in 2018 could be attributable to tobacco, but the NPT is not responsible for national level tobacco control. However, given that continued smoking risks significantly worse outcomes for the smoking patient, this NSP will, for the first time, include cessation advice given to all TB patients who smoke.

2.5.8 The impact of COVID-19

2.5.8.1 Impact to date on TB notifications and cure rates

The Covid-19 epidemic and the restrictions associated with it have reduced notifications. The total number of notifications received at the end of third quarter 2020 were 5,743, compared to an expected number of at least 6,375, if 8,500 - 9,000 TB cases were reported annually. During Q1, in the years 2019 and 2020, 2,153 and 2,043 TB cases were reported, respectively – a fall of 5.1% in notifications in comparison to the previous year. Notifications declined in 15 out of 25 districts.

During Q2, notifications were 2,030 and 1,446, in 2019 and 2020, respectively - a fall of 29%. This time declines were observed in 25 out of 26 districts. Districts in the eastern part of Sri Lanka, including Batticaloa, Ampara and Polonnaruwa reported nearly a fifty percent decrease in the total number of TB cases. Western Province, including Colombo, Kalutara and Gampaha districts, reported a decrease of one fourth of TB cases in comparison to Q2 in 2019.

The proximal cause of reduced notifications was thought to be the lack of transport facilities during the curfew period, both for patients and health staff. The numbers of patients accessing healthcare facilities for minor symptoms fell, as did the number of presumptive TB cases presenting to the health system. Between March and August 2020, 36% of the DTCOs reported problems with the roster system (staff off sick, isolating, etc).

The effect of the outbreak on health staff, including in chest clinics, was most prominent during the second wave. The staff at the Gampaha DCC had to quarantine for 14 days, but essential TB services were provided through the NHRD OPD system. Contact tracing was significantly reduced.

2.5.8.2 Treatment outcomes

There has been a marked reduction in TB deaths reported during the epidemic. Deaths due to TB in Sri Lanka in the September of each year, 2019 and 2020, were reported as 416 and 164 respectively - a 61% decrease in TB death notifications.

During Q1 in 2020, 1,458 TB cases were identified as interrupters of TB treatment. Among these 89.4% (n=1,322) were traced within the first week of notification and the remaining 9.2% (n=136) were traced later. In Q2, 1,605 interrupters of TB treatment were reported, of whom 93.9% (n=1,507) were traced within the first week of notification and 5.3% (n=85) were traced later. Hence, loss to follow up in Q2 in 2020 was only 13 - 0.8% - of the original interrupters.

2.5.8.3 Measures taken by DCCs

The measures taken by DCCs included:

For screening:

- Arrangement of a table at the entrance and guiding COVID suspects to the Covid units
- Allowing only referrals through OPD/GHT
- Patients with SOB were directed for admission
- Patients with cough more than 2 weeks were registered
- Only registered patients were seen

For treatment and adherence:

- 2 months treatment was given to patients, limited number of new patients seen
- In some instances, drugs were issued for 2 weeks during the intensive phase and 1 month for continuation phase patients.
- Drugs sent by post to non-TB patients.
- Two months drugs issued to the clinic patients other than TB patients
- Patients were followed up over the phone every two weeks.
- Branch clinics were used as much as possible, including for provision of drugs.
- Contact numbers of DCC and DTCO given to patients to facilitate communication, especially to arrange delivery of drugs to patients through PHIs and follow up communications with patients and family members.
- DTCOs were able to provide advice on-call, day and night.
- Sometimes sputum samples were collected at patients' homes and transported to microscopic centres by PHIs
- Home visits by DTCO and PHI and home delivery of drugs
- Drug deliveries by vehicles and by post
- Some drugs were provided monthly in DCC, and some patients called to their nearby Health institutions regularly to confirm the drug intake by telephone

36% of DTCOs reported problems with supplies of personal protective equipment (PPE). Over 90% of DCCs were able to maintain sufficient drug stocks[22].

The circular of 29th April 2020 provided "Interim guidance for intermediate TB laboratories, GeneXpert laboratories and microscopy centers for handling patients' samples amid COVID pandemic".

2.5.8.4 Possible synergies in TB: COVID collaboration:

The GeneXpert machines normally used for TB testing were used for PCR testing for COVID patients at five sites, hence affecting the number of tests carried out for presumptive TB patients.

[22] Wickramaarachchi CM, Pallewatte NC. Unpublished data from Research study on "Challenges faced in implementation of Guidelines for diagnosis and management of Tuberculosis patients during COVID-19 pandemic in Sri Lanka".

Table 5: Summary of COVID-19 impacts and mitigation measures

Impact on TB services	
Reduced number of newly diagnosed TB patients	
Decrease in reporting of number of TB deaths	
Decreased contact tracing	
Reduced number of clinic visits for TB patients	
Reduced number of OPD visits for TB patients	
Fewer hospitals providing in-patient care to people with drug-sensitive TB, MDR/RR TB	
People with TB isolated/ in locked down	
Increase risk in transmission of TB and COVID 19 in congregate settings and health care facilities due to non-availability of PPE and basic infection prevention	
Increase risk of transmission of COVID 19 to TB health care staff owing to common respiratory nature of both diseases and lack of sufficient PPE and infection prevention. Quarantine of health care staff, if it becomes necessary, will cause TB treatment care provision to further deteriorate.	
Reallocation of TB resources to COVID-19 response	
Reallocation of funding	
Reallocation of Gene –Xpert machines	
Mitigation strategies Identified	**Current situation**
Provide simultaneous testing for TB and COVID 19 for individuals when indicated, including merging of TB and COVID19 laboratory platforms and networks	Currently done in a few districts such as Gampaha and Polonnaruwa. Advised DTCOs during Quarter DTCO review. Issues – According to circulars issued by MOH, safety cabinets is a requirement. Therefore, due to non-availability of safety cabinets, PHLTs are reluctant. PHLT cadre issues. Transportation issues Implementation – Provision of safety cabinets and Facilities advised to transport collected specimens to nearby centres where safety cabinets are available.
Maintain and scale up TB preventive treatment including via synergies with TB contact tracing efforts related to COVID 19.	Appointment system for patients (preferably in the afternoon where DCCs are less crowded) to enhance contact tracing for TB, despite COVID situation.
Limit the risk in transmission of TB and COVID 19 in congregate settings and health care facilities by ensuring sufficient amounts of PPE and basic infection preventive methods.	According to the survey conducted among DTCOs, only 63% of DTCOs have sufficient PPE. Issue – difficulty in getting PPE for the health care staff.
Limit the risk of transmission of COVID 19 to TB health care staff by ensuring sufficient amount of PPE and basic infection preventive methods.	According to the survey conducted among DTCOs, only 53% of DTCOs have sufficient amount of PPEs. Issue – difficulty in getting PPE for the health care staff.
Home delivery of anti-TB drugs	In practice during lockdown and curfew situation. Issues- Transportation Human resource
Maximize remote care and support for people with TB by expanding the use of digital technologies	Due to the economic status of the patients novel digital technologies cannot be applied. Nevertheless, over the phone communication is in practice. Plan to implement SMS services
Mechanism to enhance notification of TB deaths	To overcome this issue, strict monitoring of the treatment interrupters to be done. Hence, death due to TB (while on treatment) will not be missed.

2.5.9 Gender and human rights

The recent study of gender, socio-cultural barriers and human rights in TB carried out by NPTCCD staff[23] provided unprecedented information. Based on a study done in hospitals and communities using a qualitative approach among selected target groups (community, patients, and health care workers), 11 focus group discussions and 30 in-depth interviews with health care workers were conducted in Colombo, Jaffna, Ampara, and Kalmunai districts, with representation of urban, rural and estate populations, during June to August 2020.

The key findings were, firstly, lack of awareness on TB care including prevention, diagnosis, treatment and follow up in the community, which leads to stigma and discrimination, concealment of the disease condition, and poor treatment adherence. Second, among health care professionals, an inadequate understanding of the current status of TB and new treatment modalities. Lastly, there was a perceived discrimination due to stigma among children affected by TB, leading to concealment of their disease condition from friends, and psychological trauma at an early age.

Socio-economic disadvantage was apparent in the estates, other isolated rural communities, especially Tamil communities caught up in the Civil War in the North and Northeast, and in the Tamil Muslim populations, especially in Kalmunai. There was little evidence of gender-based discrimination in access to TB services, except in the Muslim communities, where women and girls had less access to the financial means to provide transport and other resources required to access diagnosis and treatment. Furthermore, women from these communities had to be accompanied by a male relative before attending services.

The GOSL response has been to accelerate re-building of health infrastructure in these disadvantaged areas affected by the War. The study concluded that development and health interventions, including staff training, would require communications with the affected populations in their own languages, especially Tamil. The same applies to health promotional messages for the general community. Social protection provisions for patients with TB are already among the highest in Sri Lanka, at Rs. 5,000, but whether this is, in fact, adequate for families that are already disadvantaged, needs to be further explored. The NPT is developing a risk assessment tool to assess the level of disadvantage and has been brokering with local donors to provide nutritional support to those in need.

[23] Cader M, Pallewatte N, Wickramaarachchi, CM, Senanayake R.J.M.A.J, Kajanan S, Liyanage NR, Herath H. Priority areas with Proposed Strategic Objectives and Key activities for Gender, Human rights and socio cultural Barriers in Tuberculosis Prevention, Diagnosis , Treatment and follow up facilities in Sri Lanka. Presented to the NSP Team, 3rd November, 2020.

This NSP plans to continue the nutritional support, establish social media groups by DTCOs for GPs in their districts, with periodical updates on TB and new treatment approaches, train health workers, in Tamil, to use participatory approaches in community awareness, and recognise GPs as DOTS providers where home DOT cannot be done directly under the DTCOs.

Table 6: Active case finding in selected districts, 2019. In green, those who were symptomatic were initially subjected to sputum microscopy + CXR, in yellow, those who were symptomatic were subjected initially to sputum microscopy, and in red, method not specified

District	Elderly Homes		Estate Workers		Drug Rehab Centres		Prison		Remand centres		Orphanages		Other	
	Number Screened	Number Positive	Number Screened	Number Positive	Number Screened	Number Positive	Number Screened	Number Positive	Number Screened	Number Positive	Number Screened	Number Positive	Number Screened	Number Positive
Galle	0	0	48	0	115	0	1453	2	0	0	0	0	38	0
Gampaha	190	3	0	0	215	1	0	0	138	5	63	3	0	0
Colombo	0	0	0	0	0	0	3074	11	0	0	0	0	118	0
Kegalle	0	0	379	0	754	0	0	0	0	0	0	0	49	0
Polonnaruwa	18	0	0	0	967	0	354	1	0	0	0	0	68	0
Anuradhapura	310	0	0	0	0	0	0	0	0	0	43	0	1080	0
Puttalam	0	0	0	0	0	0	0	0	0	0	0	0	285	0
Badulla	28	0	0	0	1103	6	0	0	401	1	0	0	264	0
Batticaloa	0	0	0	0	0	0	508	0	136	0	0	0	36	0
Trincomalee	0	0	0	0	0	0	350	1	0	0	0	0	221	0
Ampara	35	0	0	0	0	0	0	0	0	0	0	0	97	1
Mannar	0	0	0	0	0	0	0	0	0	0	0	0	375	0
Kalutara	0	0	932	8	80	1	693	0	0	0	0	0	490	10

3. Gap analysis

3.1 SWOT analysis

Strengths	Weaknesses
• Strong network of NPTCCD: Central Unit/DTCOs/NTRL/Drug store etc • Relatively low incidence • Well-educated population • EPIMS backbone in every district • Good internet access • Capacity for operational research (OR)	- Insufficient trained staff - Recruitment system that does not respond to NPT needs - Diagnostic delay in private sector - Weak linkage of NPT:Private sector - Large hospitals causing diagnostic delay - Lab test result reporting and lab data analysis weak - Frequent equipment breakdowns - Failed pilot district concept due to lack of trained HR and health system policy constraints - Weak coordination of NPT with other departments/units, e.g. NPT/NSACP
Opportunities	**Threats**
○ Good epidemiological position to push for elimination ○ New technologies coming, especially digital interventions ○ TB focused in older populations, providing options for targeting ○ Portable XRay machines and GeneXpert provide opportunities for increasing sensitivity of ACF diagnosis ○ PPA shows the way for PPM collaboration, and cutting diagnostic delays ○ ePIMS can support LIMS and provide data for decision-making ○ Comorbidities (hence high TB mortality) can be addressed using the high-quality clinical care available	▪ Covid-19 epidemic ▪ Poor national economic outlook ▪ Health system gives priority to clinical services ▪ Insufficient capacity may persist in NPT with low availability of staff to recruit ▪ Natural disasters ▪ Potential increase in substance abuse (currently the trend of substance abuse as reported by NDDCB is flat)

3.2 Gaps in the current system

The major gap in TB control efforts in Sri Lanka is political will. Even before COVID-19, the political visibility of tuberculosis - and the burden it places on Sri Lankan citizens - was minimal. The priority afforded to TB was evident by the fact that the Director of the NPTCCD holds two other substantive official positions due to lack of senior staff at ministry level. As the ETR stated, the NPT needs a full-time, undistracted Director.

Lack of appropriate human resources are the second most significant gap. The posts vacant in the NPTCCD include all three consultant community physicians (CCP) (with a fourth previously approved, but not listed by the Ministry), one of two consultant microbiologists, 10 MOs, 2MLTs, 2 PHLTs and 2 pharmacists. In order to fill these two gaps, which are

outside its direct control, the NPT will coordinate support from partners and advocate for the necessary changes with Ministry decision-makers, particularly the DDG Medical Services.

Addressing the technical gaps listed in Section 2.5.6 requires massive expansion, from a base of almost zero, in two major areas: **public:private mix (PPM) and coordination** to correct what amounts to malpractice in the private sector in the management of TB, and a **TB preventive treatment (TPT) programme** to bring reactivation of TB down to a level that will enable Sri Lanka to reach its End TB Strategy and UN SDG commitments.

The TPT programme should be focused on thorough, revitalised, contact tracing, which will have the important side-effect of **increased case finding, especially in children**, as well as **the elderly**. The over 55s already account for nearly half of notifications, and the population continues to age. **Special efforts will be introduced for the elderly** to boost case finding, maintain adherence, and improve outcomes through better joint management of TB and comorbidities. High mortality in the elderly will be addressed through upgrading of r**espiratory ward facilities** in several hospitals to better manage TB cases, and promote an alliance between medical specialties, especially endocrinology/diabetes and respiratory medicine. Homes for the elderly will be mapped and residents screened for TB at entry. **Smoking cessation programmes** will be introduced into routine TB management in order to improve outcomes.

Screening and diagnostic algorithms for **ACF** need to be made more sensitive by using CXR and GeneXpert, or other, new molecular tests that are anticipated. Following the obvious success of **operational research** activities in 2019/20 (TB/DM, death analyses, gender and human rights survey, and especially the PPA) this area will be systematised and will identify those populations that will benefit from ACF, as well as aiming to review every death of a TB case, and supporting the PPM and TPT expansions.

The key gap in the **laboratory** area is the rapid provision of results and data to decision-makers which will be addressed through development of an **information system and linkage with the ePIMS**.

To improve monitoring and evaluation, the **ePIMS itself requires further development, including apps to facilitate good practice in the private sector,** and to generate useful data for decision-makers at central and district levels. Better estimates of the TB burden are urgently needed. Problematic areas of data collection such as presumptive registers and initial default will be reviewed and analysed to see if digital health interventions might offer solutions.

For all of the above, **training and focused, supportive supervision** need to be expanded to support change in the Programme.

3.3 Digital health interventions – a specific new area of work, 2021-2025

3.3.1 Improving disease surveillance through a laboratory information management system

Management of data on TB diagnosis tests, sputum smear, culture and GeneXpert is essential in surveillance of TB. Currently laboratory information regarding TB diagnosis is recorded using paper-based methods. Introducing an electronic Laboratory Information Management System (LIMS) can help proper management of this information and NPTCCD is planning to implement a comprehensive LIMS, covering the NTRL, DCCs, GeneXpert sites, microscopy centers and other government and private institutions contributing to TB diagnostics. Activities include:

4.1.2.1 Develop and implement a comprehensive LIMS for NTRL and lab network

3.3.2 Implementing an electronic presumptive TB register for government and private sector

The number of patients/TB suspects lost in between referring institutions and DCCs has been a concern and an electronic presumptive TB register has been identified as an intervention to address this. Government and private institutions (including GPs) referring TB patients to DCCs for diagnosis and registration will be able to do so using this register and can improve communication and assist tracing the missing cases. Existing hospital information management systems in the government hospitals (HIMS and HHIMS) will be integrated to the proposed system with development of additional components. The activity is included under,

4.1.1.1 Develop and implement module for referring presumptive patients from private hospitals/GP/EMO (And for all private institutions with diagnostic facilities)

4.1.1.2 Develop and implement module for referring presumptive patients from government OPDs

3.3.3 Involve GPs through a mobile app for case detection and management

General practitioners, especially the part-time private practitioners (PPPs), have been identified as an important point in the patient care pathway, and involving GPs in TB diagnosis and management through a mobile app has been identified as an intervention to improve this engagement. An app will be developed which will have functionality to refer patients for investigations, add to the presumptive register, provide feedback, DOT provision, clinical decision supporting and other information provision. This activity is listed as a component under:

4.1.1.1 Develop and implement module for referring presumptive patients from private hospitals/GP/EMO (And for all private institutions with diagnostic facilities)

3.3.4 Improving contact tracing through an app for Range PHIs

Communication of information regarding contact tracing at field with the range PHI needs to be improved to increase the efficiency of the process. To inform the range PHIs on the identified contacts and get feedback on the progress of the screening, a mobile app, integrated to the ePIMS is planned. The activity is under:

1.3.1.2.a Develop a mobile app integrated to ePIMS for range PHIs for contact screening

3.3.5 Enhanced programme management through aggregate TB Health Management Information System

The current ePIMS is lacking aggregate information analysis and visualizations which are required for program monitoring, management and decision making. Integrating the ePIMS with DHIS2 TB-HMIS was identified as the solution and improving the system with international and local HISP groups is planned. The activities are mentioned under,

4.2.1.1 Develop an MoU with HISP

4.2.2.1 Customization of the aggregate information system

3.3.6 Expanding the ePIMS to include DCC OPD patient information

Patients attending the OPD of the DCCs are currently not captured in the ePIMS. These include presumptive TB patients as well as patients with other respiratory diseases. Having these details is vital for holistic management of patients and will facilitate maintaining an improved EMR for the patient. It was planned to expand the current ePIMS to OPDs as a solution. The activity is mentioned under:

4.1.3.1 Develop and implement DCC- OPD patient information management module

3.3.7 Use of SMS and social media to improve stakeholder engagement and patient compliance

SMS campaign is planned to increase awareness among medical officers on TB diagnosis and management. Sending SMSs for patients/DOT providers is also included to improve treatment compliance. This will be integrated with the ePIMS. These activities are mentioned under:

1.2.2.1. Sending SMS reminders to all TB patients/DOT providers

3.1.1.1 Sending SMS to part time GPs and their groups with the emphasis on TB diagnosis and management (DOTs, ADRs etc.)

3.3.8 Use of Facebook, Viber, WhatsApp and other social media to increase engagement of GPs, EMAs and other healthcare workers

This was identified as an activity under:

1.3.6.3.a Formation of a WhatsApp/Viber group with Chest clinic staff, NPTCCD staff and EMA

3.1.1.6 Creating social media groups with part time and full time GPs and DTCO/MO Chest Clinics according to the updated list in the district

6.9.1.10 Use of social media for TB control activities promotion

3.3.9 Implementing eLearning modules on TB

With the pandemic situation expected to prevail for some time, eLearning methodologies have been identified as a successful method to deliver TB related training to different groups. Existing training modules will be supplemented with eLearning modules as in the following activities:

6.6.4.2. Preparation of Training Modules for Lab staff

6.8.4.3 Development of eLearning modules for training based on training manuals

6.8.5.1 Development of eLearning modules for GPs (full time and part time), with certification

4. NSP 2021 -2025, Vision, Mission, Goal and Objectives

4.1 Vision

A TB-free Sri Lanka with zero deaths, disease, and poverty caused by TB

4.2 Mission

To effectively end the TB epidemic in Sri Lanka by 2035

4.3 Goal

Achieve universal access to TB diagnosis and treatment by 2025 and to get on track to achieve the End TB targets by 2035

Target for the goal: 54,790 people successfully treated between 2021 and 2025, including over 3,000 children (<15 years).

Rationale for the goal:

In 2019 there were an estimated 14,000 new and relapse patients with TB in Sri Lanka, a figure that has changed little in the last 20 years. However, the recent ETR concluded that "the evidence, including the assessment of the impact of ageing on TB, suggests that the current estimates of incidence over-estimate the burden, and in fact the burden of TB (incidence) is likely to have been gently falling." But this NSP has to make some assumptions in order to plan for the likely number of cases. A figure of 12,400 cases per year is not unrealistic (and will be re-estimated by an inventory study in the plan period). Therefore, Sri Lanka aims to identify and notify 90% or 11,160 of these, and successfully treat 90% of them, or 10,044 annually, of whom about 600 would be children below the age of 15 years. This means doubling the child TB notification rate from 3% of total notifications to 6%.[24]

4.4 Objectives

1. **To find and successfully treat, on average, between 2021 and 2025, 10,000 cases of drug sensitive TB annually including 600 children**
2. **To successfully treat, on average, each year between 2021 and 2025, 11,600 eligible cases for TB preventive treatment (TPT);**
3. **To properly engage the private sector in TB diagnosis and care, and ensure by end 2025, 30% of all cases notified are referred from the private sector;**
4. **To strengthen monitoring and evaluation of TB control activities at all levels;**
5. **To significantly increase the quality and quantity of operational research studies on TB;**
6. **To significantly improve the organisation and management and control of TB activities.**

[24] At present child TB cases are 3% of the total case burden in the country and there is a variation of reporting across districts. Considering that the child health indicators, including the under 5 mortality rate, are on a par with developed countries, that well-established MCH services exist up to grass root level, 99% BCG vaccination coverage at birth and good practices of care seeking behaviour by mothers with sick children, it can be assumed that child TB cases would not be more than 6% of the total case burden of TB (3,287 over 5 years).

5. Interventions and activities by objective

1 To find and successfully treat, on average, between 2021 and 2025, 10,000 cases of drug sensitive TB annually, including 600 children

1.1 Routine case finding through patients referred or self-referred through the DCCs (80% of notifications).

1.1.1. Diagnosis of 90% of new and relapsed patients with a WHO-recommended diagnostic test at the point of diagnosis by end-2022

The priorities here are to expand availability of diagnosis by GeneXpert (or other rapid WRD) into hospitals and facilities, public and private, where it is currently only slowly expanding, and referring the suspected or diagnosed case to the nearest DCC. This will include expansion of the GeneXpert network and its annual throughput, including a sputum transport system. Expanded chest radiology will identify those for GeneXpert testing.

1.1.2. Universal DST by end 2022

This requires general improvement of lab infrastructure and processes, and particularly, expansion of DST at NTRL and ITLs, with purchase and maintenance of the necessary equipment, with a focus on the new molecular technologies and reducing risk of transmission in laboratories.

1.2 Routine treatment of all forms of TB, drug sensitive and drug resistant, will be intensified, better monitored and higher rates of adherence and successful completion will be obtained (DS – 90%, DR-80%).

1.2.1 Provision of a continuous supply of quality-assured first and second-line ATT and ancillary drugs.

First priority is to ensure supply through proper PSM principles, with adequate storage, distribution and QA. To increase adherence, social protection allowances, digital interventions such as SMS to patients, nutrition support and better targeting of hi-risk non-adhering groups, will all be deployed.

1.2.2 Improving drug compliance to ATT

Including SMS reminders, nutritional supplements to encourage adherence, financial social support, and regular monitoring, with capacity to provide supervised care for unsupported patients.

1.2.3 Improvement of treatment success rate among DS-TB patients.

Management of comorbidities and adverse drug reactions.

1.2.4 Improvement of treatment success rates among MDR/RR TB patients.

DOT for all on SLD treatment and supervision of DOT providers. Management of comorbidities and adverse drug reactions. Additional treatment and palliative care facilities.

1.3 Strengthening of ACF among high-risk groups

1.3.1 Screening of contacts of TB patients.

The screening algorithm will be to screen all close contacts of whatever age with CXR + symptom screen, followed by GeneXpert if either is +ve. This is consistent with national LTBI guideline, is reasonably sensitive, yet does not lead to prohibitive numbers of GeneXpert tests, with consequent expense.

1.3.2 Screening of all high-risk categories with effective diagnostic method.

The goal here is to efficiently identify cases among prisoners, and any other high-risk groups proven to have a TB prevalence of around 1% or more. This will require acquisition and deployment of portable X-ray machines with the sensitive diagnostic algorithm shown above.

1.3.3 Development and implementation of an effective system to screen for and notify TB cases among those attending diabetic clinic

1.3.4 Innovative efforts to find cases among the elderly.

This will involve screening of elderly contacts, with mobile Xray if necessary, and social science/operational research to identify populations of at-risk and accessible elderly people, eg old peoples' homes, temples, etc.

1.3.5 Innovative efforts to find cases among

a) the homeless, institutionalized, the mentally disabled, handicapped people,

b) Refugees/Resettling population and migrants

Including establishment of an outbreak response team. Work with legal and police departments to formulate uniform proper mechanism. PHIs and DTCOs will be made aware of the mechanisms for legal actions to ensure protection of public health – incarceration to prevent transmission can be ethical, but forced treatment is not.

1.3.6 Strengthening of case finding in Estate and Urban slum populations.

Coordination with the Urban and Estate Health Unit, plus engagement with the estate medical assistants and NGOs working with the slum populations.

1.3.7 Targeted interventions for people who use drugs (PWUD) in highly prevalent district (Colombo, Gampaha, Kurunegala, and Kandy districts)

Field officer supervision to ensure adherence, in coordination with the NDDCB.

1.3.8 Development and implementation of an effective system to screen for and notify TB cases among inmates in the prisons

As this is the one high risk group shown to have a population prevalence of >1% in relatively recent times, the prison population in each prison will be screened annually (mass screening). Appropriate mechanisms to identify TB patients at entry to the prisons, routine clinics for symptomatic patients and communication with chest clinics to continue follow up after release from the prison will also be set up.

1.4 Engaging traditional, complementary, and alternative medicine (TCAM) practitioners

Among efforts to ensure that all people at risk of TB are rapidly screened, the important group of Traditional Complementary Ayurvedic Medical (TCAM) practitioners will be alerted to the risk of TB among their clientele and encouraged to identify presumptive TB suspects and refer those with suspected symptoms to the DCCs for screening and diagnosis.

1.5 Intensified case finding of TB among PLHIV

This intervention will ensure that all WHO recommended TB/HIV collaborative activities for which the NPTCCD is responsible will be implemented in this NSP. Those for which the NSACP is responsible, namely intensified case finding in PLHIV attending clinics, infection control in the NSACP settings, and TPT for PLHIV, will be encouraged in the renewed dialogue with the NSACP.

1.5.1 Close collaboration with NSACP at central and regional level and integrated TB and HIV service delivery.
1.5.2 Screening of all HIV patients for TB
1.5.3 Early diagnosis of TB/HIV coinfection

1.6 Detection of childhood TB cases

The relatively low case detection of TB in children demands a special attention be given to this age group, to focus efforts on those children at risk, and to ensure recording and reporting from other child-oriented services.

1.6.1 Further continuation of the Steering Committee for childhood TB
1.6.2 Investigation of children who are more susceptible for TB
1.6.3 Massive expansion of contact-tracing in children
1.6.4 Involvement of MCH services for TB case detection and referral

2 To successfully treat, on average, each year between 2021 and 2025, 11,600 eligible cases for TB preventive treatment (TPT)

A rolling expansion of TPT is planned with HIV infected contacts of all ages and HIV negative child contacts <5 years – the current target groups - in 2021, plus contacts 5-15 years

starting in 2022, and adult contacts (>15 years and < 65 years) in 2023. Clinical risk groups e.g. those receiving kidney transplants, TNF blockers, etc., will need to be added from the beginning, but these are relatively small numbers.

2.1 Provision and distribution of diagnostics of TPT for eligible populations

2.2 Provision and distribution of drugs for TPT for eligible populations

2.3 Fully implementation of LTBI guidelines, reporting, monitoring and evaluation through identified focal points at NPTCCD and district levels

This group will include, from 2023 onwards, the "socially vulnerable" groups such as prisoners, followed by health care workers.

3 The private sector will be properly engaged in TB diagnosis and care, and by end 2025, 30% of all cases notified will be referred from the private sector.

This key objective attempts to succeed where previous plans have failed and requires high quality leadership. The key targets are the PPPs, who will be targeted with SMS. Access will be created for their patients to investigations in the public sector. Systems will be set up to record and report a presumptive case from the private sector, and simplified mechanisms (compared to the public sector) to notify a case.

3.1 Engagement of part-time private practitioners and all private facilities likely to be seeing presumptive cases

3.1.1 Innovative approaches to encourage, private facilities, all part-time private practitioners, and full-time practitioners to recognize presumptive TB cases and refer them to DCCs for investigation, e.g., easy provision of diagnostic facilities, easy notification, social media groups, letters of appreciation, etc.

3.1.2 Collaborative activities between NPT and non-NTP stakeholders

4 To strengthen monitoring and evaluation of TB control activities at all levels

4.1 ePIMS will be analysed, its defects corrected, its opportunities fully exploited, and implementation expanded.

This Plan will ensure that the ePIMS, disseminated in every district in the past three years, will now be strengthened in all districts to provide almost real-time, case-based data for decision makers at both district and national levels. Aggregate reports will be enabled, with data validation algorithms, and quality assurance built-in, indicator monitoring, flexible data analysis, visualization and dashboards added.

4.1.1 Establish an electronic presumptive TB register as a component of ePIMS.

The register will be designed for both private and government facilities.

4.1.2 Expand laboratory information module to a LIMS to improve laboratory surveillance

To enable lab result data to be available for the front-line clinician and data analysts in M&E, and also in the private sector. LIMS will be developed on ePIMS or on a compatible platform or linked through an API. This will be discussed at the initial designing stage

4.1.3 Expand the ePIMS to include Chest clinic OPD information at DCCs

4.1.4 Implementation of all of ePIMS components in each district

4.1.5 Establish information security related to ePIMS

4.1.6 Maintenance of ePIMS with additional requirements

4.2 Optimize aggregate data management through a TB-HMIS using DHIS2 platform

Through the use of the DHIS2 platform that is now widely used internationally, this Plan will take rapid steps to maximize the usefulness of the ePIMS system and fully exploit its potential to provide easily accessible data for decision-making at the district, as well as national level.

4.2.1 Establish collaboration with local / international HISP network for continuous technical support

4.2.2 Develop datasets, indicators, analytic components and dashboards in DHIS2 and establish data transfer from ePIMS

4.3 Information dissemination on TB related activities through electronic and print media

The transmission off information about TB, the control measures undertaken by the country, and the performance of the Programme itself are key to keep the public, politicians and decision-makers supportive of TB control efforts.

4.3.1 Improve and update NPTCCD website regularly.

4.3.2 Develop website/page for NTRL

4.3.3 Provision of recording and reporting formats on lab information

4.3.4 Publish annual reports of TB control

4.4 Timely recording and reporting

Timely reporting is a function of the efficiency of the Programme and will be monitored according to the activities in 4.4.1.

4.4.1 Timely submission of signed quarterly reports from districts, NTRL, PMDT coordinator, CDS

4.5 Regular assessment of programme performance

Every disease control programme requires regular advice and guidance from the outside (both national and international) to monitor achievements and performance against the

NSP and help keep the programme on track in its work. This intervention will enable that through the following activities.

4.5.1 Conduct Regular review activities at central level on TB control activities
4.5.2 Conduct Regular review activities at district levels on TB control activities
4.5.3 Conduct regular supervisions by central unit on TB control activities
4.5.4 National and international reviews

4.6 Assess true burden of TB disease in the country

The NPT will collaborate with external expertise (see TA Plan) to design and carry out an inventory study to gain a more precise and accurate assessment of the burden of TB in Sri Lanka.

4.6.1 Conduct an inventory study – to gain a better understanding of incidence

5 To significantly increase the quality and quantity of operational research studies on TB

5.1 Enhance research activities through establishing research consortium

The NPT has shown what it can achieve in operational research in the past three years. It will now build on this platform and gradually expand the reach of simple studies designed with practical goals in mind that are aimed at improving Programme performance, using, as much as possible, routinely collected data. The research generation process will be systematised and results got into practice as efficiently as possible.

5.1.1 Establish national TB research network
5.1.2 Annual research symposium on TB and other respiratory diseases
5.1.3 Maintain a research repository on TB and other respiratory diseases

6 To significantly improve the organisation and management and control of TB activities

6.1 Administrative and technical support to TB activities

To address the lack of political and governmental visibility accorded to TB, the ETR recommended a National TB Commission to be chaired by the Minister. In addition, the TB Advisory Committee, to advise the Ministry on TB policies, and the TB Technical Support Group, to support the NPT in its technical functions, are key support bodies for the NPT, and this intervention is designed to keep this support going.

6.1.1 Establish a National TB Commission, chaired by the Minister of Health (or above), to engage all sectors of society
6.1.2 Biannual stakeholder meeting chaired by Secretary of Health
6.1.3 Regular advisory committee meetings
6.1.4 Regular technical support group meetings
6.1.5 District coordinating committee meetings for TB control at RDHS

6.2 Fill 90% of all vacancies in the NPTCCD by end 2021.

6.2 to 6.5 are all aimed at ensuring the NPT has sufficient staff with the right qualifications to provide all the functions needed for successful TB control in Sri Lanka throughout the 5 years of the Plan, as well as the proper working conditions and office environment for them to function at the highest level.

6.2.1 Improve staff capacity at central level

6.3 Fill 90% of all vacancies in the districts by end of 2021.

6.4 Regular cadre revisions at provincial and national levels

6.4.1 Assess cadre requirements and create new cadre positions every 4 years at central and district levels

6.5 Programme management –Grant

6.5.1 Recruitment of new staff required for NTP

Office equipment, asset verification processes, maintenance of PMU

6.6 Programme management NPTCCD

Internet and other communications and transport are essential functions of the NPT and small investments are required to keep these functional.

6.6.1 Sustaining internet connectivity, and telecommunication facility

6.6.2 NTP fuel, maintenance and repairs of vehicle

6.7 Provision of standardised TB care

One key function of a Central Unit is to develop and keep up to date the national policies for TB control activities in order to ensure maximally effective performance. Manuals and guidelines will be prepared and disseminated mostly on the internet to enable rapid and easy revision if new technologies or techniques become available, and also to avoid printing costs. Policies will be developed to ensure that the principles of quality improvement will be applied to all the work of the NPT.

6.7.1 Develop and implement policies related to quality improvement

6.7.2 Regular updating of manuals

6.7.3 Preparation of guidelines

6.7.4 Establishment of a working group at NPTCCD level to prepare guidelines/ SOPs/ TORs

6.7.5 Provision of quality services

6.8 Capacity Building of NPT staff

The country relies on appropriately trained staff to correctly manage the TB epidemic and affected people. Since the NPT cannot select its staff according to their experience in

TB, in-service training is absolutely essential. The following measures are designed to ensure that, as soon as possible after recruitment, a staff is capable of carrying out their functions to the best of their ability.

6.8.1 Training of newly appointed staff

6.8.2 Ensure proper in-service training for the staff engaged with TB control activities at all levels

6.8.3 Improve counselling skills of chest clinic staff

6.8.4 Training material development

6.8.5 Training of non-NTP TB care providers

6.8.6 Capacity building of staff through international workshops and conferences

6.9 Social mobilization and community empowerment in TB care

These measures are aimed at promoting positive reactions, rather than negative ones, in the event that a person or family is affected by TB. The base of this work is the provision of accurate, useful information to families and communities, so that correct decisions can be made to support a person with TB to seek a diagnosis, start treatment and have their families or other contacts checked.

6.9.1 Improve health seeking behaviour among general public

6.9.2 Reduction of stigma

6.9.3 Preparation of IEC material

6.9.4 Carrying out FGD s in randomly selected population groups to assess the effectiveness of Health Education interventions

6. Budget plan summary

(The Budget Plan itself is in Excel which should accompany this document)

6.1 The costs of the plan with justifications

The total cost of this plan is US$ 29.81 million spread over the 5 years, 2021 to 2025. This amount is divided unequally between six objectives. The bulk of the expenditure (60.2%) is proposed for Objective 1, which includes all case-finding and treatment for both drug-sensitive and drug-resistant disease (Table 6) and aims for a significant increase in case finding compared to the levels seen in recent years, especially of drug sensitive disease. This is in line with the priority need to find and register more of the incident cases. Finding more cases in children is a priority within this objective, and for the first time TCAM practitioners will be involved (Table 7). A careful, logical approach to ACF is included as information becomes available that identifies the high-risk groups to be added to prisoners, contacts and PLHIV, and the more sensitive diagnostic algorithm to be used in ACF from 2021 requires the purchase of two portable X-ray machines, in the first instance.

The second highest expenditure is for Objective 6 (31.4%), which aims at improving the efficiency and effectiveness of the management and organisation of TB control activities and includes mostly the salary costs for the reinforcement of human resources at the NPTCCD strongly recommended by both the MTR and the ETR, as well as the training for the staff. More rapid development of policy guidelines and timely updates, laboratory accreditation and QA standards, as well as social mobilisation are also included.

Objective 2 (4.6% of total costs) will introduce a large-scale programme to address preventive treatment for all contacts of active TB cases, regardless of age. The costs are relatively low because the contact tracing costs are assumed to be covered in the activities of the PHIs, and not included in this NSP.

Objective 3 addresses PPM, and its budget is restricted by government regulations limiting the extent to which private sector institutions can collaborate with the public sector. The budget may be insufficient to achieve the targets and will likely bring the regulations into question – an issue the NTP will need to address during the Plan period.

Objective 4 covers monitoring and evaluation and the budget is thought to be covered in other areas, notable objective 1 and 6. Objective 5 addresses operational research for which only small amounts have been allocated.

6.2 Potential funding sources

The major funding sources identified in the budget are the GoSL and The Global Fund, which, respectively, are expected to support US$ 14.7 million, or 49% of the total budget, and US$ 5.685 million, or 19% of the total budget. The Global Fund has already allocated

about US$ 1 million for 2021, and their allocation to Sri Lanka is roughly the same for the period, 2022-2024 inclusive. The budget assumes a similar level of funding from the Global Fund for 2025. US$1.91 million, or 6.4% of the total budget, is expected to be picked up by other donors including SAARC, WHO, World Bank etc. At present there is a likely budget gap of US$ 7.543 million, or 25% of the total.

Table 7: Annual and total budgets for the 5 years of the Plan by NSP Objectives

NSP Objectives	Year 1	Year 2	Year 3	Year 4	Year 5	Grand total
Objective 1: To find and successfully treat, on average, between 2021 and 2025, 10,000 cases of drug sensitive TB annually, including 600 children	3,358,598.27	3,935,824.06	3,968,984.91	3,486,417.67	2,630,031.46	17,379,856.36
Objective 2: Objective 2: To successfully treat, on average, between 2021 and 2025, 11,600 eligible cases for TB preventive treatment (TPT)	92,594.21	90,651.13	128,689.22	141,074.85	164,762.45	617,771.87
Objective 3: The private sector will be properly engaged in TB diagnosis and care, and 30% of all cases notified will be referred (or managed?) from the private sector	19,879.33	19,993.77	20,119.66	20,258.13	20,410.45	100,661.34
Objective 4: To Strengthen the Monitoring and Evaluation of TB control activities at all levels	328,691.12	89,143.56	229,764.07	52,988.77	188,425.43	889,012.93
Objective 5: To significantly increase the quality and quantity of operational research studies on TB	17,172.78	17,172.78	18,012.46	6,527.12	6,527.12	65,412.25
Objective 6: To significantly improve the organization and management and control of TB	1,597,077.35	1,703,744.73	1,803,374.75	2,027,881.27	2,258,320.27	9,390,398.36
Grand Total	**5,414,013.06**	**5,856,530.02**	**6,168,945.06**	**5,735,147.81**	**5,268,477.18**	**28,443,113.12**

Table 8: Annual and total budgets for the 5 years of the Plan by NSP interventions

NSP Intervention	Year 1	Year 2	Year 3	Year 4	Year 5	Grand total
1.1 Routine case finding through patients referred or self-referred through the DCCs (80% of notifications)	1,430,346.94	2,159,909.08	2,093,718.68	1,721,992.44	1,341,305.93	8,747,273.07
1.2 Routine treatment of all forms of TB, drug sensitive and drug resistant, will be intensified, better monitored and higher rates of adherence and successful completion will be obtained (DS – 90%, DR-80%).	1,641,396.59	1,748,553.51	1,824,718.77	1,736,531.47	1,260,774.82	8,211,975.16
1.3 Strengthening of Active Case Finding (ACF) among high-risk groups	284,380.69	26,167.03	49,216.21	26,699.31	26,619.47	413,082.72
1.4 Engaging traditional, complementary, and alternative medicine (TCAM) practitioners	638.74	79.84	-	79.84	-	798.42
1.5 intensified case finding of TB among PLHIV	482.78	-	216.64	-	216.64	916.06
1.6 Detection of childhood TB cases	1,352.53	1,114.60	1,114.60	1,114.60	1,114.60	5,810.93
2.1 Procurement of diagnostics for LTBI	48,865.51	59,749.43	78,314.99	83,056.48	89,718.33	359,704.74
2.2 Procurement of drugs for LTBI	43,728.70	30,901.70	50,374.23	58,018.37	75,044.12	258,067.13
2.3 Fully implementation of LTBI guidelines reporting, monitoring and evaluation through an identified focal point at NPTCCD and district levels	-	-	-	-	-	-
3.1 Engagement of part-time private practitioners and all private facilities likely to be seeing presumptive cases	19,879.33	19,993.77	20,119.66	20,258.13	20,410.45	100,661.34
4.1 ePIMS will be analyzed, its defects corrected, and its opportunities fully exploited and implementation expanded	293,985.73	23,651.99	152,664.61	19,593.87	19,593.87	509,490.07
4.2 Optimize aggregate data management through a TB-HMIS	514.19	514.19	514.19	514.19	514.19	2,570.93

4.3 Information dissemination on TB related activities through electronic and print media	9,799.33	3,411.93	3,411.93	8,734.76	3,411.93	28,769.89
4.4 timely recording and reporting	-	-	-	-	-	-
4.5 Regular assessment of programme performance	24,391.87	24,145.95	73,173.34	24,145.95	164,905.44	310,762.55
4.6 Assess true burden of TB disease in the country	-	37,419.49	-	-	-	37,419.49
5.1 Enhance research activities through establishing research consortium and regularizing	17,172.78	17,172.78	18,012.46	6,527.12	6,527.12	65,412.25
6.1 Administrative and technical support for TB activities	16,748.82	16,748.82	16,748.82	16,748.82	16,748.82	83,744.08
6.2 Fill 90% of all vacancies in the NTPCCD by end 2021.	-	-	-	-	-	-
6.3 Fill 90% of District vacancies by end 2021	-	-	-	-	-	-
6.4 regular cadre revisions at national and provincial level and salaries	1,064,565.92	1,171,022.52	1,288,124.77	1,416,937.24	1,558,630.97	6,499,281.42
6.5 Programme management –Grant	126,240.52	119,550.57	117,708.74	132,490.28	120,062.44	616,052.55
6.6 Programme management NPTCCD	13,094.16	13,094.16	13,094.16	13,094.16	13,094.16	65,470.80
6.7 Provision of standardized TB care	34,858.39	12,214.07	19,112.27	12,543.43	72,508.59	151,236.75
6.8 Capacity Building of NTP staff	75,024.86	102,597.27	54,772.45	50,969.55	55,302.50	338,666.63
6.9 Social mobilization and community empowerment in TB care.	266,544.69	268,517.33	293,813.54	385,097.78	421,972.80	1,635,946.13
Grand Total	**5,414,013.06**	**5,856,530.02**	**6,168,945.06**	**5,735,147.81**	**5,268,477.18**	**28,443,113.12**

6.3 Prioritization scenarios and approaches

Interventions and activities have been prioritised, with high priority accorded to 80% of the budget, while 12% and 8% are medium and low priority, respectively (Table 8).

Table 9: Annual and total budgets according to the priority level accorded to activities

Priority	Year 1	Year 2	Year 3	Year 4	Year 5	Grand Total
High	4,359,275.63	4,269,465.74	4,675,291.04	4,585,027.01	4,548,654.32	22,437,713.74
low	613,246.61	223,139.30	722,183.96	658,691.54	257,020.12	2,474,281.52
Medium	441,490.82	1,363,924.97	771,470.06	491,429.26	462,802.74	3,531,117.86
Total	**5,414,013.06**	**5,856,530.02**	**6,168,945.06**	**5,735,147.81**	**5,268,477.18**	**28,443,113.12**

7. The Monitoring and Evaluation Plan

7.1 Introduction

This monitoring and evaluation plan is the framework that defines the indicators that will be used for assessing the level of achievement in working towards the goal(s), objectives and targets specified in the NSP. It also will:

- monitor the progress made in the implementation of planned activities and in delivery of services, usually on a quarterly basis;
- evaluate the progress made towards the intended goal(s), objectives and targets

7.2 Description (summary) of the information system for TB (adapted from the epidemiological review)

7.2.1 The Health Information context

The M & E Unit at NPTCCD is responsible for overall implementation, monitoring and evaluation of TB control activities and is manned by a medical officer, development officer and health assistant. Technical guidance is normally provided by the Consultant Community Physician (CCP) in charge of the unit, but this post is vacant at the present time.

Data are recorded for all individual TB cases at the service delivery points, using standardized TB data collection forms. All TB cases from all parts of the country should be included in national TB surveillance. Patient-level data are available at national level. The frequency of data transmission to the national level is in real time for the ePIMS, and quarterly for the paper (aggregated) recording system.

7.2.2 Tools and data flow

Sri Lanka's TB surveillance system is in transition from paper to electronic, case-based, TB case recording and reporting. As of 2020, of 26 reporting units, only Colombo has been fully transitioned to electronic forms, while in the remaining districts, paper forms are still largely used in parallel to the electronic system. Paper-based recording and national surveillance data still rely on the aggregated quarterly data reporting system.

According to the national manual of TB control, all presumptive TB patients should be recorded in "***Register of Tuberculosis suspects (TB 16)***" maintained at the out-patient departments of health care institutions. This is not well filled at present and understanding of the use of this register is lacking (MTR, 2017).

Once the sputum smear/biological material is collected, ***Request form for bacteriological examination*** *(Form* ***TB05 &TB 06****)* is completed which accompanies the biological sample sent to a laboratory. TB 05 forms are used for microscopy examination and TB 06 for Xpert, culture and DST. Laboratory results are communicated back to the requesting physician

using the same TB 05 with completed results. In addition to paper forms, laboratory test results are sometimes communicated back to requesting physician by phone to reduce the turn-around time. In each laboratory the results are entered into "***Laboratory register (TB-04)***".

Following the confirmation of patient with TB disease, a triplicate *form H-**816 A "TB notification form"*** is completed by a medical officer from the facility that confirmed the TB diagnosis. If it is in the DCC, one copy is sent to the MOH of the area of residence of the patient, a second copy is sent to NPTCCD, while the third copy is retained at the clinic. When the patient is diagnosed at a hospital two copies should be sent to NPTCCD and one copy should be retained at the relevant health facility.

Detailed TB patients' related data are captured in individual TB treatment card '***Form TB 01'*** which contains important administrative, demographic, and clinical details about the patient and his/her treatment. If DOT provision is not done at the chest clinic, the TB card is filled in duplicate. The original card is retained in the clinic and the duplicate is sent to the treatment centre where patients are provided with DOT. At the DCC all diagnosed TB patients are registered in the "District *TB register" (Form TB 03*)" and regularly updated using the TB treatment card. District TB registers are used to develop quarterly reports on case finding, sputum conversion and treatment outcome.

H816 A form is sent to relevant MoH office by the DCC to ensure,

- Case investigation and patient follow-up
- Confirmation of the address of the patient
- Contact screening, referral for in-depth examination if required and follow-up for two years.

All patients notified by H816 A should be entered in the "***TB notification register (TB18)***" maintained at MoH office and handed over to the range PHI. Once household contacts are investigated and screened, the investigation outcome details are recorded in the TB investigation register (TB 19) maintained by the range PHI at his office. In addition, details of investigation of each index case are reported back to DCC using "***Response to notification H 816 B form***".

Death occurring in a TB patient during the period of treatment is notified to the DCC using "***TB death notification form (H- 814***). Following in-depth investigation of the death event a more detailed report goes into the form ***"TB death investigation form TB 17***" and this is forwarded to the NPTCCD.

Non-adhering patients are recorded in the "***Interrupters register***", which aims to document the efforts of the heath facility directed to follow-up the patients who interrupted their treatment. "***Register of TB contacts***" is used to record the close contacts of all forms of TB.

The paper forms usually are transmitted by post. While in Colombo, only electronic version of forms is used for reporting and information transmission.

Reporting of TB control related data from DCC to NPTCCD occurs quarterly, using standard electronic spreadsheets and paper-based RR forms. "Case finding quarterly report TB 08" includes notification data with the core variables of patients enrolled previous quarter, including data on HIV co-infection. "***Sputum conversion at the end of intensive phase of treatment TB 09***" provides intermediate data on treatment effectiveness of the cohort enrolled 6 months before the report, while "***Quarterly report of TB treatment outcome TB-10 form***" summarizes the final TB treatment outcome of patients enrolled into treatment 12-15 months previously disaggregated by age group, sex, bacteriological confirmation, site of disease, and history of treatment. Summary of TB case finding, contact tracing activities, including number of OPD visits, people screened, including prisoners, drug users, number tested for microscopy and GeneXpert, and data on available human resources during the reporting quarter are reported using "***Quarterly report on program management -TB 12***". This form is used to generate national statistical reports on TB and submit data to the Global TB database.

National surveillance statistics are generated by NPTCCD M&E unit following a data validation process. Training for the surveillance staff is organized once a year, during the field supervisory visits, and whenever there is a revision in the recording and reporting framework.

7.2.3 Electronic Programme Information Management System (ePIMS)

ePIMS is a real time, case-based, electronic, surveillance system developed locally with support of the Global Fund. With access via standard web browsers. Data and back-up server are located at the Colombo chest clinic premises. The system consists of the following modules:

- Dashboard
- Aggregate and case based electronic recording and reporting system, including the following sections
    - Patient registration
    - Treatment
    - Follow-up
    - Record and reports
- Laboratory investigation module

- Drug stock information module
- Case notification and contact tracing module
- MDR-TB Patient Information module

The system was designed by a committee comprised of specialists in health informatics and technical staff of the NPTCCD, after assessing the paper-based R&R system, clinicians' needs as well as information needed for the international agencies.

The system contains many more data elements than the paper-based standard recording forms. The "Registration" section of recording and reporting module contains about 40 variables on patient demographic, social and clinical characteristics. The "Treatment" section captures data on complaints at the initiation of treatment, prescriptions and it allows the clinician to order investigations, assign the DOT center, record contacts, give information about health education and counselling, and record adverse drug events. The "follow-up" section of the R&R module captures information on complaints, weight, height, laboratory test results, chest radiography, adherence, contacts during the follow-up visits, saves the digital file of the x ray. ePIMS allows arrangement of appointments and, in case of no show, the system alerts a potential loss to follow-up. The unit of recording is the case, to each record a system generated ID is assigned along with district TB ID. However, because National Identify Card number (NIC) and passport number are also entered, a person with multiple episodes can be identified. NIC are compulsory for all Sri Lankan citizens who are 16 years of age and older.

The MOH module was designed to receive on-line H816 A notification forms, complete outcomes of contact tracing, tracing of treatment interrupters, death investigation and back referral of H816B.

The system generates the following registers (line listing of records with key characteristics): central and district TB register, notification register (MOH area), contact tracing register, treatment interruption register (district level), central and district death register. In addition, it generates quarterly standard reports of case finding, treatment, smear conversion and treatment outcome (TB 08, TB 09, TB 10) by district.

The laboratory module is designed to enter data at three levels: DCC laboratory (microscopy and Xpert), intermediate laboratory (microscopy, Xpert, culture) and NTRL (microscopy, Xpert, culture and DST). However, so far, the laboratory module was used in CCC – Colombo, while the drug store module was used only in 3 districts (i.e., Colombo, Anuradhapura and Polonnaruwa). The ePIMS in 2019 was piloted in three districts, including Colombo, Kurunegela, Matara and then as of 2020, all 26 districts were phased into the system gradually and now function at different levels. Table 9 shows the utilization of ePIMS specific modules by districts. As it is shown, Colombo is the only DCC utilizing all modules

(except “MDR module”). All districts complete at least the “registration module”.

System users include doctors (230), nurses (53), PHLT (23), MLT (26), PHI (41), pharmacists (19), development officers (2) and users in office of the MOH (73). The system is accessed using individual user accounts (usernames and passwords); role-based permissions define which data items, screens and reports different types of users can see and which data items they can modify. Data users were trained on system use; brief written training modules are available. In addition, there is a training module via google classroom.

According to the NPTCCD the system has good acceptance. It has reduced workloads, improved case notification and investigation at MOH level, and improved contact tracing and timely tracing of those with treatment interruptions.

Table 10: Completion of ePIMS components by districts

District	Registration	Treatment	Contact tracing	Default tracing	GIS	Notification	Drugs	Lab	Reporting	Death Investigation	Patient transfer	MDR
Colombo	●	●	●	●	●	●	●	●	●	●	●	●
Gampaha	●	●	●	●	●	●	●	●	●	●	●	●
Anuradhapura	●	●	●	●	●	●	●	●	●	●	●	●
Trincomalee	●	●	●	●	●	●	●	●	●	●	●	●
Galle	●	●	●	●	●	●	●	●	●	●	●	●
Nuwara Eliya	●	●	●	●	●	●	●	●	●	●	●	●
Matara	●	●	●	●	●	●	●	●	●	●	●	●
Kurunegala	●	●	●	●	●	●	●	●	●	●	●	●
Kegalle	●	●	●	●	●	●	●	●	●	●	●	●
Matale	●	●	●	●	●	●	●	●	●	●	●	●
Monaragala	●	●	●	●	●	●	●	●	●	●	●	●
Ampara	●	●	●	●	●	●	●	●	●	●	●	●
Kalutara	●	●	●	●	●	●	●	●	●	●	●	●
Kandy	●	●	●	●	●	●	●	●	●	●	●	●
Badulla	●	●	●	●	●	●	●	●	●	●	●	●
Batticaloa	●	●	●	●	●	●	●	●	●	●	●	●
Polonnaruwa	●	●	●	●	●	●	●	●	●	●	●	●
Mannar	●	●	●	●	●	●	●	●	●	●	●	●
Kilinochchi	●	●	●	●	●	●	●	●	●	●	●	●
Jaffna	●	●	●	●	●	●	●	●	●	●	●	●
Hambantota	●	●	●	●	●	●	●	●	●	●	●	●
Vavuniya	●	●	●	●	●	●	●	●	●	●	●	●
Puttalam	●	●	●	●	●	●	●	●	●	●	●	●
CSTH	●	●	●	●	●	●	●	●	●	●	●	●
Ratnapura	●	●	●	●	●	●	●	●	●	●	●	●
CEBH	●	●	●	●	●	●	●	●	●	●	●	●
Kalmunai	●	●	●	●	●	●	●	●	●	●	●	●
Mullaitivu	●	●	●	●	●	●	●	●	●	●	●	●

● No
● Yes

7.2.4 Quality assurance

Data quality control and verification is implemented at district and national levels. At district level quality control is implemented during the supervisory visits using standard checklist, which contains qualitative and quantitative measurement of data quality of the district, included cross-check between source documents and recounting of reports. In addition, quality control is implemented during the quarterly meeting as described above. And final data quality and verification is implemented at national level on quarterly basis – by comparing the reported data field. Feedback is provided to district staff if any problem is identified.

ePIMS is designed in a way that during the data entry process data validation checks are undertaken to prevent errors. For example, for most of the variables (sex, geographical location, anatomical site of disease, previous history, outcomes of treatment and other) only pre-defined options are allowed to enter that appear as a drop-down menu during the data entry. Fields are enhanced with the checks, so that only numbers are possible to enter in numeric fields and dates in date fields, however, there are no extended data quality controls in place for batch checking nor standard operating procedures.

7.2.5 Vital registration system

Sri Lanka has a well-established civil registration and vital statistics system, and registration of births, deaths and marriages are established practice in the country with high completeness rates for deaths (100%)[25]. However, the quality of data and mortality statistics is low, which compromises reliable cause of death data.

7.2.6 Challenges to be met in this NSP

All types of TB patients are included in the surveillance system across the country, but the **private sector is not involved in TB treatment**. TB notification is a legal requirement, but is weakly, if ever, enforced. The epidemiological review concluded that **patients initially lost to follow-up and those who died before the start of the treatment, and most probably RR-TB cases, are not registered** in the TB register most of the time. **Significant numbers of TB cases in prisons are missed**.

Currently used case finding and treatment outcome **reporting forms incorporate numerous un-necessary dis-aggregations**. There are **no standard forms for RR/MDR-TB recording** (individual treatment card and register, although the latter is being revamped).

The ePIMS design is more focused on clinical care of the patients and resource management rather than surveillance and monitoring of the trend of disease burden and programmatic

[25] Sri Lanka Implementation Working Group. Sri Lanka: Strengthening the quality and availability of mortality statistics. CRVS country reports. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, University of Melbourne; 2019.

indicators. Therefore, the use of **ePIMS to generate national reports and use it for the data analysis and interpretation is still limited**: the system has no dashboard of key TB indicators, and there are no built-in features to produce time-series analysis, tables, figures, maps, no features to calculate rates. There are no automated checks to assess/alert duplicate, incomplete entries, and inconsistencies. To generate annual reports, the quarterly reports should be summarized manually.

NTRL and intermediate laboratories do not yet use the ePIMS laboratory module, therefore the laboratory results remain largely incomplete. There is no automated connectivity with GeneXpert machines and GenXpert outputs have to be manually re-entered.

In the ETR there were no designated personnel at DCC and NPTCCD to oversee ePIMS data quality and provide feedback to users, however a Senior Registrar on Health Informatics and trainee MO in Health Informatics are available now to oversee the ePIMS. **No standard operating procedure/algorithm exists for data cleaning** (de-duplication, checking missing values, inconsistencies)

Despite high HIV testing coverage, about **a quarter of TB/HIV cases are missed by the TB surveillance** system, which will be addressed by expanding close collaboration between those two institutions.

7.2.7 Recommendations

<u>Strengthen coverage of the TB surveillance system ("missed" TB cases)</u>

- Ensure that presumptive TB register is consistently used in all facilities engaged in TB care and referral (urgent)
- Introduce standard recording forms for patients enrolled into second-line treatment (urgent)
- Transition from treatment register into register of people with TB. District TB register should include not only patients who are started on treatment, but all patients diagnosed with TB which are also primary lost-to-follow-up cases (those not started on treatment) and those that die prior to starting TB treatment. (urgent)
- Ensure that all prison TB cases are included into Quarterly report in programmatic management (TB 12). Strengthen on-site/remote supervision, analysis of prison TB data, followed by interpretation and provision of the feedback to prison health staff and authorities (urgent)
- Improve routine household source contact tracing and contact tracing of adult index cases focusing on potentially exposed children (urgent)
- The new TB diagnostic algorithm should be implemented everywhere. Increase Gene-Xpert testing coverage with aim to reach universal testing coverage among

diagnosed TB cases in line with Top 10 TB indicators of End-TB strategy. All GeneXpert laboratories should be integrated with ePIMS with appropriate connectivity solution (e.g., GxAlert) to facilitate smooth data transmission to requesting clinicians for faster patient follow-up and ensure remote monitoring of key performance indicators (mid-term)

- Advocate to improve the quality of vital registration system with systematic registration of cause of death by health care providers (long-term)

Strengthen quality of the TB surveillance system

- Aim for automatic integration or importation of data generated by other electronic systems (such as laboratory systems, digital Xray) into ePIMS without manual data re-entry Furthermore, remote monitoring via data connectivity solutions should be used to monitor key performance indicators of all Gene Xpert sites, which can highlight needs for troubleshooting, device repairs, targeted on- site supervision, or retraining of technicians[26] (urgent)

NPTCCD might consider to simplify the ePIMS structure by removing variables that are not used for analysis or decision-making (e.g. presenting complain and duration, contact history of TB, Mantoux, ESR, civil status, living, occupation, education, complaints, investigations) or for which many entries are "missing", suggesting they are not feasible to complete. Develop a plan to optimize and upgrade ePIMS with clear action, budget, timeline, indicators and targets in line with WHO requirements[27] for the electronic surveillance systems. Particularly, the system should be enhanced with dashboard to allow automated generation of key standard programmatic indicators. WHO has a recommended set of dashboards for programmatic management of TB control program described in "Guidance for TB programme managers" accessible from https://www.who.int/healthinfo/FacilityAnalysisGuide_TB.pdf?ua=1, which could be considered for country adaptation (mid-term)

- Introduce data validation algorithm to be run by designated staff at different level at defined frequencies with defined clean-up processes and full documentation of the results and provision of feedback to users. Introduce regular checks against samples of original paper document. Introduce reports on performance indicators, such as data completeness rates, available to all users so that staff within districts can compare their performance with others (mid-term).

[26] Global Laboratory Initiative. (2016) GLI quick guide to TB diagnostic connectivity. http://www.stoptb.org/wg/gli/assets/documents/gli_connectivity_guide.pdf

[27] World Health Organization. (2012). Electronic recording and reporting for tuberculosis care and control. WHO. http://www.who.int/tb/publications/electronic_recording_reporting/en/

- Parallel runs using paper and electronic systems may be necessary until districts achieve high coverage and consistency of electronic system (mid-term).
- As it is mandatory to transfer the medical officer in every four years, the regular training of the MOs who appoint to the DCC needs to strengthen (mid-term).
- Establish the mechanisms to follow-up the implementation of the recommendations made during the central staff supervisory visits, e.g., organization of targeted more frequent visits, follow-up the implementation of the recommendations during the subsequent supervisory visits etc (mid-term).
- Consider simplifying case finding and treatment outcome reporting forms. Unnecessary dis-aggregation could be removed from TB notification and treatment outcome reports (both electronic and paper forms) (mid-term).
- Improve collaboration with STD/AIDS control program (NSACP) by regular exchange of case-based data on TB/HIV cases at national level to ensure accurate surveillance and quality care.

Use of data and informed decision making

- National surveillance and monitoring annual report should include data on laboratory activities which are key in analysis of trends of TB burden, such as number of sputum smear microscopy testing and results, total number of Xpert tests and positivity, number of patients with Xpert test results. In addition, the trends of TB (APC) by type and geographic area should be analysis to assess unusual, sudden changes for timely investigation and addressing of issues (urgent).
- Conduct a national-level data quality audit to assess data validity, reliability and identify sources and magnitude of under-reporting. Audit should include cross-check between laboratory register and TB registers (both paper and ePIMS) to assess under-reporting, initial lost to follow-up (long-term).
- Conduct operational research using ePIMS to assess the predictors of unfavorable outcome and specifically for mortality. Operational research results will help NPTCCD to undertake targeted intervention to prevent unfavorable outcomes and on the other hand will identify ePIMS data quality issues and will boost the improvement of ePiMS data quality (long-term)
- Conduct catastrophic cost survey to monitor the progress toward the target to eliminate catastrophic cost and help design interventions toward the social protection of people affected with TB (long-term).

7.3 Aims for the M&E system, 2021-2025

Coverage of the existing surveillance system will be expanded; training will be provided to ensure proper use of the presumptive TB registers at OPD settings, and an electronic version of the register will be developed. The DCC staff will be trained to ensure that all new and relapsed cases diagnosed are registered. Prison TB data will be better managed to make sure all cases are registered. In addition to routine clincs conducted in prisons, there will be a mass screening of the prison system on regular basis. Electronic links will be set up between GeneXpert machines and alert systems such as GxAlert and the ePIMS.

The ePIMS will be expanded to facilitate gradual transition of M&E system from manual systems to a completely electronic system. Variables in the ePIMS will be modified to remove unused data for decision-making; the data gathered should be fully utilized for decision making processes. The data validation algorithms will be inserted into ePIMS, and data quality will be checked every quarter along withRegular data quality audits. All diagnostic laboratory data will be linked with ePIMS and analysed in the annual report; the annual report will be more analytical. The ePIMS' capacity to automatically produce graphs and analyses will be fully exploited to provide better data for decision-making. A system which facilitates generation of indicators would strengthen the M & E process in achieving NPTCCD objectives.

Central staff supervisory visits will be more focused on districts in need of support; systems will be set up to enable data transfer from TB and HIV databases and improve NPT/NSACP coordination.

More operational research, based on ePIMS data, will be conducted to predict unfavourable outcomes and help design targeted interventions (and help improve ePIMS data quality); a catastrophic cost survey to help design interventions to help the poor with TB will be carried out. NPT will conduct an inventory study to gain a more precise measure of TB burden in Sri Lanka.

7.4 Targets and indicators (by NSP objective)

Table 11: Indicators and targets for 2021 to 2025. W10 = WHO Top-Ten priority indicators. W10 = all three TPT indicators combined provide the WHO Top-Ten indicator No. 5. Indicators starting with "TB-", "TB/HIV-"or "MDRTB-" refer to the Global Fund indicators[28].*

Indicator type	No.	INDICATOR	Data source and responsible agency	Baseline - 2019	2021	2022	2023	2024	2025
Overall Goal: Achieve universal access to TB diagnosis and treatment by 2025 and to get on track to achieve the End TB targets by 2035									
Impact	1. TB-I2 TB I-2	**TB incidence (new & relapse) rate:** Estimated number of new and relapse TB cases occurring per 100,000 population in a specified year.	NPTCCD data, WHO for analysis (Inventory study expected to revise incidence estimates)	**14,000 cases 64/100,000**	55:100,000 =11,895[29] 21,803,445	52:100000 =11,419 21,958,249	49:100,000 =10,923 22,114,153	47:100,000 =10,486 22,271,163	45:100,000 =10,067 22,429,288
Impact	2. TB-I3 TB I-3	**Mortality rate due to TB: Estimated** number of deaths due to TB per 100,000 population in a specified year.	NPTCCD data, WHO for analysis	**770 deaths 3.6/100,000**	550 deaths[30] 2.5:100,000	500 2.3:100,000	450 2.0:100,000	400 1.8:100,000	350 1.5:100,000
Impact	3. W10	**Case fatality ratio (CFR):** estimated number of TB deaths divided by estimated number of incident cases in the same years, expressed as a percentage.	NPTCCD data, maybe WHO for analysis Annual estimation	**770/14,000 5.5%**	4.6%	4.4%	4.1%	3.8%	3.5%

[28] The Global Fund. Indicator Guidance Sheet: 26 August 2020.

[29] We have considered baseline value (2019) as 64:100,000 =14,000 cases. For 2019, estimated mid-year population was taken as 21,647,582. For 2020, the figure was taken as 59:100,000 based on the ETR report. For 2021, annual reduction of cases was taken as 4%, based on the 3.7% APC mentioned in the ETR, and the annual incidence cases were calculated. The mid-year population were calculated considering the population growth rate of 0.71% (Dpt of Census and Statistics 2011).

[30] Annual death reduction was taken as 50 deaths per year. Mid-year population as above.

Indicator type	No.	INDICATOR	Data source and responsible agency	Baseline - 2019	2021	2022	2023	2024	2025
Objective 1: To find and successfully treat[31], on average, between 2021 and 2025, 10,000 cases of drug sensitive TB annually, including 600 children.									
Output	1.1 W10 - 1 TB O - 5 TBO-1a TCP-1	**DSTB treatment coverage:** number of new and relapse cases notified and treated, divided by the estimated number of incident TB cases in the same year, expressed as a percentage.	**District registers and database, NPTCCD**	8,434/14,000 **60% (47–82)**	10,000	10,000	10,000	10,000	10,000
Output	1.1.1	**DSTB treatment coverage- Pulmonary TB (PTB):** number of new and relapse PTB cases notified and treated, divided by number of all (PTB+EPTB) new and relapse cases that were notified and treated.	**District registers and database, NPTCCD**	73%	76%	79%	82%	86%	90%
Output	1.1.2	**DSTB treatment coverage- Childhood TB:** Number of new and relapse cases in children (0-4, 5-14 years) that were notified and successfully treated, divided by number of all new and relapse PTB cases that were notified and treated.	**District registers and database, NPTCCD**	250 approx. 3%	350	450	600	600	600
Outcome	1.2 W10 - 2 TBO-2a TCP-2	**DSTB treatment success rate:** Number of notified TB patients (from previous year) who were successfully treated divided by the number of new and relapse cases that were notified and treated (in same year)	**District registers and database, NPTCCD**	85%	90%	90%	90%	90%	90%
Output	1.3.1 TBO-6 Can yield MDR TB-3	**DRTB treatment coverage** Number of RR/MDR TB cases that were notified and treated, divided by the estimated number of incident DRTB cases among bacteriologically confirmed PTB cases notified in the same year, expressed as a percentage.	**District registers and database, NPTCCD (numerator)** **WHO Country profile (denominator)**	2018 12 /27 (44.4%)	>90%	>90%	>90%	>90%	>90%

[31] Measured using indicators 1.1 and 1.2

Outcome	1.3.2 TBO-4 MDR TB-9	**DRTB treatment success rate**: Number of notified RR/MDR TB patients who were successfully treated, divided by the number of RR/MDR TB cases that were notified and treated.	**District registers and database, NPTCCD**	64%	75%	>75%	>75%	>75%	>75%
Process	1.3.3	**DRTB patients- social support coverage:** Number of notified RR/MDR TB patients who received social support during treatment over the number of RR/MDR TB cases who started treatment.	**District registers and database, NPTCCD**	>90%	90%	95%	100%	100%	100%
Process	1.4 W10 - 4 TCP-8	**Percentage of new and relapse TB patients tested using a WHO-recommended rapid diagnostic (WRD) at the time of diagnosis:** Number of new and relapse TB patients tested using a WRD at the time of diagnosis, divided by total number of new and relapse TB patients, expressed as a percentage.	**District registers and NTRL database 2019 38%**	38%	≥ 50%	≥ 60%	≥ 70%	≥ 80%	≥90%
Process	1.5 W10 - 7 MDR TB-6	**Drug-susceptibility testing (DST) coverage for TB patients** Number of bacteriologically confirmed new TB cases with DST results for at least rifampicin, divided by Total number of New bacteriologically confirmed TB cases in the same year, expressed as a percentage	**District registers and NTRL database**	>95%	>95%	>95%	>95%	>95%	>95%
Outcomes	1.6 W10 - 3	**Percentage of TB-affected households that experience catastrophic costs due to TB:** Number of people treated for TB (and their households) who incur catastrophic costs (direct and indirect combined), divided by the total number of people treated for TB.	**Special Survey – see below**	No data	<10%	<8%	<7%	<5%	<5%
Output	1.7 W10 - 8	**Treatment coverage, new TB drugs:** Number of TB patients treated with regimens that include new (endorsed after 2010) TB drugs, divided by the number of notified patients eligible for treatment with new TB drugs, expressed as a percentage.	**PMDT registers**	2019 data 15/21 (71.4%)	≥90%	≥90%	≥90%	≥90%	≥90%

Process	1.8 W10 - 9 TB/HIV-5	**Documentation of HIV status among TB patients** Number of new and relapse TB patients with documented HIV status, divided by the number of new and relapse TB patients notified in the same year, expressed as a percentage.	**District registers and database, NPTCCD**	91.2%	>98%	>98%	>98%	>98%	>98%
Process	1.9	**Chest X-ray (CXR) utilization for screening:** Number of presumptive cases receiving CXR divided by total number of presumptive cases.	**District presumptive case registers, NPTCCD central database**	40%	50%	60%	70%	>75%	>75%
Process	1.10 Yielding TCP-6a	**ACF among prisoners:** Number of prisoners screened per year using the standard algorithm of CXR + symptom screen, followed by GeneXpert if either is +ve, divided by mid-year total of prisoners.	**Numerator- NPTCCD data Denominator- Department of Prison**		50%	60	70	80	>90
Output	1.11 MDR TB-7.1	**Resistance testing to second-line drugs:** Number of confirmed RR/MDR-TB cases tested for resistance to second-line drugs, over all RR/MDR cases identified.		38.1%			>90%	>90%	>90%
Objective 2. A massive expansion of TB preventive treatment (TPT) from 290 cases treated annually to 11,600 by 2025 To successfully treat, on average, each year between 2021 and 2025, 11,600 eligible cases for TB preventive treatment (TPT)									
Output	2.1 W10*-5 TCP - 5.1	**TPT coverage in <5yrs household contacts (HHC) of B+PTB**: number of children aged <5 years contacts of people with bacteriologically confirmed TB enrolled on TPT divided by the number of children <5yrs that are HHCs of B+ PTB eligible for treatment,	**District registers and database, NPTCCD**	**44.1%**	≥ 60%	≥ 75%	≥90%	≥90%	≥90%
Output	2.2 TCP - 5.1	**TPT coverage in people >5ys HH contact of B+PTB:** Number of HHCs aged >5 yrs of bacteriologically confirmed PTB, enrolled TPT divided by number of people aged > 5yrs that are HHCs of people with bacteriologically confirmed PTB	**MOH registers District registers and database, NPTCCD**	2.2%	10%	≥ 50%	≥ 60%	≥ 70%	75%

Output	2.3 W10*-5 TCP - 5.1	**TPT coverage in people living with HIV:** Number of people newly enrolled in HIV care enrolled on LTBI treatment divided by the number of eligible people newly enrolled in HIV care	**NSACP database, District registers and database, NPTCCD**	87.3%	≥90%	≥90%	≥90%	≥90%	≥90%
Process	2.4 W10 - 6	**Contact investigation coverage:** Number of contacts of all TB patients who were evaluated for TB, divided by the total number identified, expressed as a percentage.	**District registers, MOH data, and database, NPTCCD**	**48%**	≥ 70%	≥ 90%	≥90%	≥90%	≥90%
Process	**2.4a**	**Contact investigation coverage among elderly:** Number of contacts ≥65 years who were screened for TB, divided by total number of contacts of that age who were identified.	**District registers, MOH data, and database, NPTCCD**	**Not available**	65%	75%	>90%	>90%	>90%
Process	2.5	**Contact investigation using standard algorithm**: Number of contacts of all TB cases evaluated for TB that were evaluated using CXR + symptom screen, followed by GeneXpert if either is +ve, divided by the total number of contacts evaluated.	**District registers, MOH data, and database, NPTCCD**	85%	≥90%	≥90%	≥95%	100%	100%
Objective 3. The private sector will be properly engaged in TB diagnosis and management, and 30% of all cases notified will be referredfrom there. To properly engage the private sector in TB diagnosis and care, and ensure by end 2025, 30% of all cases notified are referred from the private sector									
Output	3.1 TCP-7a	**DSTB treatment coverage-TB cases notified by private providers:** Number of new and relapse cases referred by private providers, divided by number of total new and relapse cases that were notified and treated.	**District registers and database, NPTCCD**	Not available	10%	20%	30%	30%	30%
Process	3.2	**DSTB services coverage in private sector:** Number of private facilities/private practitioners who are referring patients to DCCs/ providing DOTS divided by the total number of private facilities/private practitioners registered.	Data from Mapping of private facilities/practitioners, District registers						

Objective 4. To completely overhaul the M&E system To strengthen monitoring and evaluation of TB control activities at all levels									
Process	4.1	**Districts with accurate presumptive data:** Number of districts with an accurate electronic presumptive TB register as a component of ePIMS		0	0	2	7	12	26
Output	4.2	Development of a laboratory information system, linked to ePIMS		0	0	1	1	1	1
Process	4.3	**Cybersecurity:** Number of medium to low risk evaluations out of the laid criteria on cybersecurity assessment of ePIMS	**Annual cybersecurity assessment**	30%	40%	50%	80%	90%	100%
Output	4.4	**Timely information**: Publication of an annual report before December of following year.	**NPTCCD publications**	Yes	Yes	Yes	Yes	Yes	Yes
Process	4.5	**Timely reporting**: Number of submissions of signed quarterly reports from all districts, NTRL, PMDT coordinator, CDS, NHRD etc on time, out of all submissions due.	**NPTCCD and DCC data**	15/30= 50% per quarter	70%	80%	90%	100%	100%
Process	4.6	**Timely supportive supervisions**: Number of regular supportive supervisions by central unit on time, divided by all planned central unit supervisions	**NPTCCD and DCC data**	60% (2020)	100%	100%	100%	100%	100%
Objective 5. To significantly increase the quality and quantity of operational research studies on TB									
Outcome	5.1	The % of research studies with completed components as scheduled within the year	Research papers written up/ published	100%	100%	100%	100%	100%	100%
Objective 6. To significantly improve the organisation and management of TB activities									
Outcome	6.1	Biannual stakeholder meeting chaired at Secretary level	MoH meeting minutes	100%	100%	100%	100%	100%	100%
Process	6.2	**Improved district management**: % of quarterly districts coordinating committee meetings for TB control at	**meeting minutes**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

		RDHS level that took place, divided by the number planned							
Process	6.3	**Human Resource Management**: Number of vacancies in cadre for medical officers, consultants, nurses, PHIs and PHLTs at the NPTCCD at year end	NPTCCD Cadre		0%	0%	0%	0%	0%
Process	6.4	**Human Resource Management**: Number of vacancies in cadre at DCCs at year end	DCC cadre posts		0%	0%	0%	0%	0%
Process	6.5	**Policy development**: % of policies/guidelines written or revised annually divided by number planned	**NPTCCD/ Ministry of Health**	100%	**100%**	**100%**	**100%**	**100%**	**100%**
Process	6.6	**Staff training:** Proportion of NPTCCD staff completing a recognized and appropriate training course annually	NPTCCD/ Training Plan	100%	**100%**	**100%**	**100%**	**100%**	**100%**
Process	6.7	**Staff training:** Proportion of DCC staff completing a recognized and appropriate training course annually	NPTCCD/ Training Plan	100%	100%	100%	100%	100%	100%
Process	6.8	**% of state sector and private laboratories with satisfactory quarterly EQA reports out of total number of laboratories registered for EQA**	NTRL	100%	100%	100%	100%	100%	100%
Process	6.9	**Information dissemination/stigma reduction**: % of programmes conducted to reduce stigma, out of planned for the year	**TB 12**	100%	100%	100%	100%	100%	100%

7.5 Surveys and reviews planned for 2020 – 2023

7.5.1 An inventory study

Sri Lanka urgently needs additional evidence to more precisely estimate the annual TB incidence, especially given that the current WHO estimates seem likely to be excessive. The feasibility of carrying out an inventory study will be determined by the NPT, and hopefully this will be positive. If it is, then a study will be commissioned, designed and executed, using external technical assistance where necessary.

7.5.2 Catastrophic cost survey

The overall costs of diagnosis and treatment of TB, as well as the indirect costs of transport to clinical facilities, food and drink while traveling, and the concomitant loss of wages have been shown to reduce access to care and diminish the adherence to treatment, leading to the vicious cycle of disease leading to poverty, and poverty leading to more ill-health. Measures of social protection, and public sector financial support for the sick, have been shown to enhance access to diagnostic and treatment services, and are becoming more widely available as economies expand worldwide. As an initial step to make the case for more social support for TB patients from national resources, the WHO has advised all countries to assess the degree to which families experiencing TB are subject to financial loss and how it is adversely affecting access to good TB care and has prepared guidance on how to conduct such studies[32]. This NSP envisages such a study and planning has already begun, with the help of the SAARC. Ethical Review Committee clearance is awaited.

7.5.3 Mid-term and end of term reviews

In accordance with international guidance this NSP includes a mid-term review to be carried out in 2023 by public health experts external to the programme who have experience in TB control programmes. An End of Term review will similarly be planned for end of 2025.

7.5.4 Drug resistance surveillance

Already about 25% of the new cases are tested with GeneXpert. It is expected that this will rise to over 50% within two years across the country, if the pilot of GeneXpert as the first line diagnostic test in Gampaha district goes well. Should this 50% be achieved, then the data derived from routine cases across the country being tested for at least rifampicin resistance will probably obviate the need for a specific drug resistance survey (DRS). However, this NSP plans for a DRS as a contingency in case the 50% is not achieved.

[32] WHO, 2020. Tuberculosis Patient Cost Surveys: A Handbook. WHO, Geneva. https://apps.who.int/iris/bitstream/handle/10665/259701/9789241513524-eng.pdf?sequence=1

8. Technical assistance (TA) plan

This section of the NSP gives the Programme's requirements for technical assistance (TA). While focusing on the first two years, it nevertheless lists some of the important events requiring TA right up until 2025 (Table 11). The specification of deliverables is also laid out in Table 11 with a brief description of the profile/expertise of the consultant who will ensure the technical assistance; identification of the entity/officer responsible for organising the intervention or activity; and the timeframe for carrying out the TA. The costing details, namely the estimated costs of the TAs are in the budget plan, together with the source of funding, where available.

Table 12: Technical assistance required, by objective and activity, with expertise required. Costs and funding source are in the Budget Plan

Intervention/ Activity	Deliverable	Responsible Unit/Officer	Type and timing of TA Expertise required	Source of TA	Dates and Duration	Other issues
Objective 4. To completely overhaul the M&E system						
4.5.4.1 Conduct epidemiological review	4.5.4.1.a Epidemiological review and analytical report	M&E Unit	External & local consultancy in mid-2023 & 2025. To include training component for 1-2 local epidemiologists *Expertise: Proven experience in TB epidemiology and preparation of analytical epidemiological reviews. Good, proven, writing and training skills.*	International + Local	June 2023 4 weeks April 2025 4 weeks	In country mission preferred
4.5.4.2 Conduct program review mid-term and end-term	4.5.4.2.a Program review at mid-term and at end-term, with reviewed reports	Planning unit	External & local consultancy in mid-2023 & 2025 *Expertise: Team Leader with proven experience in TB reviews, diplomatic and writing skills. 2-3 local experts with programmatic TB control experience and relevant experience for the review, depending on priorities at the time. For 2025, 2-3 additional external experts with proven experience in the priorities to be addressed.*	International + Local	August 2023 4 weeks June 2025 4 weeks	In country mission preferred
4.6.1.1 Conduct an inventory study to gain a better understanding of incidence	4.6.1.1.a An inventory study performed with more precise estimates of annual incidence	M&E unit	External consultancy to support local team protocol development in 2021 *Expertise: proven experience in inventory studies and proven capacity to lead a local team.*	International	2022 January 3weeks protocol preparation 3 weeks data analysis, report writing	In country mission preferred

Objective 5. To significantly increase the quality and quantity of operational research (OR) studies on TB						
6.7.1 Develop and implement policies related to quality improvement	6.7.1.1 An Infection Control Guideline applicable to all levels	Con. Microbiologist	Local consultant to work with responsible unit in NPT. *Expertise: experience in airborne infection control assessments in clinical settings as well as labs, full understanding of WHO and CDC guidance on TBIC.*	Local consultancy by College of Microbiologists.	2021 February 6 weeks	In country mission preferred
6.7.2 Regular updating of manuals	6.7.2.1 A Revised National TB Manual incorporating major new advances	Planning unit	International and local Technical Assistance (NSP) *Expertise (international): proven experience in writing high quality programme manuals for TB, proven writing and diplomatic skills – and training skills if you want them to teach local staff.*	International + Local	2025 March 6 weeks	In country mission preferred
6.7.2 Regular updating of manuals	6.7.2.2 PMDT guideline e-version	PMDT coordinator	International and local Technical Assistance (PMDT) *Expertise (international): proven experience in PMDT and in writing good quality PMDT guidelines. Must be up-to-date with WHO and other international guidance. Proven writing and diplomatic skills – and training skills if you want them to teach local staff.*	International + Local	2025 March 6 weeks	In country mission preferred
6.7.2 Regular updating of manuals	6.7.2.3 Revised Laboratory manual	Con. Microbiologist and the lab team	International and local Technical Assistance *Expertise (international): proven experience in TB microbiology and running a TB lab, writing good quality lab guidelines. Must be up-to-date with WHO and other international guidance. Proven writing and diplomatic skills – and training skills if you want them to teach local staff.*	International + Local	2021 February 6 weeks	In country mission preferred
6.7.3 Preparation of guidelines	6.7.3.1 Revised EPTB management guidelines e version	Training unit	6.7.3.1.a Local Technical Assistance (EPTB) *Expertise: proven experience in clinical work in TB and in writing good quality guidelines that also address the public health needs. Must be up-to-date with WHO and other international guidance. Proven writing and diplomatic skills.*	Local	2022 March 6 weeks	-
6.7.3 Preparation of guidelines	6.7.3.2 Revised paediatric guidelines e version	High-risk group unit	6.7.3.2.a Local Technical Assistance (Paediatric guidelines) *Expertise: proven experience in clinical paediatrics including TB, and in writing good quality guidelines that also address the public health needs. Must be up-*	Local	2024 March 6 weeks	-

			to-date with WHO and other international guidance. Proven writing and diplomatic skills.			
6.7.5 Provision of quality services	6.7.5.1 International accreditation of NTRL to ISO 15189:2012 standard	Con. Microbiologist and the team	TA for review of laboratory methodologies and review of the documents prepared for accreditation by NTRL as per the ISO 15189 and to carry out a gap analysis by SNL before applying for ISO 15189:2012 certification *Expertise: Highly experienced microbiology lab manager with experience in TB-lab accreditation. Must be up-to-date with ISO 15189:2012 standards and WHO TB diagnostic methods. Proven writing and diplomatic skills.*	International	2021 June 6 weeks	-
6.7.5 Provision of quality services	6.7.5.2 Quality assurance guidance for microscopy services, culture laboratories and GeneXpert sites	Con. Microbiologist and the team	Revision of quality assurance protocol for new MC and development and implementation of proficiency testing for culture and molecular diagnostics including Genexpert testing *Expertise: Highly experienced consultant microbiologist with experience in preparation, storage and distribution PT and monitoring and evaluation of quality assurance of culture and molecular methods under the national TB laboratory network. Must be up to date with WHO and other international guidance*	International	2021 February 4 weeks	-
6.8.2 Ensure proper in-service training for the staff engaged with TB control activities at all levels	6.8.2.17 PMDT training - by international consultant	PMDT coordinator	PMDT training - by international consultant - One week *Expertise: experience with PMDT in a national setting and with r-GLC missions. Proven teaching skills.*	By International consultant coming for GLC mission	2021 May 2023 May One week	Virtual meetings if physical travel is not feasible
6.8.4 Training material development	6.8.4.2. Training Modules for Lab staff	Con. Microbiologist and the training Unit	Preparation of Training Modules for Lab staff *Expertise: TB lab management experience in a national setting. Proven writing and teaching skills.*	National	2021 May 4 weeks	Virtual meetings if physical travel is not feasible

6.8.4 Training material development	6.8.4.3 eLearning modules for training based on training manuals	Training unit	Development of eLearning modules for training based on training manuals *Expertise: Proven experience in e-learning module development from hardcopy guidelines. Proven writing and teaching skills. Experience in TB training material development.*	Local	2021 March 6 months	-

9. Emergency Preparedness Plan

9.1 Nature of likely emergencies

In the past two decades Sri Lanka has experienced civil disturbance, localised to the North and North East of the country, a tsunami that came across the Indian Ocean and affected primarily the Eastern and Southern seaboard, terrorist atrocities, and, currently, a global pandemic that has truly affected the entire country. Sri Lanka therefore is prone to natural disasters as well as politically inspired attacks and global health threats. However, the country also has considerable experience in the mechanisms required to maintain health programmes, and TB programme service delivery, under demanding conditions.

As well as the kind of emergencies that it has already experienced, it is worth considering what could also happen in Sri Lanka in the near future, so as always to be ready for the unexpected.

9.1.1 Cyber-security

Many states, public institutions and private companies have recently reported cyber-security attacks on their information systems by State and non-State actors. While most of these are aimed at stealing data of various kinds for state security or commercial gain, some have been ransomware attacks that have paralysed elements of the health sector until either ransom have been paid, or the threats removed by technological means 33. The types of malware used in attacks on US and Canadian hospitals in October 2020 included the well-known Trickbot trojan and Ryuk ransomware as the primary hacking tools involved in the attacks. Security analysts at private companies say that the activity is tied to the Russian criminal gang sometimes called UNC 1878 or Wizard Spider. Ransomware actors have for years targeted hospitals, because locking up a health care organization's digital systems can threaten patient care and create maximum urgency to pay up and recover. More recently, both rate of infections against the industry and the demands themselves have exploded. While attacks of this kind are generally against rich institutions in rich countries, attacks in less rich countries such as Thailand have occurred[34].

Recent attacks have taken many forms (Table 12).

[33] Wired. **Ransomware Hits Dozens of Hospitals in an Unprecedented Wave.** 29 October 2020. https://www.wired.com/story/ransomware-hospitals-ryuk-trickbot/#:~:text=A%20fresh%20wave%20of%20ransomware,cases%20spike%20across%20the%20US.&text=The%20alert%20points%20to%20the,tools%20involved%20in%20the%20attacks. Accessed 16th December.

[34] The World Bank. How COVID-19 has exposed cyber-security risks in the health sector. http://pubdocs.worldbank.org/en/989431596041514122/July-2020-Digital-Development-Thought-Leadership.pdf Accessed 16th December.

Table 13: Types of cyber-attacks recently deployed against health facilities of various kinds in several countries

TYPE OF ATTACK	DEFINITION
Malware	A form of malicious code that is designed to damage or disrupt a computer system, or to gain unauthorized access into a system. Malware can manifest in a variety of form, the most common being viruses, worms, Trojan horses, and spyware.
Phishing & Spear Phishing	An attempt by perpetrator to acquire sensitive data through fraudulent solicitation - most often using emails and websites. Spear phishing is a more targetted version of phishing that involves well-researched victims, social engineering, and personalized messages to gain trust.
Ransomware	A type of malware intented to block access to a computer system, files, or data until a ransom is paid
Denial-of-Service (DoS) & Distributed Denial-of-Services (DDoS)	Prevent authorized access to resources and content for a certain amount of time. For certain time-critical operations - which are ubiquitous throughout healthcare - even a delay lasting milliseconds can yield significant damage.
Malicious Information Campaigns	- **Misinformation:** Information that is false but not created with the intention of causing harm. - **Disinformation:** False information that is intentionally used to cause harm. - **Mal-information:** Information based on reality that is used to cause harm.

Source: The World Bank.

Recently, phishing campaigns have focused on companies and organizations associated with GAVI, the Global Alliance for Vaccines and Immunisation, particularly the Vaccine Alliance's Cold Chain Equipment Optimization Platform. The motive so far appears to be to obtain information, but criminal intent down the line, e.g., ransomware attacks on critical parts of the vaccine cold-chain, or tax frauds, are anticipated. Seemingly any part of the cold chain was within bounds for the attackers. The World Bank has warned: "Significantly more investment and sectoral focus is needed to raise awareness and build cybersecurity capacity, particularly in developing countries."

The international policing agency, Interpol, has issued a 'Purple Notice' warning to police in 194 countries about the increasing threat to healthcare facilities during COVID-19.

9.1.2 Population displacement

As well as civil war, population displacement can occur as a result of radiation threats, or, more likely, tsunamis and tropical cyclones. More than 75,000 people were evacuated ahead of Cyclone Burevi earlier in December 2020 in Sri Lanka, as a result of warnings by the US Navy's Joint Typhoon Warning Centre. However, such evacuations are generally short-lived and should not pose much of a problem for TB services, unless severe and widespread

damage to buildings and infrastructure occurs. But such damage is becoming increasingly frequent with global warming, as occurred in November 2020 in Providencia in the Caribbean, where 95% of buildings were completely destroyed or rendered unusable by Hurricane Iota.

Recently, the Government of Sri Lanka approved the Atomic Energy Authority of Sri Lanka to conduct a pre-feasibility study of using nuclear energy as a viable option beyond 2020 for power generation. Nuclear power station dysfunction in Sri Lanka is therefore not a current risk, nor likely to become so in the period of the Plan. However, there are two active atomic power stations in nearby India, Chennai and Kadankulam, although none of the major winds in the region appears to blow in an Easterly direction from the mainland to Sri Lanka. Nonetheless while population evacuation is the usual response to widespread radiation threats, it has only been used on three occasions, namely after the explosions at Three Mile Island, US, Chernobyl, Ukraine and Fukushima, Japan, and was localised to the site around the power stations.

Other potential causes of population displacement include further outbreaks of civil unrest or civil war in Sri Lanka, although the peace following the defeat of Tamil separatists in 2009 has remained stable. Theoretically, an influx of refugees due to adverse events in India could occur but has never happened in recent times.

9.2 Principles of response

9.2.1 General measures

9.2.1.1 The NPTCCD should take leadership and responsibility for developing strategic TB emergency preparedness measures, including those that re-inforce cyber-security.

9.2.1.2 An NPTCCD focal point for emergencies should be designated. He/she should seek out and collaborate with units in the health sector responsible for emergency preparedness.

9.2.1.3 TB services should be integrated into the acute and chronic phases of the health sector plan for complex emergencies (assuming there is one) through a set of interventions, such as designating NPT participation in the emergency preparedness meetings (usually this would be the focal point), involvement of stakeholders around specific issues, e.g. tracing of patients, cross-border activities (where relevant), as well as ensuring that TB is included in national emergency preparedness guidelines and emergency plans.

9.2.1.4 An “Emergency Response Plan” of NPTCCD should be prepared in the event of serious population displacement, epidemic, or other disaster. Roles for key Central Unit staff should be described, and key telephone numbers listed. DTCOs should be designated the focal points for response in the districts, and 1-page laminated response plans prepared by each district in the event that a significant proportion of the population will be displaced from that district, as well as for a significant inward displacement of people.

9.2.2 Cyber-security

The World Bank warns that "for developing countries, including low-and medium-income economies, the COVID-19 pandemic has dramatically underscored the need to prioritize building cybersecurity capacity within the health sector and represents a rare opportunity to establish cybersecurity more broadly as a core element of the 21st Century's development agenda."

Measures recommended include ensuring that there is cyber-security expertise within the health sector and establishing information sharing and analysis for the health sector to provide centralized information on the latest threats. This also helps coordinate expertise, as well as response support.

Vulnerability scans and penetration testing of hospitals and healthcare centres' digitally connected systems and IT infrastructure, including medical machines and devices as well as cloud computing platforms and both mobile and web-based telehealth applications are recommended. Health sector-focused awareness campaigns which include information about general cybersecurity and vulnerabilities for healthcare workers as well as citizens, are also advised, as well as awareness campaigns on how to identify and respond to different types of malicious information campaigns. Integrating best practices for privacy standards around health and medical data with best practices in the health sector are advised but may not yet be so important for Sri Lanka. But this will become increasingly important as telework and telehealth platforms, as well as hospital and health centre information and communication infrastructure become increasingly reliant upon digital technologies in the coming years. Forging public-private partnerships with cybersecurity firms to compliment public sector responses is also suggested by the World Bank.

While many of these issues and recommended solutions appear may be inappropriate for the NPTCCD right now, the development of ePIMS and the proposed expansion of digital health interventions to address TB related problems means that risk of exposure to cyber-threats is increasing already and will continue to do so over time.

The priority therefore is to examine the ePIMS' exposure to cyber-problems of all kinds and take measures to eliminate the risk, along the lines of those recommended by the recent "*Global Fund's Cyber-Security Review of NPTCCD's ePIMS*".

Next, all new digital health interventions require a similar cyber-security assessment and measures introduced to minimise risk.

9.2.3 Population displacement (whatever the cause)

2.2.1 Priority will be given to the identification of patients whose treatment has been interrupted and to the re-establishment of TB treatment for these patients. DTCOs will take

the lead for their patients who have been re-located, in cooperation with the DTCO in the new location. DTCOs will ensure that treatment registers are backed up and accessible under emergency conditions, or available from the internet. TB drug supply and management and monitoring systems will be integrated into the health sector response to the emergency.

2.2.2 The monitoring and evaluation system will be re-established in the event the emergency looks likely to require displacement beyond one or two weeks.

2.2.3 The NPT focal point for emergency preparedness will take responsibility for ensuring the monitoring of the displaced populations, and for ensuring that the responsible DTCOs are adequately supported in their tasks.

10. Activity Plan and Operational Plan

Table 14: Activity Plan

Key Interventions	Activity	Sub Activities	Detailed activities
Objective 1: To find and successfully treat, on average, between 2021 and 2025, 10,000 cases of drug sensitive TB annually, including 600 children			
1.1 Routine case finding through patients referred or self-referred through the DCCs (80% of notifications)	1.1.1 Diagnosis of 90% of new and relapsed patients with a WHO recommended diagnostic test at the point of diagnosis by end-2022	1.1.1.1 Construction of cough booths in selected hospitals and chest clinics after needs assessment	1.1.1.1.a Construction of cough booths in selected hospitals and chest clinics after needs assessment
		1.1.1.2 Expansion of Microscopy services after needs assessment	1.1.1.2.a Construction of Microscopy centres after needs assessment
			1.1.1.2.b Purchase of microscopes
		1.1.1.3 Transportation samples a) from collection centres to Microscopy centres b) from chest clinics to ITLs/NTRL c) from Chest clinics, hospitals to GeneXpert sites	1.1.1.3.a Purchasing vaccine carriers/cold boxes
			1.1.1.3.b Purchasing of Mini fridges for collection centres
			1.1.1.3.c Courier charges for transportation out of district-Local
			1.1.1.3.d Purchasing of three wheelers to chest clinics.
			1.1.1.3.e Purchasing of reagents and consumables for microscopy
			1.1.1.3.f Purchase of sputum Cups
		1.1.1.4 Improved utilization of GeneXpert	1.1.1.4.a Adequate supply of (normal and ultra) Xpert cartridges
			1.1.1.4.b annual Maintenance repair and calibration fee for Xpert machines
			1.1.1.4.c Purchasing of GeneXpert machines (one GeneXpert machine to district chest clinic with high case burden and to replace old machines).
			1.1.1.4.d Replacing of modules of Xpert

			machines
			1.1.1.4.e Renewal of service contracts for GeneXpert machines on time
			1.1.1.4.f Purchasing of safety cabinets
			1.1.1.4.g Utilization of GeneXpert as the first line diagnostic test for all presumptive TB patients - pilot study in Gampaha
		1.1.1.5 Improved utilization of Xray	1.1.1.5.a Provision of Digital Xray facilities to chest clinics
			1.1.1.5.b Renewal of contracts for digital Xray maintenance
		1.1.1.6 reduce under reporting of initial loss to follow up cases, deaths before the initiation of treatment	1.1.1.6.a Maintenance and timely & complete update of laboratory registers in all laboratories where TB diagnosis is made
			1.1.1.6.b Enforcement of mandatory notification by H816 A from all institutions involve in TB diagnosis
	1.1.2 Universal DST by end 2022	1.1.2.1 Improve infrastructure in laboratories	1.1.2.1.a Expansion of NTRL with molecular section, MOTT identification section, EQA section, record room, Training Unit and storage facilities
			1.1.2.1.b Courier charges for transportation of samples SNRL – (International)
			1.1.2.1.c Provision of critical equipment - generator, cold centrifuge
			1.1.2.1.d Construction and equipment provision for ITL with BSL3 facilities (To perform DST) - Anuradhapura
			1.1.2.1.e Construction of a new ITL in Batticaloa or Ampara
			1.1.2.1.f Supply of equipment to newly constructed ITLs
			1.1.2.1.g Purchasing of 2 MGIT -320 machines to ITLs
			1.1.2.1.h Establishment of whole genome

			sequencing/ SANGA sequencing facility at NTRL
		1.1.2.2 Diagnosis of 90% of MDR/RR TB patients with a WHO recommended diagnostic test at the point of diagnosis by end-2022	1.1.2.2.a Purchase of Solid culture consumables and DST
			1.1.2.2.b MGIT culture consumables and DST
			1.1.2.2.c Procurement of an additional LPA machine to the NTRL
			1.1.2.2.d Supply of laboratory consumables for LPA/ GeneXpert
1.2 Routine treatment of all forms of TB, drug sensitive and drug resistant, will be intensified, better monitored and higher rates of adherence and successful completion will be obtained (DS – 90%, DR-80%).	1.2.1 Provision of continuous supply of first line, second line ATT and ancillary drugs	1.2.1.1 Estimation and procurement of provision of continuous supply of first line, second line ATT and ancillary drugs	1.2.1.1.a Second Line Drugs
			1.2.1.1.b GLC fee for second line drugs
			1.2.1.1.c First line drugs (FDCs)
			1.2.1.1.d First line drugs (individual Drugs)
			1.2.1.1.e Procurement of ancillary drugs including other respiratory drugs
			1.2.1.1.f Procurement of Surgical items
		1.2.1.2 Provide proper storage of drugs at all levels	1.2.1.2.a AC facilities to drug stores central and other
			1.2.1.2.b Storage facilities for DOT centres
		1.2.1.3 Distribution of ATT to drug stores of chest clinics	1.2.1.3.a Providing a proper vehicle with AC facilities.
		1.2.1.4 Drug Therapeutics Committee meeting	1.2.1.4.a conduct quarterly drug therapeutic committee meeting.
		1.2.1. 5.Drug Distribution of 26 districts	1.2.1.5.a Quarterly distribution of drugs to DCCs from CDS
			1.2.1.5.b Distribution of drugs to DOT providers/centres from DCCs
		1.2.1.6. Ensure Quality assurance of drugs by NDQAL	1.2.1.6.a Preparation of a plan for random quality check of ATT
			1.2.1.6.b Regular random checking for drug quality from each batch at each level
	1.2.2 Improving drug compliance to ATT	1.2.2.1. Sending SMS reminders to all TB patients/DOT providers	1.2.2.1.a Stakeholder meetings for content development for SMS reminders on

			treatment adherence to TB patients/DOT providers
			1.2.2.1.b Procurement/ cost of SMS portal for SMS on treatment adherence to TB patients/DOT providers
			1.2.2.1.c Development of SMS notification component in ePIMS and integrate with the SMS platform
		1.2.2.2 Provision of a nutritional supplement to TB patients	1.2.2.2.a Thriposha supplementation at each month for TB patients
			1.2.2.2.b Food stamps for selected patients according to the nutritional assessment
			1.2.2.2.c Develop tool for nutritional assessment and referring system for undernutrition
		1.2.2.3 Sufficient uniform social services allowance to all needy patients	1.2.2.3 a Advocacy meeting with Ministry of Social Services for provision of sufficient allowance to all needy patients
		1.2.2.4. Regular monitoring of treatment interruption	1.2.2.4.a Identify at risk groups for treatment interruption in the districts at the point of registration using a check list
			1.2.2.4.b Identify an Officer – Focal point with ToR- (MO/PHI/NO) at district chest clinic with loss to follow up rate above the national figure (4%) for close and more frequent monitoring
		1.2.2.5 Refurbishment of underutilized ward in a peripheral hospital for patients who needs long term care to ensure the drug compliance and proper management.	1.2.2.5.a Refurbishment of wards for long term care of TB patients in districts following a situational analysis
	1.2.3 Improvement of treatment success rate among TB patients	1.2.3.1. Maintenance of non-evaluated patients below 5%	1.2.3.1.a Preparation of a guideline for assigning treatment outcome
		1.2.3.2 Management of adverse drug reactions to ATT	1.2.3.2 a Monitoring of ADR through a checklist at each visit and mandatory

			reporting of major side effects
			1.2.3.2.b Maintenance of emergency facility at each chest clinic
		1.2.3.3 Management of comorbidities and TB complications	1.2.3.3.a Preparation and implementation of guidelines/circular on mandatory investigations at the time of first visit and follow up visits.
			1.2.3.3.b Establishment of chest wards with High Dependency Unit (HDU)
	1.2.4 Improvement of treatment success in MDR /RR TB	1.2.4.1 Provision of Directly Observed treatment (DOT provision) for all patients who are on 2nd line Treatment	1.2.4.1.a Provision of daily Supervised treatment by a reliable and accountable DOT provider to all patients on 2nd line treatment.
			1.2.4.1.b Regular (at least once a week) supervision of DOT providers of MDR-TB/RR-TB patients by PHI
		1.2.4.2 Monitoring and Timely management of adverse reactions to second line drugs	1.2.4.2.a Monitor ADR of MDR-TB/RR-TB patients according to the criteria provided and report to PMDT coordinator quarterly in the given format
		1.2.4.3 Registration and Follow up of RR TB patients who are not on 2nd line treatment.	1.2.4.3.a Development of a protocol to follow up RR-TB patients who are not on second line treatment
		1.2.4.4 Monitoring and Follow up by PMDT Coordinator.	1.2.4.4.a Regular PMDT meetings to discuss the management and progress of RR/MDR TB patients.
			1.2.4.4.b Regular follow up of MDR/RR patients
			1.2.4.4.c Home visits to selected MDR/ RR TB patients by PMDT coordinator
		1.2.4.5 Additional treatment facility for RR/MDR TB patient management	1.2.4.5.a Inward treatment facility for MDR established in a district selected by laid parameters
		1.2.4.6 Palliative care facility for TB patients for required patients with MDR/XDR	1.2.4.6 a Establish 2 bed palliative care facility at NHRD

1.3 Strengthening of Active Case Finding (ACF) among high-risk groups	1.3.1 Screening of contacts of TB patient	1.3.1.1 Screening, of all household & close contacts of all TB patients with Xray and GeneXpert within 2 weeks of diagnosis of the index case where indicated.	1.3.1.1.a Printing, distribution & Implementation of Standard Operating Procedures (SOPS) for contact tracing in all districts
			1.3.1.1.b Printing and dissemination of contact tracing formats
		1.3.1.2 Implement a mobile solution for contact screening data management at field level	1.3.1.2.a Develop a mobile app integrated to ePIMS for range PHIs for contact screening
			1.3.1.2.b Training of range PHIs on contact tracing mobile app
	1.3.2 Screening of all high-risk categories with effective diagnostic method.	1.3.2.1 Supply of portable Xray machines to districts to carry out active screening in hard-to-reach areas/hard to reach populations	1.3.2.1 a. Purchase of 2 portable Xray machines to conduct ACF in selected districts on pilot basis
		1.3.2.2 Formulate and implement a sensitive diagnostic algorithm which includes Xray and GeneXpert	1.3.2.2.a Preparation of the diagnostic algorithm for high-risk groups & printing
	1.3.3 Development and implementation of an effective system to screen for and notify TB cases among those attending diabetic clinic	1.3.3.1 Formulating and implementation of an algorithm for diabetic patients.	1.3.3.1 a Preparation of the diagnostic algorithm to screen diabetic patients
			1.3.3.1.b Discussions with Endocrinologists and physicians on referral and back-referral pathways
			1.3.3.1.c Printing of referral books for diabetic clinics
	1.3.4 Innovative efforts to find cases among Elderly	1.3.4.1 Identification and screening of home bound elderly for TB	1.3.4.1.a Screening of home bound elderly contacts of TB patients using X rays during home visits
			1.3.4.1.b Establish a mechanism to collect sputum samples from home bound elderly for X-pert through locally active field health officers
			1.3.4.1.c Provision of transport to elderly with the support of locally active NGOs / CBOs
		1.3.4.2 Use of religious places (village	1.3.4.2.a Screening programmes for

		temple/ church/ mosque) where usually elderly people gather to carry out screening using mobile/portable X-ray	elderly using mobile x ray
		1.3.4.3 Screening of Institutionalized Elderly	1.3.4.3.a. Mandatory screening with Xray at the time of admission to elderly homes
	1.3.5 Innovative efforts to find cases among a) The homeless, institutionalized, the mentally disabled, handicapped people, b) Refugees/Resettling population and migrants	1.3.5.1 Identification and prioritization of high-risk pockets and congregated settings in respective districts and annual updating of it.	1.3.5.1.a Formulating a guideline/ check list to identify high risk settings & printing and prioritization of high-risk groups according to the checklist
		1.3.5.2 Periodical screening of prioritized localities	1.3.5.2.a Screening of hard-to-reach populations using revised guidelines for ACF
		1.3.5.3 Screening of whole localize setting of homeless people/inmates of congregate setting with less priority on detection of a single case. (Outbreak investigation)	1.3.5.3. a Establishment of an outbreak response team to screen contacts in the event of an outbreak (a single case) among homeless/ inmates of congregated settings.
			1.3.5.3.b Development of an outbreak response protocol to screen contacts in the event of an outbreak (a single case) among homeless/ inmates of congregated settings & printing
	1.3.6 Strengthening of case finding in Estate and Urban slums population	1.3.6.1 Coordination and participation of Urban and Estate health Unit /Plantation Trust/	1.3.6.1.a Representation of urban and estate sector at PPM meetings (4 meetings as virtually/ physically)
		1.3.6.2 Establishment of peer groups to educate and motivate patients at estate sector to improve healthcare seeking behaviour	1.3.6.2.a Establishment of peer groups per estate to educate and motivate patients to improve healthcare seeking behaviour
			1.3.6.2.b Preparation & printing of 5-page document for peer groups (including check list for assessment) for estate sector
		1.3.6.3 Engagement of Estate Medical Assistants (EMAs) for referral of patients	1.3.6.3.a Formation of social media groups with Chest clinic staff, NPTCCD staff and EMA
			1.3.6.3.b Increase the frequency of branch clinic visits based on the patient load

			assessment, and HR capacity at each district
		1.3.6.4 Engagement of NGOs/CBOs active in Urban slum areas for referral, provision of transport facilities, contact tracing and DOT provision of TB patients.	1.3.6.4 a Develop a check list to record NGO/ CBO activities in relation to their engagement in TB care in urban slum areas
		1.3.6.5 Engagement of local government institutions (Municipal/Urban councils) and field workers for referral, contact tracing and DOT provision of TB patients.	1.3.6.5.a Annual advocacy meeting with local government agencies to improve their engagement in TB care provision
	1.3.7 Targeted intervention for people who use drugs in the highly prevalent districts (Colombo, Gampaha, Kurunegala, Kandy districts)	1.3.7.1 Ensure proper treatment adherence of people who use drugs	1.3.7.1.a Identification of treatment interruption among people who use drugs, case by case, and discussion at the monthly chest clinic conference by the PHI
			1.3.7.1.b Use of NDDCB field officers for DOT provision and tracing treatment interrupters among people who use drugs
		1.3.7.2 To build/ strengthen rapport between chest clinic staff and NDDCB field officers	1.3.7.2.a Honorarium for NDDCB officers for attending chest clinic conferences
		1.3.7.3 Use of field officers for contact tracing	1.3.7.3.a Use of NDDCB field officers for contact tracing of TB patients among people who use drugs
		1.3.7.4 Screening of detention centres for Youth offenders	1.3.7.4.a Annual screening of detention centres for youth offenders
	1.3.8 Development and implementation of an effective system to screen for and notify TB cases among inmates in the prisons.	1.3.8.1 Enhance the entry screening of all prisoners.	1.3.8.1.a Discussions at ministry level on ensuring the entry screening at prisons
			1.3.8.1.b Conduct entry screening of all inmates according to revised ACF guidelines
		1.3.8.2 Conducting of routine clinics in the prison for symptomatic patients	1.3.8.2.a Routine clinic at prison once/ twice a week depending on the number of prison inmates
		1.3.8.3 Mass screening programme for all prisoners	1.3.8.3.a Mass screening programme for all prisoners using mobile Xray
1.4 Engaging traditional,	1.4.1 Collaboration with Traditional	1.4.1.1 Involvement of representatives	1.4.1.1.a Representation of ayurvedic

complementary, and alternative medicine (TCAM) practitioners	Complementary Ayurvedic Medical (TCAM) practitioners to identify presumptive TB suspects	from Ayurveda Department, Homeopathy, University of Ayurveda	sector at PPM meetings: 4 meetings (virtual/ physical)
			1.4.1.1.b Representation of ayurvedic sector at district coordination committee meetings.
		1.4.1. 2 Incentives for Ayurveda practitioners who refer patients	1.4.1.2.a. Provision of letter of appreciation to Ayurvedic practitioners who refer presumptive patients to chest clinics
			1.4.1.2.b Back referral of TB patients to Ayurveda practitioners for DOTS
			1.4.1.2.c Printing of counter foil books for back referrals to traditional practitioners
1.5 intensified case finding of TB among PLHIV	1.5.1 Close collaboration with NSACP at central and regional level and integrated TB and HIV service delivery	1.5.1.1 Identification of a focal point at TB and HIV clinics in districts with high prevalence.	1.5.1.1 a Preparation of Terms of reference for the focal point at TB and HIV clinics in districts with high prevalence.
	1.5.2 Screening of all HIV patients for TB	1.5.2.1 Symptomatic screening of HIV patients using a standard check list at each HIV clinic visit (At least once in 3 months)	1.5.2.1.a Symptomatic screening of HIV patients using a standard check list at each HIV clinic visit
		1.5.2.2 referral of symptomatic patients to chest clinic and timely management & back referral.	1.5.2.2.a Preparation & printing of referral/ back referral forms for HIV patients who are presumptive TB cases
		1.5.2.3 Screening of PLHIV through patient groups and their networks.	1.5.2.3.a Use of already established PLHIV networks to ensure regular TB screening of PLHIV at the community level
		1.5.2.4 Provision of LAM testing facilities for TB detection among needy PLHIV (in ICUs)	1.5.2.4.a Purchase of LAM test facilities to NTRL
	1.5.3 Early diagnosis of TB/HIV coinfection	1.5.3.1 Screen all TB patients for HIV in whom HIV status is unknown at the time of diagnosis for TB	1.5.3.1.a Screen all TB patients for HIV in whom HIV status is unknown at the time of diagnosis for TB
1.6 Detection of childhood TB cases	1.6.1 Further continuation of the steering committee for childhood TB	1.6.1.1 Quarterly meeting of the steering committee for childhood TB with the collaboration of regional officials	1.6.1.1.a Quarterly steering committee meetings for Childhood TB Working Group

	1.6.2 Investigation of children who are more susceptible for TB	1.6.2.1 Implementation of diagnostic algorithm with broad definition for presumptive TB in children (including symptomatic and risk groups)	1.6.2.1.a Printing of the diagnostic algorithm for presumptive TB in children.
	1.6.3 Massive expansion of contact tracing in children	1.6.3.1 Identification and screening of all child contacts below 15 years irrespective of the sputum status and the type of TB using Xray and GeneXpert.	1.6.3.1.a Identification and screening of all child contacts below 15 years irrespective of the sputum status and the type of TB using Xray and GeneXpert.
	1.6.4 Involvement of MCH services for TB case detection & referral	1.6.4.1 Inclusion of 2 key items to midwives' home visit check list	1.6.4.1.a Discussions with the FHB on potential involvement of MCH care in childhood TB care delivery
			1.6.4.1.b Inclusion of 2 key items to midwives' home visit check list
		1.6.4.2 Establishment of referral pathways from nutritional clinics at MOH to district chest clinics	1.6.4.2.a Establishment of referral pathways for presumptive childhood TB patients from nutritional clinics at MOH offices to district chest clinics
Objective 2: To successfully treat, on average, between 2021 and 2025, 11,600 eligible cases for TB preventive treatment (TPT)			
2.1. Provision and distribution of diagnostics of TPT for eligible populations	2.1.1. Provision and distribution of diagnostics of TPT for eligible populations	2.1.1.1 Provision and distribution of diagnostics of TPT for eligible populations	2.1.1.1 Provision and distribution of diagnostics of TPT for eligible populations
2.2. Provision and distribution of drugs for TPT	2.2.1 Provision and distribution of drugs of TPT for eligible populations	2.2.1.1 Provision and distribution of drugs of TPT for eligible populations	2.2.1.1 Provision and distribution of drugs of TPT for eligible populations
2.3. Fully implementation of LTBI guidelines, reporting, monitoring and evaluation through identified focal points at NPTCCD and district levels	2.3.1 Fully implementation of LTBI guidelines, reporting, monitoring and evaluation through an identified focal point at NPTCCD	2.3.1.1. Fully implementation of LTBI guidelines, reporting, monitoring and evaluation through an identified focal point at NPTCCD	2.3.6.1.a Fully implementation of LTBI guidelines, reporting, monitoring and evaluation through an identified focal point at NPTCCD
Objective 3: The private sector will be properly engaged in TB diagnosis and care, and by end 2025, 30% of all cases notified will be referred from the private sector			
3.1 Engagement of part-time private practitioners and all private facilities likely to be seeing presumptive cases	3.1.1 Innovative approaches to encourage private facilities, all part-time private practitioners, and full-time practitioners to recognize presumptive	3.1.1.1 Mapping of all private facilities and care providers within the district	3.1.1.1.a Mapping of all private facilities and care providers within the district
		3.1.1.2 Sending SMS to part time GPs and their groups with the emphasis on TB	3.1.1.2.a Stakeholder meetings for content development for SMS for part-time GPs

	TB cases and refer them to DCCs for investigation	diagnosis and management (DOTs, ADRs etc)	3.1.1.2.b Procurement and cost for SMS portal for part time GPs
		3.1.1.3 Representation of NPTCCD at the private health regulatory council	3.1.1.3.a Representation of NPTCCD at the private health regulatory council
		3.1.1.4 Biannual newsletter containing information on TB through GMOA /SLMA	3.1.1.4.a Preparation, printing and dissemination of the newsletter containing TB information bi-annually among private sector providers
		3.1.1.5 Provision of TB promotional materials among private care providers	3.1.1.5.a Provision of TB promotional materials among private care providers
		3.1.1.6 Establishment of a referral pathway to order Xray/sputum/GeneXpert free of charge for private patients provided that they send returns and notification (Where there is no available facilities)	3.1.1.6.a Establishment of a referral pathway to order Xray/sputum/GeneXpert free of charge for private patients
			3.1.1.6.b Printing and distribution of referral/ back referrals forms to private care providers
			3.1.1.6.c Distribution of sputum cups to private care providers
			3.1.1.6.d Certificates for GPs for referring patients
		3.1.1.7 Creating a social media group with part time and full time GPs and DTCO/MO Chest Clinics according to the updated list in the district	3.1.1.7.a Creating a social media group with part time and full time GPs and DTCO/MO Chest Clinics according to the updated list in the district
	3.1.2 Collaboration activities with non-NTP stake holders	3.1.2.1 Regular meetings with PPM working group (Virtual and physical)	3.1.2.1.a Regular meetings with PPM working group to improve collaboration with non-NTP stake holders
		3.1.2.2 Collaboration between private health facilities /part-time GPs/ full time GPs	3.1.2.2.a Funding and participation in clinical society meetings at district level
			3.1.2.2.b Participation at local level activities organized by GPs
Objective 4: To Strengthen the Monitoring and Evaluation of TB control activities at all levels			
4.1 ePIMS will be analysed, its defects corrected, and its	4.1.1 Establishing an electronic presumptive TB register as a component	4.1.1.1 Develop and implement module for referring presumptive patients from	4.1.1.1.a Develop and implement module for referring presumptive patients from

opportunities fully exploited and implementation expanded	of ePIMS	private hospitals/GP/EMO (And for all private institutions with diagnostic facilities)	private hospitals/GP/EMO (And for all private institutions with diagnostic facilities)
		4.1.1.2 Develop and implement module for referring presumptive patients from government OPDs	4.1.1.2.a Collaboration meetings with HIMS/HHIMS teams on integration on hospital information system with ePIMS.
			4.1.1.2.b Development and implementation of modules in HIMS/HHIMS for presumptive TB - including training
			4.1.1.2.c Integration of developed modules in HIMS/HHIMS for presumptive TB with ePIMS
	4.1.2 Expand laboratory information module to a LIMS to improve laboratory surveillance	4.1.2.1 Develop and implement a comprehensive LIMS for NTRL and lab network	4.1.2.1.a Develop comprehensive LIMS for NTRL and lab network, and private sector and training
			4.1.2.1.b Develop integration of LIMS with ePIMS
	4.1.3 Expand the ePIMS to include Chest clinic OPD information at DCCs	4.1.3.1 Develop and implement DCC- OPD patient information management module	4.1.3.1.a Develop and implement DCC-OPD patient information management module and training
			4.1.3.1.b Integration of DCC-OPD system with ePIMS
	4.1.4 Ensure implementation of all of ePIMS components in each district	4.1.4.1 Ensure connectivity/internet at all places	4.1.4.1.a Cost for internet connectivity at -NPTCCD -NTRL -CDS -DCC Colombo and Gampaha
		4.1.4.2 Provide hardware for ePIMS implementation	4.1.4.2.a Provide hardware for ePIMS implementation - LIMS/OPD module
		4.1.4.3 Maintenance of hardware at NPTCCD	4.1.4.3.a Agreement for hardware for maintenance with a vendor
		4.1.4.4 Regular updating of software at NPTCCD	4.1.4.4.a Procurement of software including virus guard, office etc
		4.1.4.5 Improve networking in DCCs	4.1.4.5.a Providing networking infrastructure for districts without such

			facility
			4.1.4.5.b Maintenance agreement and cost for existing networking infrastructure
	4.1.5 Ensure information security related to ePIMS	4.1.5.1 Regular reviews on cyber security	4.1.5.1.a Annual security reviews through National Centre for Cyber Security
		4.1.5.2 Improve server room and backup server room infrastructure and security	4.1.5.2.a Improve server room and backup server room infrastructure and security Electrical improvements Furniture
		4.1.5.3 Maintaining of proper electronic and paper-based information backups	4.1.5.3.a Guideline for data backup of TB information system
	4.1.6 Maintenance of ePIMS with additional requirements	4.1.6.1 Develop maintenance agreement with the vendor for the next five years	4.1.6.1.a Cost for maintenance of ePIMS
			4.1.6.1.b Regular meetings of ePIMS technical group
4.2 Optimize aggregate data management through a TB-HMIS using DHIS2 platform	4.2.1 Establish collaboration with local / international HISP network for continuous technical support	4.2.1.1 Develop an MoU with HISP	4.2.1.1.a Develop an MoU with HISP groups for TB-HMIS maintenance
	4.2.2 Develop datasets, indicators, analytic components and dashboards in DHIS2 and establish data transfer from ePIMS	4.2.2.1 Customization of the aggregate information system	4.2.2.1.a Customization of the TB-HIMS aggregate information system
		4.2.2.2 Develop automated data exchange among ePIMS and TB HMIS	4.2.2.2.a Develop automated data exchange among ePIMS and TB HMIS
4.3 Information dissemination on TB related activities through electronic and print media	4.3.1 Improve and update NPTCCD website regularly	4.3.1.1 Revamping of NPTCCD website	4.3.1.1.a Design and develop improved website for NPTCCD
			4.3.1.1.b NPTCCD website hosting and maintenance agreement
	4.3.2 Develop website/page for NTRL	4.3.2.1 Development, hosting, maintenance	4.3.2.1.a Design and develop website for NTRL
			4.3.2.1.b NTRL website hosting and maintenance
	4.3.3 Provision of recording and reporting formats on lab information	4.3.3.1 Printing of lab register, presumptive TB register, patient files Contact register interrupters register	4.3.3.1.a Printing of lab register, presumptive TB register, patient files, contact register and interrupters register
	4.3.4 Publish annual reports of TB control	4.3.4.1 Preparation, printing and dissemination of annual reports of TB control	4.3.4.1.a Meeting for preparation of annual report of NPTCCD

4.4 timely recording and reporting	4.4.1 timely submission of signed quarterly reports from districts, NTRL, PMDT coordinator, CDS	4.4.1.1 Timely submission of accurate & complete Case finding report (TB 08) Sputum conversion report (TB09) Treatment outcome report (TB 10) Programme management (TB 12) by DTCOs CDS	4.4.1.1.a Timely submission of accurate & complete Case finding report (TB-08) Sputum conversion report (TB-09) Treatment outcome report (TB 10) Programme management (TB 12) by DTCOs CDS
		4.4.1.2 Timely submission of accurate & complete report by NTRL (TB 15)	4.4.1.2.a Timely submission of accurate & complete report by NTRL (TB 15)
		4.4.1.3 Timely submission of accurate & complete PMDT case finding & PMDT treatment outcome returns by PMDT Coordinator	4.4.1.3.a Timely submission of accurate & complete PMDT case finding & PMDT treatment outcome returns by PMDT Coordinator
		4.4.1.4 timely submission of accurate & complete report of Quarterly requirement by CDS	4.4.1.4.a timely submission of accurate & complete report of Quarterly requirement by CDS
		4.4.1.5. timely submission of accurate & complete report of case finding by NHRD	4.4.1.5.a Timely submission of accurate & complete report of case finding by NHRD
4.5 Regular assessment of programme performance	4.5.1 Conduct Regular review activities at central level on TB control activities	4.5.1.1 Conduct quarterly DTCO reviews	4.5.1.1.a Conduct quarterly DTCO reviews
			4.5.1.1.b Conduct virtual monthly activity review meetings with DTCOs
		4.5.1.2 Conduct annual death reviews on selected deaths from all districts	4.5.1.2.a Conduct annual death reviews on selected deaths from all districts
		4.5.1.3 Monthly review of activities by programme coordinators including lab, PMDT & drugs	4.5.1.3.a Monthly review of activities by programme coordinators including lab, PMDT & drugs
		4.5.1.4 Conduct annual PHLT reviews	4.5.1.4.a Conduct annual PHLT reviews
		4.5.1.5 Conduct annual review for laboratory network involving all places conducting GeneXpert and culture	4.5.1.5.a Conduct annual review for laboratory network involving all places conducting GeneXpert and culture
		4.5.1.6 Conduct annual PHI reviews	4.5.1.6.a Conduct annual PHI reviews
	4.5.2 Conduct Regular review activities at district levels on TB control activities	4.5.2.1 Conduct death reviews quarterly at district levels	4.5.2.1.a Conduct death reviews quarterly at district levels

		4.5.2.2 Conduct district level reviews involving all stakeholders Annually for high burden districts Two yearly for low burden districts	4.5.2.2.a Conduct district level reviews involving all stakeholders Annually for high burden districts Two yearly for low burden districts
	4.5.3 Conduct regular supervisions by central unit on TB control activities	4.5.3.1 Supervision of district chest clinics Biannually to prioritized districts Annually for other districts	4.5.3.1.a Supervision of district chest clinics Biannually to prioritized districts Annually for other districts
		4.5.3.2 Supervision of ITLs annually by consultant microbiologist	4.5.3.2.a Supervision of ITLs annually by consultant microbiologist
		4.5.3.3 Supervision of GeneXpert sites by consultant microbiologist	4.5.3.3.a Supervision of GeneXpert sites by consultant microbiologist
		4.5.3.4 Supervision of 26 District labs by NTRL	4.5.3.4.a Supervision of 26 District labs by NTRL
		4.5.3.5 Supervision of microscopy centres quarterly by regional Microbiologists	4.5.3.5.a Preparation of SOPs & check list for supervision of microscopy centres.
		4.5.3.6 Supervision of microscopy centers, DOT centers by DTCO	4.5.3.6.a Supervision of microscopy centers, DOT centers by DTCO
	4.5.4 National and international reviews	4.5.4.1 Conduct epidemiological review	4.5.4.1.a Conduct epidemiological review
		4.5.4.2 Conduct program review mid-term and end-term	4.5.4.2.a Conduct program review mid-term and end-term
		4.5.5.1. Technical assistance for preparation of national strategic plan and Grant making	4.5.5.1.a Technical assistance for preparation of national strategic plan and Grant making
4.6 Assess true burden of TB disease in the country	4.6.1 Conduct an inventory study to gain a better understanding of incidence	4.6.1.1 Conduct an inventory study to gain a better understanding of incidence	4.6.1.1.a Conduct an inventory study to gain a better understanding of incidence
Objective 5: To significantly increase the quality and quantity of operational research studies on TB			
5.1 Enhance research activities through establishing research consortium and regularizing	5.1.1 Establishing National TB Research Network	5.1.1.1 Conducting regular TB Research committee meetings	5.1.1.1.a Preparation of annual research agenda
			5.1.1.1.b Identification of priority research areas and regular update - Research committee meetings
			5.1.1.1.c Identification of an annual research fund

	5.1.2 Conducting a research symposium annually on TB and other respiratory diseases	5.1.2.1 Conducting a research symposium annually on TB and other respiratory diseases	5.1.2.1.a Conducting a research symposium annually on TB and other respiratory diseases
	5.1.3 Maintain a research repository on TB and other respiratory diseases	5.1.3.1 Maintain a research repository on TB and other respiratory diseases	5.1.3.1.a Maintain a research repository on TB and other respiratory diseases
Objective 6: To significantly improve the organization and management and control of TB			
6.1 Administrative and technical support for TB activities	6.1.1 Establish a National TB Commission, chaired by the Minister of Health (or above), to engage all sectors of society	6.1.1.1 Establish a National TB Commission, chaired by the Minister of Health (or above), to engage all sectors of society	6.1.1.1.a Establish a National TB Commission, chaired by the Minister of Health (or above), to engage all sectors of society
	6.1.2 Biannual stakeholder meeting chaired by Secretary Health	6.1.2.1 Biannual stakeholder meeting chaired by Secretary Health	6.1.2.1.a Biannual stakeholder meeting chaired by Secretary Health
	6.1.3 Conduct regular advisory committee meetings	6.1.3.1 Conduct regular advisory committee meetings	6.1.3.1.a Conduct regular advisory committee meetings
	6.1.4 Conduct regular technical support group meetings	6.1.4.1 Conduct regular technical support group meetings	6.1.4.1.a Conduct regular technical support group meetings
	6.1.5 District coordinating committee meetings for TB control at Regional Director of Health services (RDHS)	6.1.5.1 District coordinating committee meetings for TB control at Regional Director of Health services (RDHS)	6.1.5.1.a District coordinating committee meetings for TB control at Regional Director of Health services (RDHS)
6.2 Fill 90% of all vacancies in the NTPCCD by end 2021.	6.2.1 Improve staff capacity at central level	6.2.1.1 Filling of Director and other administrative and technical posts	6.2.1.1.a Filling of administrative and other technical posts at NPTCCD
		6.2.1.2 Fill all existing unfilled cadre posts at central level NPTCCD including NTRL and Central Drug Stores	6.2.1.2.a Fill all existing unfilled cadre posts at central level NPTCCD including NTRL and Central Drug Stores
6.3 Fill 90% of district vacancies by end 2021	6.3.1 improve staff capacity at district level	6.3.1.1 Fill all existing unfilled cadre posts at provincial level including DTCOs	6.3.1.1.a Fill all existing unfilled cadre posts at provincial level including DTCOs
6.4 Regular cadre revisions at national and provincial levels and salaries	6.4.1 Assessing cadre requirements and create new cadre positions every 4 years at central & district levels	6.4.1.1 Assessing cadre requirements and create new cadre positions every 4 years at central & district level	6.4.1.1.a Assessing cadre requirements and create new cadre positions every 4 years at central & district level
	6.4.2 NPTCCD (govt.) staff salaries	6.4.2.1 NPTCCD (govt.) staff salaries	6.4.2.1.a NPTCCD (govt.) staff salaries

6.5 Programme management - Grant	6.5.1 Recruitment of new staff required for NPTCCD GF project office	6.5.1.1 Recruit a Project Accountant PS4 Project Officer PS6 Finance supervisor PS6 Finance assistant MN2 Procurement Assistant MN2 HR Assistant MN2 ICT Officer PS6 AND/OR System/Network Administrator PS6? Mechanical Engineer (for NTRL) PS4 "Project manager/Deputy project manager (2) PS3 Government secondment Activity coordinators (8) PS5 Government secondment	6.5.1.1.a Recruit a Project Accountant PS4 Project Officer PS6 Finance supervisor PS6 Finance assistant MN2 Procurement Assistant MN2 HR Assistant MN2 ICT Officer PS6 AND/OR System/Network Administrator PS6? Mechanical Engineer (for NTRL) PS4 "Project manager/Deputy project manager (2) PS3 Government secondment Activity coordinators (8) PS5 Government secondment
		6.5.1.2 Office equipment and maintenance	6.5.1.2.a Office equipment and maintenance
		6.5.1.3 refurbishment of the NPTCCD office	6.5.1.3.a refurbishment of the NPTCCD office
		6.5.1.4 Asset verification visits	6.5.1.4.a Asset verification visits -PIU
		6.5.1.5. Maintenance of project management unit	6.5.1.5.a Maintenance of project management unit
		6.5.1.6. External audit fee	6.5.1.6.a. External audit fee
6.6 Programme management NPTCCD	6.6.1 Sustaining of Internet connectivity, and telecommunication facility	6.6.1.1 Payment of monthly bills	6.6.6.1.a Payment of monthly bills
	6.6.2 NTP fuel, maintenance and repair of vehicle	6.6.2.1 NTP Fuel	6.6.2.1.a NTP Fuel
		6.6.2.2 Maintenance & repair of NPTCCD vehicles	6.6.2.2.a Maintenance & repair of NPTCCD vehicles
6.7 Provision of standardized TB care	6.7.1 Develop and implement policies related to quality improvement	6.7.1.1 Develop and implement Infection control guideline at all levels	6.7.1.1.a Develop and implement Infection control guideline at all levels. Printing of the guideline
		6.7.1.2 Procurement of consumables for infection control	6.7.1.2.a Procurement of consumables for infection control
	6.7.2 Regular updating of manuals	6.7.2.1 Revision of National TB Manual	6.7.2.1.a International and local Technical Assistance for National TB Manual and printing

		6.7.2.2 PMDT guideline e version	6.7.2.2.a International and local Technical Assistance for development of PMDT guideline e-version
		6.7.2.3 Revision of Laboratory manual	6.7.2.3.a International and local Technical Assistance - Lab Manual and printing
	6.7.3 Preparation of guidelines	6.7.3.1 EPTB guidelines e version	6.7.3.1.a Local Technical Assistance for development of EPTB guideline e-version
		6.7.3.2 Paediatric guidelines e version	6.7.3.2.a Local Technical Assistance for development of Paediatric guidelines e-version
	6.7.4 Establishment of a working group at NPTCCD level to prepare guidelines/ SOPs/ TORs	6.7.4.1 eight member working group	6.7.4.1.a Establishment of a standing working group at NPTCCD level to prepare guidelines/ SOPs/ TORs
	6.7.5 Provision of quality services	6.7.5.1 international accreditation of NTRL	6.7.5.1.a TA for review of laboratory methodologies and accreditation processes at NTRL by SNL
			6.7.5.1 b. Obtaining accreditation certification and renewal fee
		6.7.5.2 Quality assurance of microscopy services, culture laboratories and GeneXpert sites	6.7.5.2.a Annual fee for Quality Control of TB culture and GeneXpert - to get down quality control strains from CDC
			6.7.5.2.b Revision of quality assurance protocol including new MC & implementation
			6.7.5.2.c Preparation of quality assurance protocol for culture & GeneXpert & implementation
6.8 Capacity Building of NTP staff	6.8.1 Training of newly appointed staff	6.8.1.1 Conduct Modular training for DTCOs/MOs chest clinic (Once a year –in May)	6.8.1.1.a Review of modules and include basic research & other new topics to training
			6.8.1.1.b Conduct Modular training for DTCOs/MOs chest clinic (Once a year –in May)
		6.8.1.2 Modular training for nurses and PHIs in DCCs (Once a year)	6.8.1.2.a Modular training for nurses and PHIs in DCCs (Once a year)
		6.8.1.3 Trainers meeting prior each	6.8.1.3.a Trainers meeting prior each

		modular training	modular training
		6.8.1.4 Training for laboratory staff - NTRL and ITLs	6.8.1.4.a Module preparation for staff training
			6.8.1.4.b Training for MLTs on culture and DST
			6.8.1.4.c Training for PHLTs
			6.8.1.4.d Annual workshop for microbiologists and MOO on TB diagnostics
		6.8.1.5 Workshops for regional CCPs on monitoring and evaluation of TB control activities	6.8.1.5.a Workshops for regional CCPs on monitoring and evaluation of TB control activities
	6.8.2 Ensure proper in-service training for the staff engaged with TB control activities at all levels	6.8.2.1 Training of Health Staff in DCC on LTBI management	6.8.2.1.a In-service training of DCC health staff on LTBI management
		6.8.2.2 Sensitization of clinicians on LTBI management	6.8.2.2.a Sensitization of clinicians on LTBI management
		6.8.2.3 Sensitization for MO/OPDs at district level	6.8.2.3.a In-service training of MO/OPDs at district level on TB care delivery
		6.8.2.4 Training for hospital Nurses at district level	6.8.2.4.a In-service training for hospital Nurses at district level on TB care delivery
		6.8.2.5 Training for MO Public health - on programmatic management of TB, infection control,	6.8.2.5.a Training for MO Public health - on programmatic management of TB, and infection control
		6.8.2.6 DOT provider training	6.8.2.6.a DOT provider training
		6.8.2.7 Joint TB HIV Training on health staff.	6.8.2.7.a Joint TB HIV training of DCC and NSACP staff
		6.8.2.8 Training of NSACP staff on TB screening	6.8.2.8.a Training of NSACP staff on TB screening
		6.8.2.9 Annual MDR TB management training for Medical Officers and nurses	6.8.2.9.a Annual MDR TB management training for medical officers and nurses at DCC
		6.8.2.10 Refresher training on ePIMS for all categories	6.8.2.10.a Refresher training on ePIMS for all categories at DCC
		6.8.2.11 Refresher training for MLT/GeneXpert site staff	6.8.2.11.a Refresher training for MLT/GeneXpert site staff

		6.8.2.12 Refresher training for PHLTs	6.8.2.12.a Refresher training for PHLTs
		6.8.2.13 Refresher training for Dispensers and pharmacists	6.8.2.13.a Refresher training for dispensers and pharmacists
		6.8.2.14 Refresher training for MOs at DCCs	6.8.2.14.a Refresher training for MOs at DCCs
		6.8.2.15 In-service training for NTRL laboratory Medical Officers	6.8.2.15.a Inservice training for NTRL laboratory Medical Officers
		6.8.2.16 Inservice training for Lab orderly/assistants in ITLs by NTRL	6.8.2.16.a Inservice training for Lab orderly/assistants in ITLs by NTRL
		6.8.2.17 PMDT training - by international consultant	6.8.2.17.a PMDT training - by international consultant
	6.8.3 Improve counselling skills of chest clinic staff	6.8.3.1 Training of chest clinic staff on tobacco cessation	6.8.3.1.a Training of chest clinic staff on tobacco cessation
		6.8.3.2 Training of chest clinic staff on counselling of patients	6.8.3.2.a Training of chest clinic staff on counselling of patients
	6.8.4 Training material development	6.8.4.1 Revision of existing paper-based modules in every 5 years based on training needs assessment	6.8.4.2.a Needs assessment for revision of paper-based modules
		6.6.4.2. Preparation of Training Modules for Lab staff	6.8.4.2.a Preparation of Training Modules for lab staff
		6.8.4.3 Development of eLearning modules for training based on training manuals	6.8.4.3.a Development of e-Learning modules for training based on training manuals
	6.8.5 Training of Non-NTP TB care providers	6.8.5.1 Development of eLearning modules for GPs (full time and part time), with certification	6.8.5.1.a Development of e-Learning modules for GPs (full time and part time), with certification
		6.8.5.2 Training on TB care services for EMAs	6.8.5.2.a Sensitization of EMAs on TB care services
		6.8.5.3 training for Traditional Medical Practitioners by DTCOs at district level	6.8.5.3.a Sensitization of Traditional Medical Practitioners by DTCOs at district level
		6.8.5.4 inclusion of programmatic aspects of TB in post graduate courses.	6.8.5.4.a inclusion of programmatic aspects of TB in post graduate courses
		6.8.5.5 Inclusion of programmatic aspects of TB in undergraduate curriculum	6.8.5.5.a inclusion of programmatic aspects of TB in undergraduate curriculum

		6.8.5.6 Sensitization of consultant medical officers and other professionals through monthly clinical meetings in SLMA/Professional colleges/Regional clinical societies and other relevant Professional organizations	6.8.5.6.a Sensitization of consultants, medical officers and other professionals through monthly clinical meetings in SLMA/Professional colleges/Regional clinical societies and other relevant Professional organizations
		6.8.5.7 Orientation programmes for registrars of birth and death	6.8.5.7.a Orientation programmes for registrars of birth and death
	6.8.6 Continuing capacity building of staff through attending international conferences and workshops	6.8.6.1 International training for central and district level staff involving TB diagnosis, care and control in centres of excellence	6.8.6.1.a International training for central and district level staff involving TB diagnosis, care and control in centres of excellence
		6.8.6.2. Participation in World Union Conference	6.8.6.2.a Registration Fee for participants for virtual meetings
6.9 Social mobilization and community empowerment in TB care.	6.9.1 improve health seeking behaviour among general public	6.9.1.1 Telecasting of a short film in two languages (Sinhala and Tamil) during prime time	6.9.1.1.a Telecasting of a short film in two languages (Sinhala and Tamil) during prime time
			6.9.1.1.b Monthly risk communication through media briefing/ conferences
		6.9.1.2 Use of Community based organizations such as Funeral societies, women societies to involve members from the same community	6.9.1.2.a Use of Community based organizations such as funeral societies, women societies to improve community participation in TB control activities
		6.9.1.3 Telecasting of audio video clips in two languages	6.9.1.3.a Telecasting of audio/ video clips in Sinhala and Tamil languages
		6.9.1.4 Publishing articles related to TB in newspapers and special magazines like ‘Suwaya’ magazine	6.9.1.4.a Publishing articles related to TB in newspapers and special magazines like ‘Suwaya’ magazine
		6.9.1.5 Participation of programmes in television and radio with regard to TB diagnosis and management	6.9.1.5.a Participation of programmes in television and radio with regard to TB diagnosis and management
		6.9.1.6 Participation in the interviews of YouTube channels	6.9.1.6.a Participation in interviews of YouTube channels
		6.9.1.7 Displaying posters in OPDs and GP offices	6.9.1.7.a Displaying posters in OPDs and GP offices

		6.9.1.8 Participation for the National and District Level Exhibitions/Demonstrations (4 per year)	6.9.1.8.a Participation for the National and District Level Exhibitions/Demonstrations (4 per year)
		6.9.1.9 Use of social media for TB control activities promotion	6.9.1.9.a Use of social media for TB control activities promotion
		6.9.1.10 World TB Day activities	6.9.1.10.a World TB Day activities
	6.9.2 Reduction of stigma	6.9.2.1 Formation of patient advisory groups among selected communities.	6.9.2.1.a Formation of patient groups among selected communities
		6.9.2.2 Engage TB champions/Celebrities as brand ambassadors.	6.9.2.2.a Engage TB champions/Celebrities as brand ambassadors
			6.9.2.2.b Telecast success stories
	6.9.3 Preparation of IEC material	6.9.3.1 Development of IEC material Posters with algorithms/ key messages Leaflets Desktop Calendar Bill Board Mugs Booklets for patients Video clips	6.9.3.1.a Designing & pretesting IEC Material
			6.9.3.2.b Printing & distribution of IEC Material
	6.9.4 Carrying out FGDs in randomly selected population groups to assess the effectiveness of Health Education interventions	6.9.4.1 Conduct at least 5 FDGs per year	6.9.4.1.a Conduct 5 focus group discussions per year for assessment of effectiveness of health education programmes

Table 15: Operational Plan

Detailed activities	Year 1		Year 2		Year 3		Year 4		Year 5	
	Starting quarter	Finishing quarter	Starting quarter	Finishing quarter	Starting quarter	Finishing quarter	Starting quarter	Finishing quarter	Starting quarter	Finishing quarter
1.1.1.1.a Construction of cough booths in selected hospitals and chest clinics after needs assessment	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.1.1.2.a Construction of Microscopy centres after needs assessment			Q1	Q4	Q1	Q4				
1.1.1.2.b Purchase of microscopes					Q1	Q2	Q1	Q2		
1.1.1.3.a Purchasing vaccine carriers/cold boxes	Q1	Q2								
1.1.1.3.b Purchasing of Mini fridges for collection centres	Q1	Q2			Q1	Q2				
1.1.1.3.c Courier charges for transportation out of district-Local	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.1.1.3.d Purchasing of three wheelers to chest clinics.	Q1	Q2	Q1	Q2						
1.1.1.3.e Purchasing of reagents and consumables for microscopy	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
1.1.1.3.f Purchase of sputum Cups	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
1.1.1.4.a Adequate supply of (normal and ultra) GeneXpert cartridges	Q2	Q4								
1.1.1.4.b annual Maintenance repair and calibration fee for GeneXpert machines	Q1	Q4	Q2	Q3	Q2	Q3	Q2	Q3	Q2	Q3
1.1.1.4.c Purchasing of GeneXpert machines (one GeneXpert machine to district chest clinic with high case burden and to replace old	Q1	Q2			Q1	Q2				

machines).										
1.1.1.4.d Replacing of modules of GeneXpert machines	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.1.1.4.e Renewal of service contracts for GeneXpert machines on time	Q1	Q2	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.1.1.4.f Purchasing of safety cabinets			Q1	Q2	Q1	Q2				
1.1.1.4.g Utilization of GeneXpert as the first line diagnostic test for all presumptive TB patients - pilot study in Gampaha	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.1.1.5.a Provision of Digital Xray facilities to chest clinics	Q1	Q2	Q1	Q2					Q1	Q2
1.1.1.5.b Renewal of contracts for digital Xray maintenance	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.1.1.6.a Maintenance and timely & complete update of laboratory registers in all laboratories where TB diagnosis is made	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.1.1.6.b Enforcement of mandatory notification by H816 A from all institutions involve in TB diagnosis	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.1.2.1.a Expansion of NTRL with molecular section, MOTT identification section, EQA section, record room, Training Unit and storage facilities			Q1	Q4	Q1	Q3				
1.1.2.1.b Courier charges for transportation of samples SNRL – (International)	Q3		Q3		Q3		Q3		Q3	
1.1.2.1.c Provision of critical equipment - generator, cold centrifuge					Q1	Q2				
1.1.2.1.d Construction and equipment provision for ITL with BSL3 facilities (To perform DST) - Anuradhapura			Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q2
1.1.2.1.e Construction of a new ITL in Batticaloa or Ampara	Q1	Q4	Q1	Q4						

1.1.2.1.f Supply of equipment to newly constructed ITLs			Q3	Q4	Q1	Q2				
1.1.2.1.g Purchasing of 2 MGIT -320 machines to ITLs	Q1	Q2								
1.1.2.1.h Establishment of whole genome sequencing/ SANGA sequencing facility at NTRL			Q2							
1.1.2.2.a Purchase of Solid culture consumables and DST	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
1.1.2.2.b MGIT culture consumables and DST	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
1.1.2.2.c Procurement of an additional LPA machine to the NTRL			Q1	Q2						
1.1.2.2.d Supply of laboratory consumables for LPA/ GeneXpert	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
1.2.1.1.a Second Line Drugs	Q1	Q1 of 2022	Q3	Q1 of 2023	Q3	Q1 of 2024	Q3	Q1 of 2025	Q3	Q1 of 2026
1.2.1.1.b GLC fee for second line drugs	Q3	Q1 of 2022	Q3	Q1 of 2023	Q3	Q1 of 2024	Q3	Q1 of 2025	Q3	Q1 of 2026
1.2.1.1.c First line drugs (FDCs)	Q2	Q4	Q2	Q4	Q2	Q4	Q2	Q4	Q2	Q4
1.2.1.1.d First line drugs (individual Drugs)	Q2	Q4	Q2	Q4	Q2	Q4	Q2	Q4	Q2	Q4
1.2.1.1.e Procurement of ancillary drugs including other respiratory drugs	Q2	Q4	Q2	Q4	Q2	Q4	Q2	Q4	Q2	Q4
1.2.1.1.f Procurement of Surgical items	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
1.2.1.2.a AC facilities to drug stores central and other			Q1	Q2						
1.2.1.2.b Storage facilities for DOT centres	Q1	Q2					Q1	Q2		

1.2.1.3.a Providing a proper vehicle with AC facilities.			Q1	Q2						
1.2.1.4.a conduct quarterly drug therapeutic committee meeting.	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.1.5.a Quarterly distribution of drugs to DCCs from CDS	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.1.5.b Distribution of drugs to DOT providers/centres from DCCs	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.1.6.a Preparation of a plan for random quality check of ATT	Q1	Q4								
1.2.1.6.b Regular random checking for drug quality from each batch at each level	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.2.1.a Stakeholder meetings for content development for SMS reminders on treatment adherence to TB patients/DOT providers	Q2	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.2.1.b Procurement/ cost of SMS portal for SMS on treatment adherence to TB patients/DOT providers	Q2	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.2.1.c Development of SMS notification component in ePIMS and integrate with the SMS platform	Q1	Q3	-	-	-	-	-	-	-	-
1.2.2.2.a Thriposha supplementation at each month for TB patients	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4		
1.2.2.2.b Food stamps for selected patients according to the nutritional assessment	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4		
1.2.2.2.c Develop tool for nutritional assessment and referring system for undernutrition	Q1	Q4								
1.2.2.3 a Advocacy meeting with Ministry of Social Services for provision of sufficient allowance to all needy patients	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.2.4.a Identify at risk groups for treatment interruption in the districts at the point of	Q1	Q4								

registration using a check list										
1.2.2.4.b Identify an Officer – Focal point with ToR- (MO/PHI/NO) at district chest clinic with loss to follow up rate above the national figure (4%) for close and more frequent monitoring	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.2.5.a Refurbishment of wards for long term care of TB patients in districts following a situational analysis	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4		
1.2.3.1.a Preparation of a guideline for assigning treatment outcome	Q1	Q4								
1.2.3.2 a Monitoring of ADR through a checklist at each visit and mandatory reporting of major side effects	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.3.2.b Maintenance of emergency facility at each chest clinic	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.3.3.a Preparation and implementation of guidelines/circular on mandatory investigations at the time of first visit and follow up visits.	Q1	Q2								
1.2.3.3.b Establishment of chest wards with High Dependency Unit (HDU)	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.4.1.a Provision of daily Supervised treatment by a reliable and accountable DOT provider to all patients on 2nd line treatment.	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.4.1.b Regular (at least once a week) supervision of DOT providers of MDR-TB/RR-TB patients by PHI	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.4.2.a Monitor ADR of MDR-TB/RR-TB patients according to the criteria provided and report to PMDT coordinator quarterly in the given format	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.4.3.a Development of a protocol to follow up RR-TB patients who are not on second line treatment	Q1	Q4								

1.2.4.4.a Regular PMDT meetings to discuss the management and progress of RR/MDR TB patients.	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.4.4.b Regular follow up of MDR/RR patients	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.4.4.c Home visits to selected MDR/ RR TB patients by PMDT coordinator	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.2.4.5.a Inward treatment facility for MDR established in a district selected by laid parameters					Q1	Q4	Q1	Q2		
1.2.4.6 a Establish 2 bed palliative care facility at NHRD			Q1	Q4	Q1	Q2				
1.3.1.1.a Printing, distribution & Implementation of Standard Operating Procedures (SOPS) for contact tracing in all districts	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.1.1.b Printing and dissemination of contact tracing formats	Q1	Q4			Q1	Q4				
1.3.1.2.a Develop a mobile app integrated to ePIMS for range PHIs for contact screening	-	-	Q1	Q2	Q1	Q4	Q1	Q4	Q1	Q4
1.3.1.2.b Training of range PHIs on contact tracing mobile app	-	-	Q3	Q4	-	-	-	-	-	-
1.3.2.1 a. Purchase of 2 portable Xray machines to conduct ACF in a selected districts in a pilot basis	Q1	Q2								
1.3.2.2.a Preparation of the diagnostic algorithm for high-risk groups & printing	Q1	Q2								
1.3.3.1 a Preparation of the diagnostic algorithm to screen diabetic patients	Q2	Q3								
1.3.3.1.b Discussions with Endocrinologists and physicians on referral and back-referral pathways	Q1	Q4								

1.3.3.1.c Printing of referral books for diabetic clinics			Q1	Q4			Q1	Q4		
1.3.4.1.a Screening of home bound elderly contacts of TB patients using X rays during home visits	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.4.1.b Establish a mechanism to collect sputum samples from home bound elderly for GeneXpert through locally active field health officers	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.4.1.c Provision of transport to elderly with the support of locally active NGOs / CBOs	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.4.2.a Screening programmes for elderly using mobile x ray	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.4.3.a. Mandatory screening with Xray at the time of admission to elderly homes	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.5.1.a Formulating a guideline/ check list to identify high risk settings & printing and prioritization of high-risk groups according to the checklist	Q2	Q3								
1.3.5.2.a Screening of hard-to-reach populations using revised guidelines for ACF	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.5.3.a Establishment of an outbreak response team to screen contacts in the event of an outbreak (a single case) among homeless/ inmates of congregated settings.	Q1									
1.3.5.3.b Development of an outbreak response protocol to screen contacts in the event of an outbreak (a single case) among homeless/ inmates of congregated settings & printing	Q1	Q4								
1.3.6.1.a Representation of urban and estate sector at PPM meetings (2 virtual /2 physically present per year)	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4

1.3.6.2.a Establishment of peer groups per estate to educate and motivate patients to improve healthcare seeking behaviour	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.6.2.b Preparation & printing of 5-page document for peer groups (including check list for assessment) for estate sector	Q1									
1.3.6.3.a Formation of social media groups with Chest clinic staff, NPTCCD staff and EMA	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.6.3.b Increase the frequency of branch clinic visits based on the patient load assessment, and HR capacity at each district	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.6.4 a Develop a check list to record NGO/ CBO activities in relation to their engagement in TB care in urban slum areas	Q1									
1.3.6.5.a Annual advocacy meeting with local government agencies to improve their engagement in TB care provision	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.7.1.a Identification of treatment interruption among people who use drugs, case by case, and discussion at the monthly chest clinic conference by the PHI	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.7.1.b Use of NDDCB field officers NDDCB for DOT provision and tracing treatment interrupters among people who use drugs	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.7.2.a Honorarium for NDDCB officers for attending chest clinic conferences	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.7.3.a Use of NDDCB field officers for contact tracing of TB patients among people who use drugs	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.7.4.a Annual screening of detention centres for youth offenders	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.8.1.a Discussions at ministry level on ensuring the entry screening at prisons	Q1									

1.3.8.1.b Conduct entry screening of all inmates according to revised ACF guidelines	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.8.2.a Routine clinic at prison once/ twice a week depending on the number of prison inmates	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.3.8.3.a Mass screening programme for all prisoners using mobile Xray	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.4.1.1.a Representation of Ayurvedic sector at PPM meetings (2 virtual/ 2 physical)	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.4.1.1.b Representation of Ayurvedic sector at District Coordination Committee meetings.	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.4.1.2.a. Provision of 'letter of appreciation' to Ayurvedic Practitioners who refer presumptive TB patients to chest clinics	Q1	Q2								
1.4.1.2.b Back referral of TB patients to Ayurvedic Practitioners for DOTS	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.4.1.2.c Printing of counter foil books for back referrals to Traditional Practitioners			Q1	Q2			Q1	Q2		
1.5.1.1 a Preparation of Terms of Reference for the focal point at DCC and STI clinics in districts with high prevalence of TB and HIV respectively.	Q1	Q2								
1.5.2.1.a Symptomatic screening of HIV patients (using a standard check list) at each clinic visit	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.5.2.2.a Preparation and printing of referral/ back referral forms for HIV patients who are presumptive TB cases	Q1	Q2								
1.5.2.3.a Using already established PLHIV networks to ensure regular TB screening among PLHIV at community level	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.5.2.4.a Purchase of LAM test facilities to NTRL	Q1	Q2			Q1	Q2			Q1	Q2

1.5.3.1.a Screening all TB patients for HIV (in whom HIV status is unknown at the time of diagnosis of TB)	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.6.1.1.a Quarterly Steering Committee meetings for Childhood TB Working Group	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.6.2.1.a Printing of the diagnostic algorithm for Presumptive TB in children.	Q1	Q2								
1.6.3.1.a Identification and screening of all child contacts below 15 years old (irrespective of the sputum status and the type of TB, using X-ray and GeneXpert).	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
1.6.4.1.a Discussions with the FHB on potential involvement of MCH care in Childhood TB care delivery	Q1	Q4								
1.6.4.1.b Inclusion of two key items to PHM home visit check list	Q1	Q2								
1.6.4.2.a Establishment of referral pathways for Presumptive Childhood TB patients from nutritional clinics at MOH offices to District Chest Clinics	Q2	Q3								
2.1.1.1 Provision and distribution of diagnostics for preventive treatment to eligible populations	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
2.2.1.1 Provision and distribution of drugs of TPT for eligible populations	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
2.3.1.1.a Fully implementation of LTBI guideline, reporting, monitoring and evaluation through an identified focal point at NPTCCD	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
3.1.1.1.a Mapping of all private facilities and care providers within the district	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4

3.1.1.2.a Stakeholder meetings for content development for SMS for part-time GPs	Q2	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
3.1.1.2.b Procurement and cost for SMS portal for part time GPs	Q2	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
3.1.1.3.a Representation of NPTCCD at the Private Health Regulatory Council	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
3.1.1.4.a Preparation, printing and dissemination of the 'newsletter' containing TB information bi-annually among private sector providers	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
3.1.1.5.a Provision of TB promotional materials among private care providers	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
3.1.1.6.a Establishment of a referral pathway to order X-ray/ sputum/ GeneXpert free of charge for private sector patients	Q2	Q3								
3.1.1.6.b Printing and distribution of referral/ back referral forms to private care providers	Q2	Q3					Q2	Q3		
3.1.1.6.c Distribution of sputum cups to private care providers	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
3.1.1.6.d Issuing certificates for GPs for referring patients	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
3.1.1.7.a Creating social media groups including part time/ full time GPs and DTCO/MO Chest Clinics (according to the updated list in the district)	Q1	Q2								
3.1.2.1.a Regular meetings with PPM working group to improve collaboration with non-NTP stake holders	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
3.1.2.2.a Sponsoring and participation in Clinical Society meetings at district level	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
3.1.2.2.b Participation at local level activities organized by GPs	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4

4.1.1.1.a Development and implementation of a module for referring presumptive patients from private hospitals/ GP/ EMO (and for all private health institutions with diagnostic facilities)	Q2	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.1.1.2.a Collaborative meetings with HIMS/ HHIMS teams on integration of hospital information system with ePIMS.	-	-	Q3	Q4	-	-	-	-	-	-
4.1.1.2.b Development and implementation of modules in HIMS/ HHIMS for Presumptive TB including training	-	-	-	-	Q1	Q3	-	-	-	-
4.1.1.2.c Integration of developed modules in HIMS/HHIMS for Presumptive TB with ePIMS	-	-	-	-	Q3	Q4	-	-	-	-
4.1.2.1.a Development of comprehensive LIMS for NTRL and lab network, and private sector and training	Q2	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.1.2.1.b Development and integration of LIMS with ePIMS	-	-	-	-	Q1	Q2	-	-	-	-
4.1.3.1.a Development and implementation of DCC- OPD patient information management module and training	-	-	-	-	Q1	Q4	Q1	Q4	Q1	Q4
4.1.3.1.b Integration of DCC-OPD system with ePIMS			-	-	Q3	Q4	-	-	-	-
4.1.4.1.a Cost for internet connectivity at -NPTCCD -NTRL -CDS -DCC Colombo and Gampaha	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.1.4.2.a Provision of hardware for ePIMS implementation - LIMS/OPD module	Q3	Q4			Q3	Q4				
4.1.4.3.a Agreement with a vendor for maintenance of hardware	Q2	Q3	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.1.4.4.a Procurement of software including virus guard, MS office etc	Q2	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4

4.1.4.5.a Providing networking infrastructure for districts without such facility	-	-	Q1	Q2	-	-	-	-	-	-
4.1.4.5.b Maintenance agreement and cost for existing networking infrastructure	Q2	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.1.5.1.a Annual security reviews through National Centre for Cyber Security	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4	Q4
4.1.5.2.a Improve server room and backup server room infrastructure and security electrical improvements furniture	Q2	Q4	-	-	-	-	-	-	-	-
4.1.5.3.a Guideline for data backup of TB information system	Q4	Q4	-	-	-	-	-	-	-	-
4.1.6.1.a Cost for maintenance of ePIMS	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.1.6.1.b Regular meetings of ePIMS Technical Group	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.2.1.1.a Development of an MoU with HISP groups for TB-HMIS maintenance	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.2.2.1.a Customization of the TB-HIMS aggregate information system	Q2	Q4	Q1	Q4	-	-	-	-	-	-
4.2.2.2.a Development of automated data exchange among ePIMS and TB HMIS	Q2	Q4	Q1	Q4	-	-	-	-	-	-
4.3.1.1.a Designing and development of an improved website for NPTCCD	Q3	Q4	-	-						
4.3.1.1.b NPTCCD website hosting and maintenance agreement	-	-	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.3.2.1.a Designing and development of a website for NTRL	Q3	Q4	-	-	-	-	-	-	-	-
4.3.2.1.b NTRL website hosting and maintenance			Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4

4.3.3.1.a Printing of Lab Register, Presumptive TB Register, patient files, Contact Register and Interrupters Register							Q1	Q2		
4.3.4.1.a Meeting for preparation of Annual Report of NPTCCD	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.4.1.1.a Timely submission of accurate & complete Case Finding Report (TB-08), Sputum Conversion Report (TB-09), Treatment Outcome Report (TB 10) and Programme Management (TB 12) by DTCOs and CDS	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.4.1.2.a Timely submission of accurate & complete report by NTRL (TB 15)	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.4.1.3.a Timely submission of accurate & complete PMDT Case Finding Return & PMDT Treatment Outcome Return by PMDT Coordinator	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.4.1.4.a Timely submission of accurate & complete report of quarterly requirement by CDS	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.4.1.5.a Timely submission of accurate & complete report of case finding by NHRD	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.5.1.1.a Conducting Quarterly DTCO Reviews	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.5.1.1.b Conducting monthly activity review meetings with DTCOs (virtually)	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.5.1.2.a Conducting Annual Death Reviews on selected deaths from all districts	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.5.1.3.a Monthly review of activities by programme coordinators including lab, PMDT & drugs	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.5.1.4.a Conducting Annual PHLT Reviews	Q3		Q3		Q3		Q3		Q3	

4.5.1.5.a Conducting Annual Review for laboratory network involving all institutions conducting GeneXpert and culture	Q2	Q3	Q2	Q3	Q2	Q3	Q2	Q3	Q2	Q3
4.5.1.6.a Conducting Annual PHI Reviews	Q2	Q3	Q2	Q3	Q2	Q3	Q2	Q3	Q2	Q3
4.5.2.1.a Conducting Quarterly Death Reviews at district level	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.5.2.2.a Conducting district level reviews involving all stakeholders (annually for districts with high burden and bi-annually for districts with low burden)	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.5.3.1.a Supervision of District Chest Clinics (bi-annually in prioritized districts and annually in other districts)	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.5.3.2.a Supervision of ITLs annually by Consultant Microbiologist	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.5.3.3.a Supervision of GeneXpert sites by Consultant Microbiologist	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.5.3.4.a Supervision of 26 District labs by NTRL	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.5.3.5.a Preparation of SOPs & check list for supervision of microscopy centres.	Q1	Q4								
4.5.3.6.a Supervision of microscopy centres and DOT centres by DTCO	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
4.5.4.1.a Conducting Epidemiology Review					Q1	Q3			Q1	Q3
4.5.4.2.a Conducting mid-term and end-term program review					Q1	Q3			Q1	Q3
4.5.5.1.a Technical assistance for preparation of National Strategic Plan and grant making									Q2	Q2
4.6.1.1.a Conducting an inventory study to get a better understanding on incidence			Q1	Q4						

5.1.1.1.a Preparation of Annual Research Agenda	Q1		Q1		Q1		Q1		Q1	
5.1.1.1.b Identification of priority research areas and update - Research committee meetings regularly	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
5.1.1.1.c Identification of an Annual Research Fund	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
5.1.2.1.a Conducting a research symposium on TB and other respiratory diseases annually					Q2					
5.1.3.1.a Maintaining a research repository on TB and other respiratory diseases	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.1.1.1.a Establishment of a National TB Commission, chaired by the Minister of Health (or above), to engage all sectors of society	Q1									
6.1.2.1.a Conducting bi-annual stakeholder meetings, chaired by Secretary of Health Ministry	Q1	Q3	Q1	Q3	Q1	Q3	Q1	Q3	Q1	Q3
6.1.3.1.a Conducting Advisory Committee meetings regularly	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.1.4.1.a Conducting Technical Support Group meetings regularly	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.1.5.1.a Conducting District Coordinating Committee meetings for TB control at Regional Director of Health services (RDHS)	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.2.1.1.a Filling of administrative and other technical posts at NPTCCD	Q1									
6.2.1.2.a Filling of all unfilled cadre posts at central level (including NPTCCD, NTRL and Central Drug Stores)	Q1									
6.3.1.1.a Filling of all unfilled cadre posts at provincial level including DTCOs	Q1									

6.4.1.1.a Assessing cadre requirements and creating new cadre positions (every 4 yearly at central & district level)	Q1								Q1	
6.4.2.1.a NPTCCD (govt) staff salaries	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.5.1.1.a Recruitment of a Project Accountant PS4 Project Officer PS6 Finance supervisor PS6 Finance assistant MN2 Procurement Assistant MN2 HR Assistant MN2 ICT Officer PS6 AND/OR System/Network Administrator PS6? Mechanical Engineer (for NTRL) PS4 Project manager/Deputy project manager (2) PS3 Government secondment Activity coordinators (8) PS5 Government secondment	Q1									
6.5.1.2.a Office equipment and maintenance	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.5.1.3.a Refurbishment of the NPTCCD office	Q1			Q2			Q1			Q2
6.5.1.4.a Asset verification visits -PIU			Q1	Q4			Q1	Q4		
6.5.1.5.a Maintenance of project management unit	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.5.1.6.a. External audit fee	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.6.6.1.a Payment of monthly bills	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.6.2.1.a NTP Fuel	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4

6.6.2.2.a Maintenance & repair of NPTCCD vehicles	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.7.1.1.a Development and implementation of Infection Control Guideline at all levels and printing of the guideline	Q1	Q2								
6.7.1.2.a Procurement of consumables for infection control	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
6.7.2.1.a International and local technical assistance for National TB Manual and printing	Q1	Q4								
6.7.2.2.a International and local technical assistance for development of PMDT Guideline e-version									Q1	Q4
6.7.2.3.a International and local technical assistance for development of Lab Manual and printing									Q1	Q4
6.7.3.1.a Local technical assistance for development of EPTB Guideline e-version			Q1	Q4						
6.7.3.2.a Local technical assistance for development of Paediatric Guidelines e-version					Q1	Q4				
6.7.4.1.a Establishment of a Standing Working Group at NPTCCD level to prepare guidelines/ SOPs/ TORs	Q1	Q4								
6.7.5.1.a TA for review of laboratory methodologies and accreditation processes at NTRL by SNL	Q1									
6.7.5.1 b. Obtaining accreditation certification and renewal fee	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4
6.7.5.2.a Annual fee for quality control of TB culture and GeneXpert - to get down quality control strains from CDC	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
6.7.5.2.b Revision of quality assurance protocol including new MC & implementation	Q1	Q2								

6.7.5.2.c Preparation of quality assurance protocol for culture & GeneXpert and implementation	Q1	Q2								
6.8.1.1.a Review of modules and including new topics on basic research & training	Q1	Q2								
6.8.1.1.b Conducting modular training for DTCOs/ MOs chest clinic (once a year –in May)	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.1.2.a Conducting modular training for nurses and PHIs in DCCs (once a year)	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.1.3.a Conducting trainers meeting prior to each modular training	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.1.4.a Module preparation for staff training	Q1	Q3	Q1	Q3	Q1	Q3	Q1	Q3	Q1	Q3
6.8.1.4.b Training for MLTs on culture and DST	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.1.4.c Training for PHLTs	Q2		Q2		Q2		Q2		Q2	
6.8.1.4.d Conducting annual workshop for Consultant Microbiologists and Medical Officers on TB diagnostics	Q1	Q3	Q1	Q3	Q1	Q3	Q1	Q3	Q1	Q3
6.8.1.5.a Conducting workshops for regional Consultant Community Physicians (CCPs) on monitoring and evaluation of TB control activities	Q1	Q3	Q1	Q3	Q1	Q3	Q1	Q3	Q1	Q3
6.8.2.1.a Conducting in-service training on LTBI management for DCC health staff	Q2		Q2		Q2		Q2		Q2	
6.8.2.2.a Sensitization of clinicians on LTBI management	Q1	Q4	Q1	Q4	Q1	Q4				
6.8.2.3.a Conducting in-service training on TB care delivery for MO/OPDs at district level	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.2.4.a Conducting in-service training on TB care delivery for hospital nurses at district level	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4

6.8.2.5.a Conducting training on programmatic management of TB and infection control for MO Public Health	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.2.6.a Conducting DOT provider training	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.2.7.a Conducting Joint TB-HIV training for DCC and NSACP staff	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.2.8.a Conducting training on TB screening for NSACP staff	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.2.9.a Annual MDR TB management training for medical officers and nurses at DCC	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.2.10.a Refresher training on ePIMS for all categories of staff at DCC	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.2.11.a Refresher training for MLT/GeneXpert site staff	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.2.12.a Refresher training for PHLTs	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.2.13.a Refresher training for dispensers and pharmacists	Q3		Q3		Q3		Q3		Q3	
6.8.2.14.a Refresher training for MOs at DCCs	Q3		Q3		Q3		Q3		Q3	
6.8.2.15.a In-service training for NTRL lab MOs	Q2		Q2		Q2		Q2		Q2	
6.8.2.16.a In-service training for Lab orderly/ assistants in ITLs by NTRL	Q2		Q2		Q2		Q2		Q2	
6.8.2.17.a PMDT training - by international consultant	Q2	Q3			Q2	Q3			Q2	Q3
6.8.3.1.a Conducting training of DCC staff on tobacco cessation	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.3.2.a Training of DCC staff on counselling of patients	Q2				Q2				Q2	

6.8.4.2.a Needs assessment for revision of paper-based modules	Q1	Q4					Q1	Q4		
6.8.4.2.a Preparation of Training Modules for lab staff	Q1	Q2								
6.8.4.3.a Development of e-Learning modules for training based on training manuals	Q3	Q4	Q1	Q4	Q1	Q4	-	-	-	-
6.8.5.1.a Development of e-Learning modules for GPs (full time and part time), with certification	Q3	Q4	Q1	Q4	Q1	Q4	-	-	-	-
6.8.5.2.a Sensitization of EMAs on TB care services	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.5.3.a Sensitization of Traditional Medical Practitioners by DTCOs at district level	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.5.4.a Inclusion of programmatic aspects of TB in post graduate courses	Q2									
6.8.5.5.a Inclusion of programmatic aspects of TB in undergraduate curriculum	Q2	Q3								
6.8.5.6.a Sensitization of consultants, medical officers and other professionals through monthly clinical meetings in SLMA/ professional colleges/ regional clinical societies and other relevant professional organizations	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.5.7.a Orientation programmes for Registrars of Birth and Death	Q2		Q2		Q2		Q2		Q2	
6.8.6.1.a International training for central and district level staff involving TB diagnosis, care and control in centres of excellence	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.8.6.2.a Registration Fee for participants for virtual meetings	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.9.1.1.a Telecasting of a short film in two languages (Sinhala and Tamil) during prime time	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4

6.9.1.1.b Monthly risk communication through media briefing/ conferences	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.9.1.2.a Using Community Based Organizations such as funeral societies, women societies to improve community participation in TB control activities	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.9.1.3.a Telecasting of audio/ video clips in Sinhala and Tamil languages	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.9.1.4.a Publishing articles related to TB in newspapers and special magazines like “Suwaya magazine”	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.9.1.5.a Participation in programmes of television and radio with regard to TB diagnosis and management	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.9.1.6.a Participation in interviews of YouTube channels	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.9.1.7.a Displaying posters in OPDs and GP offices	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.9.1.8.a Participation for the National and District Level Exhibitions/ Demonstrations (4 per year)	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.9.1.9.a Using social media for promotion of TB control activities	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.9.1.10.a World TB Day activities	Q1		Q1		Q1		Q1		Q1	
6.9.2.1.a Formation of patient groups among selected communities	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.9.2.2.a Engage TB champions/ celebrities as ‘brand ambassadors’	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.9.2.2.b Telecast success stories	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4
6.9.3.1.a Designing & pretesting IEC material	Q1	Q2			Q1	Q2				

6.9.3.2.b Printing & distribution of IEC material	Q1	Q2					Q1	Q2		
6.9.4.1.a Conducting focus group discussions per year (for assessment of effectiveness of health education programmes)	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4	Q1	Q4

Annexures

Stakeholders List

NSP (2021 – 2025) Preparation- Virtual Meeting on 29/10/2020

1	Dr Paul Nunn	- International Consultant
2	Dr Nirupa Pallewatta	- Deputy Director/NPTCCD
3	Dr Dushani Jayawardhana	- Consultant Microbiologist /NTRL
4	Dr Pramil Liyanage	- Acting Consultant in Health Informatics - NPTCCD
5	Dr Neranjan Dissanayake	- Consultant Respiratory Physician
6	Dr Sumal Nandasena	- Deputy Regional Director of Health Services - Kalutara
7	Dr Sumudu A. Hewage	- Acting Consultant Community Physician
8	Dr Lakmal Rathnayake	- Former DTCO, Colombo
9	Dr Chathurani Wickramaarachchi	- Senior Registrar in Community Medicine- NPTCCD
10	Dr N.R. Liyanage	- Senior Registrar in Community Medicine - NPTCCD
11	Dr Amali Senanayake	- Medical Officer - NPTCCD
12	Dr Awanthi Senadheera	- Medical Officer - NPTCCD
13	Dr S. Kajanan	- Medical Officer - NPTCCD
14	Dr Kishan Suriaaratchie	- Medical Officer - NPTCCD
15	Dr Shashi Abeysekara	- Medical Officer – NPTCCD

NSP (2021 – 2025) Preparation- Virtual Meeting on 03/11/2020

1	Dr Paul Nunn	- International Consultant
2	Dr Nirupa Pallewatte	- Deputy Director – NPTCCD
3	Dr Dushani Jayawardhana	- Consultant Microbiologist /NTRL
4	Dr Sumal Nandasena	- Deputy Regional Director of Health Services - Kalutara
5	Dr Sumudu A. Hewage	- Acting Consultant Community Physician
6	Dr Pramil Liyanage	- Acting Consultant in Health Informatics - NPTCCD
7	Dr Amali Senanayake	- Medical Officer - NPTCCD
8	Dr Shashi Abeysekara	- Medical Officer - NPTCCD
9	Dr Awanthi Senadheera	- Medical Officer - NPTCCD
10	Dr Kishan Suriaaratchie	- Medical Officer - NPTCCD
11	Dr S. Kajanan	- Medical Officer – NPTCCD

NSP (2021 – 2025) Preparation- Virtual Meeting on 06/11/2020

1	Dr Paul Nunn	- International Consultant
2	Dr Nirupa Pallewatte	- Deputy Director – NPTCCD
3	Dr Dushani Jayawardhana	- Consultant Microbiologist /NTRL
4	Dr Sumal Nandasena	- Deputy Regional Director of Health Services - Kalutara

5	Dr Pramil Liyanage	- Acting Consultant in Health Informatics - NPTCCD
6	Dr Sumudu A. Hewage	- Acting Consultant Community Physician
7	Dr Lakmal Rathnayake	- MO
8	Dr Chathurani Wickramaarachchi	- Senior Registrar in Community Medicine - NPTCCD
9	Dr Amali Senanayake	- Medical Officer - NPTCCD
10	Dr Shashi Abeysekara	- Medical Officer - NPTCCD
11	Dr Awanthi Senadheera	- Medical Officer - NPTCCD
12	Dr Kishan Suriaaratchie	- Medical Officer - NPTCCD
13	Dr S. Kajanan	- Medical Officer - NPTCCD

NSP (2021 – 2025) Preparation- Virtual Meeting on 12/11/2020

1	Dr Paul Nunn	- International Consultant
2	Dr Nirupa Pallewatta	- Deputy Director/NPTCCD
3	Dr Dushani Jayawardhana	- Consultant Microbiologist /NTRL
4	Dr Pramil Liyanage	- Acting Consultant in Health Informatics - NPTCCD
5	Dr Neranjan Dissanayake	- Consultant Respiratory Physician
6	Dr Sumal Nandasena	- Deputy Regional Director of Health Services - Kalutara
7	Dr Sumudu A. Hewage	- Acting Consultant Community Physician
8	Dr Lakmal Rathnayake	-Former DTCO, Colombo
9	Dr Chathurani Wickramaarachchi	- Senior Registrar in Community Medicine - NPTCCD
10	Dr N.R. Liyanage	- Senior Registrar in Community Medicine - NPTCCD
11	Dr Amali Senanayake	- Medical Officer - NPTCCD
12	Dr Awanthi Senadheera	- Medical Officer - NPTCCD
13	Dr S. Kajanan	- Medical Officer - NPTCCD
14	Dr Kishan Suriaaratchie	- Medical Officer - NPTCCD
15	Dr Shashi Abeysekara	- Medical Officer – NPTCCD

NSP (2021 – 2025) Preparation- Virtual Meeting on 19/11/2020

1	Dr Paul Nunn	- International Consultant
2	Dr Nirupa Pallewatta	- Deputy Director/NPTCCD
3	Dr Dushani Jayawardhana	- Consultant Microbiologist /NTRL
4	Dr Pramil Liyanage	- Acting Consultant in Health Informatics - NPTCCD
5	Dr Neranjan Dissanayake	- Consultant Respiratory Physician
6	Dr Sumal Nandasena	- Deputy Regional Director of Health Services - Kalutara
7	Dr Sumudu A. Hewage	- Acting Consultant Community Physician
8	Dr Lakmal Rathnayake	- Former DTCO, Colombo
9	Dr Chathurani Wickramaarachchi	- Senior Registrar in Community Medicine - NPTCCD
10	Dr N.R. Liyanage	- Senior Registrar in Community Medicine - NPTCCD
11	Dr Amali Senanayake	- Medical Officer - NPTCCD
12	Dr Awanthi Senadhera	- Medical Officer - NPTCCD
13	Dr S. Kajanan	- Medical Officer - NPTCCD

14	Dr Kishan Suriaaratchie	- Medical Officer - NPTCCD
15	Dr Shashi Abeysekara	- Medical Officer – NPTCCD

NSP (2021 – 2025) Preparation- Virtual Meeting on 28/11/2020

1	Dr Paul Nunn	- International Consultant
2	Dr Nirupa Pallewatta	- Deputy Director/NPTCCD
3	Dr Dushani Jayawardhana	- Consultant Microbiologist /NTRL
4	Dr Pramil Liyanage	- Acting Consultant in Health Informatics - NPTCCD
5	Dr Neranjan Dissanayake	- Consultant Respiratory Physician
6	Dr Sumal Nandasena	- Deputy Regional Director of Health Services - Kalutara
7	Dr Sumudu A. Hewage	- Acting Consultant Community Physician
8	Dr Lakmal Rathnayake	- Former DTCO, Colombo
9	Dr Chathurani Wickramaarachchi	- Senior Registrar in Community Medicine- NPTCCD
10	Dr N.R. Liyanage	- Senior Registrar in Community Medicine - NPTCCD
11	Dr Amali Senanayake	- Medical Officer - NPTCCD
12	Dr Awanthi Senadheera	- Medical Officer - NPTCCD
13	Dr S. Kajanan	- Medical Officer - NPTCCD
14	Dr Kishan Suriaaratchie	- Medical Officer - NPTCCD
15	Dr Shashi Abeysekara	- Medical Officer – NPTCCD

NSP (2021 – 2025) Preparation- Virtual Meeting on 04/12/2020

1	Dr Paul Nunn	- International Consultant
2	Dr Nirupa Pallewatta	- Deputy Director/NPTCCD
3	Dr Dushani Jayawardhana	- Consultant Microbiologist /NTRL
4	Dr Pramil Liyanage	- Acting Consultant in Health Informatics - NPTCCD
5	Dr Neranjan Dissanayake	- Consultant Respiratory Physician
6	Dr Sumal Nandasena	- Deputy Regional Director of Health Services - Kalutara
7	Dr Sumudu A. Hewage	- Acting Consultant Community Physician
8	Dr Lakmal Rathnayake	- Former DTCO, Colombo
9	Dr Chathurani Wickramaarachchi	- Senior Registrar in Community Medicine - NPTCCD
10	Dr N.R. Liyanage	- Senior Registrar in Community Medicine - NPTCCD
11	Dr Amali Senanayake	- Medical Officer - NPTCCD
12	Dr Awanthi Senadheera	- Medical Officer - NPTCCD
13	Dr S. Kajanan	- Medical Officer - NPTCCD
14	Dr Kishan Suriaaratchie	- Medical Officer - NPTCCD
15	Dr Shashi Abeysekara	- Medical Officer - NPTCCD

NSP (2021 – 2025) Preparation- Virtual Meeting on 09/12/2020

1 Dr Paul Nunn - International Consultant
2 Dr H.D.B Herath - Director/NPTCCD
3 Dr Nirupa Pallewatta - Deputy Director/NPTCCD
4 Dr Nirupa Pallewatta - Deputy Director/NPTCCD
5 Dr Pramil Liyanage - Acting Consultant in Health Informatics - NPTCCD
6 Dr Sumudu A. Hewage - Acting Consultant Community Physician
7 Dr N.R. Liyanage - Senior Registrar in Community Medicine- NPTCCD
8 Dr Amali Senanayake - Medical Officer - NPTCCD
9 Dr Awanthi Senadheera - Medical Officer - NPTCCD
10 Dr S. Kajanan - Medical Officer - NPTCCD
11 Dr Kishan Suriaaratchie - Medical Officer – NPTCCD
12 Dr Shashi Abeysekara - Medical Officer – NPTCCD
13 Dr P.A.S.S. Perera - Registrar in Community Medicine
14 DTCOs –

1. Ampara - Dr Devika Wijethunga
2. Matale - Dr R. D. Senaka Rajugamuwa
3. Polonnaruwa - Dr J. D. S. Samaraweera
4. Galle - Dr Iresha Samanmalee
5. Colombo - Dr Nayana de Silva
6. Batticaloa - Dr Aranee Koneswaran
7. Trincomalee - Dr A. Aninthitha
8. Kalutara - Dr Amarasiri
9. Jaffna - Dr R. Maniwasakan
10. Kurunegala - Dr Kapila Kulathilake
11. Vavuniya - Dr M. Kalaichelvan
12. Gampaha - Dr Kaushalya Rapaksha
13. Kegalle - Dr Danoja Punyasoma

NSP (2021 – 2025) Preparation- Virtual Meeting on 11/12/2020

1 Dr Paul Nunn - International Consultant
2 Dr Nirupa Pallewatta - Deputy Director/NPTCCD
3 Dr Dushani Jayawardhana - Consultant Microbiologist
4 Dr Sumudu A. Hewage - Acting Consultant Community Physician
5 Dr Pramil Liyanage - Acting Consultant in Health Informatics - NPTCCD
6 Dr N.R. Liyanage - Senior Registrar in Community Medicine – NPTCCD
7 Dr Amali Senanayake - Medical Officer - NPTCCD
8 Dr Awanthi Senadheera - Medical Officer - NPTCCD

9	Dr S. Kajanan	- Medical Officer - NPTCCD
10	Dr Kishan Suriaaratchie	- Medical Officer – NPTCCD
11	Dr Shashi Abeysekara	- Medical Officer – NPTCCD
12	Dr P.A.S.S. Perera	- Registrar in Community Medicine

NSP (2021 – 2025) Preparation- Virtual Meeting on 18/12/2020

1	Dr Paul Nunn	- International Consultant
2	Dr Nirupa Pallewatta	- Deputy Director/NPTCCD
3	Dr Dushani Jayawardhana	- Consultant Microbiologist
4	Dr Sumudu A. Hewage	- Acting Consultant Community Physician
5	Dr Pramil Liyanage	- Acting Consultant in Health Informatics - NPTCCD
6	Dr Amali Senanayake	- Medical Officer - NPTCCD
7	Dr N.R. Liyanage	- Senior Registrar in Community Medicine - NPTCCD
8	Dr Awanthi Senadheera	- Medical Officer - NPTCCD
9	Dr S. Kajanan	- Medical Officer - NPTCCD
10	Dr Kishan Suriaaratchie	- Medical Officer – NPTCCD
11	Dr Shashi Abeysekara	- Medical Officer – NPTCCD
12	Dr P.A.S.S. Perera	- Registrar in Community Medicine

NSP (2021 – 2025) Preparation- Virtual Meeting on 01/01/2021

1	Dr Paul Nunn	- International Consultant
2	Dr Nirupa Pallewatta	- Deputy Director/NPTCCD
3	Dr Dushani Jayawardhana	- Consultant Microbiologist
4	Dr Sumudu A. Hewage	- Acting Consultant Community Physician
5	Dr Pramil Liyanage	- Acting Consultant in Health Informatics - NPTCCD
6	Dr N.R. Liyanage	- Senior Registrar in Community Medicine – NPTCCD
7	Dr Chathurani Wickramaarachchi	- Senior Registrar in Community Medicine – NPTCCD
8	Dr Amali Senanayake	- Medical Officer - NPTCCD
9	Dr Awanthi Senadheera	- Medical Officer - NPTCCD
10	Dr S. Kajanan	- Medical Officer - NPTCCD
11	Dr Kishan Suriaaratchie	- Medical Officer – NPTCCD
12	Dr Shashi Abeysekara	- Medical Officer – NPTCCD
13	Dr P.A.S.S. Perera	- Registrar in Community Medicine

NSP (2021 – 2025) Preparation- Virtual Meeting on 07/01/2021

1	Dr Paul Nunn	- International Consultant
2	Dr Nirupa Pallewatta	- Deputy Director/NPTCCD
3	Dr Dushani Jayawardhana	- Consultant Microbiologist
4	Dr Sumudu A. Hewage	- Acting Consultant Community Physician
5	Dr Pramil Liyanage	- Acting Consultant in Health Informatics - NPTCCD
6	Dr N.R. Liyanage	- Senior Registrar in Community Medicine– NPTCCD

7	Dr Chathurani Wickramaarachchi	- Senior Registrar in Community Medicine – NPTCCD
8	Dr Amali Senanayake	- Medical Officer - NPTCCD
9	Dr Awanthi Senadheera	- Medical Officer - NPTCCD
10	Dr S. Kajanan	- Medical Officer - NPTCCD
11	Dr Kishan Suriaaratchie	- Medical Officer – NPTCCD
12	Dr Shashi Abeysekara	- Medical Officer – NPTCCD

NSP (2021 – 2025) Preparation- Virtual Meeting on 12/01/2021

1	Dr Paul Nunn	- International Consultant
2	Mrs. Tikiri Rambukwella	- Finance Consultant
3	Dr Nirupa Pallewatta	- Deputy Director/NPTCCD
4	Dr Dushani Jayawardhana	- Consultant Microbiologist
5	Dr Sumudu A. Hewage	- Acting Consultant Community Physician
6	Dr Pramil Liyanage	- Acting Consultant in Health Informatics - NPTCCD
7	Dr N.R. Liyanage	- Senior Registrar in Community Medicine– NPTCCD
8	Dr Chathurani Wickramaarachchi	- Senior Registrar in Community Medicine – NPTCCD
9	Dr Amali Sennayake	- Medical Officer - NPTCCD
10	Dr Awanthi Senadheera	- Medical Officer - NPTCCD
11	Dr S. Kajanan	- Medical Officer - NPTCCD
12	Dr Kishan Suriaaratchie	- Medical Officer – NPTCCD
13	Dr Shashi Abeysekara	- Medical Officer – NPTCCD
14	Dr P.A.S.S. Perera	- Registrar in Community Medicine

Other Stakeholder Meetings

NSP REVISION 2021 – 2025 – STAKEHOLDER MEETING WITH ESTATE MEDICAL OFFICERS/ASSISTANTS

The above meeting was held on 20th November 2020 virtually. Estate Medical Assistants (EMAs) from estates in Nuwaraeliya district participated along with DTCO Nuwaraeliya. The details of the participants are as follows

NAME	DESIGNATION
MR.K.A.PRADEEP	EMA – SOMERSET ESTATE
MR.A.P.JOSEPH	EMA – CONCORDIA ESTATE
MS.JASCINTHA SAMUEL	EMA – COURT LODGE ESTATE
DR.KRISHANI	HEALTH MANAGER – PLANTATION HUMAN DEVELOPMENT TRUST
DR.ANJANA	DTCO NUWARAELIYA
MR.RAVICHANDRAN	EMA – AMBAKALE ESTATE
MR.SELVARAJAN	EMA – TORRINGTON ESTATE
MR.KUMARASIRI	EMA
MS.NANCY	EMA
MR.YAPA WATTEGODA	EMA
MS.NITHI SELLA	EMA
DR.N.R.LIYANAGE	SENIOR REGISTRAR IN COMMUNITY MEDICINE /NPTCCD
DR.S.KAJANAN	MO/NPTCCD

NSP REVISION 2021 – 2025 – STAKEHOLDER MEETING WITH GENERAL PARCTITIONERS AND PART TIME PRIVATE PRACTITIONERS

The above meeting was held on 17th of November 2020 virtually. General practitioners and part time private practitioner from several districts in Sri Lanka participated in the meeting.

The details of the participants are as follows

NAME	DISTRICT
DR.N.C.PALLEWATTE	DEPUTY DIRECTOR/NPTCCD
DR.ARULANANTHAM	BATTICALOA
DR.A.M.D.L.CHANDRASIRI	KALUTARA
DR.LALITHA JAYASUNDARA	ANURADAPURA
DR.SAMPATH DEMATAPAKSHA	AMPARA
DR.PUVIKARAN	VAVUNIYA
DR.MADUSHANKA RANASINGHE	MONARAGALA
DR.SANOOZ	KALMUNAI
DR.THASLEEM	DTCO/PUTTALAM
DR.AMALI SENANAYAKE	MO/NPTCCD
DR.ARANI	DTCO/BATTICALOA
DR.S.KAJANAN	MO/NPTCCD

NSP REVISION 2021 – 2025 – STAKEHOLDER MEETING WITH PRIVATE HEALTH CARE INSTITUTIONS

The above meeting was held on 11th of November 2020 virtually. **MEDICAL DIRECTORS OF PRIVATE HOSPITALS, PRIVATE LABORATORIES and CONSULTANT MICROBIOLOGIST ATTACHED TO PRIVATE LABORATORIES** participated in the meeting.

The details of the participants are as follows

NAME	DISTRICT
DR.N.C.PALLEWATTE	DEPUTY DIRECTOR/NPTCCD
DR.TISSA LOWE	MEDICAL SUPERINTENDENT – NAWALOKA HOSPITAL
DR.JAYANTHI ELVITIGALE	CONSULTANT MICROBIOLOGIST – HEMAS HOSPITAL
DR.THARINDU	MOIC/OPD – HEMAS HOSPITAL
DR.HASANTHI IDHAMALGODA	MEDICAL DIRECTOR – ASIRI MEDICAL HOSPITAL
DR.JENNIFER PERERA	CONSULTANT MICROBIOLOGIST – NAWALOKA HOSPITAL
DR.DUSHANI JAYAWARDENE	CONSULTANT MICROBIOLOGIST - NTRL
DR.PRANITHA SOMARATHNE	CONSULTANT MICROBIOLOGIST – LANKA HOSPITAL
MS.DEEPIKA	INFECTION CONTROL NURSING OFFICER/LABORATORY – DURDANS HOSPITAL
MR.UPUL THUDAWE	MANAGING DIERECTOR – DURDANS HOSPITAL
DR.FAREJA JABEER	CHIEF MEDICAL OFFICER – WESTERN HOSPITAL
DR.C.M.WICKRAMAAARACHCHI	SENIOR REGISTRAR IN COMMUNITY MEDICINE/NPTCCD
DR.THUSARI DILRUKSHI	
DR.PRAMIL LIYANAGE	ACTING CONSULTANT IN HEALTH INFORMATICS/NPTCCD
DR.AMALI SENANAYAKE	MO/NPTCCD
DR.AWANTHI SENADHEERA	MO/NPTCCD
DR.S.KAJANAN	MO/NPTCCD

END TERM REVIEW AND NSP PREPARATION

Discussion with Consultant Respiratory Physicians - 07th October 2020

1.	Dr Paul Nunn	International Consultant/ Team Lead
2.	Dr Holger Sawert	International Consultant
3.	Dr Vithal Prasad	International Consultant
4.	Dr Vineet Bhatia	International Consultant
5.	Dr Shamini Prathapan	National Consultant
6.	Dr Aindralal Balasuriya	National Consultant
7.	Dr Shirani Chandrasiri	National Consultant
8.	Dr Neranjan Dissanayake	National Consultant
9.	Dr Nirupa Pallewatte	Deputy Director/ NPTCCD
10.	Dr Dushani Jayawardene	Consultant Microbiologist - NTRL
11.	Dr Bandu Gunasena	Consultant Respiratory Physician
12.	Dr Amitha Fernando	Consultant Respiratory Physician
13.	Dr Eshanth Perera	Consultant Respiratory Physician
14.	Dr Chatura Wirasinghe	Consultant Respiratory Physician
15.	Dr Ravini Karunathilaka	Consultant Respiratory Physician
16.	Dr S. Muhunthan	Consultant Respiratory Physician
17.	Dr Hiranthe Pathirathna	Consultant Respiratory Physician
18.	Dr Geethal Perera	Consultant Respiratory Physician
19.	Dr Channa De Silva	Consultant Paediatric Pulmonologist
20.	Dr Aruna Hearth	Consultant Paediatric Pulmonologist
21.	Dr Rajanthi Ramachandran	Consultant Microbiologist
22.	Dr Sumudu Hewage	Acting Consultant Community Physician
23.	Dr Sugeesha	Senior Registrar in Respiratory Medicine
24.	Dr Dilesha	Senior Registrar in Respiratory Medicine
25.	Dr Awanthi Senadheera	Medical Officer/ NPTCCD
26.	Dr Shashika Abeysekara	Medical Officer/ NPTCCD
27.	Dr Kishan Suriaaratchie	Medical Officer/ NPTCCD

Discussion with District TB Control Officers - 13th October 2020

1.	Dr Paul Nunn	International Consultant/ Team Lead
2.	Dr Holger Sawert	International Consultant
3.	Dr Vithal Prasad	International Consultant
4.	Dr Vineet Bhatia	International Consultant
5.	Dr Shamini Prathapan	National Consultant
6.	Dr Aindralal Balasuriya	National Consultant
7.	Dr Shirani Chandrasiri	National Consultant
8.	Dr Neranjan Dissanayake	National Consultant
9.	Dr Nirupa Pallewatte	Deputy Director/ NPTCCD
10.	Dr Dushani Jayawardene	Consultant Microbiologist - NTRL
11.	Dr Sumudu Hewage	Acting Consultant Community Physician
12.	Dr Nadeeja Liyanage	Senior Registrar in Community Medicine
13.	Dr Chathurani Wickramarachchi	Senior Registrar in Community Medicine
14.	Dr Nayana De Silva	DTCO Colombo
15.	Dr A Ramachandran	MO- Chest Clinic Colombo
16.	Dr Devika Wijethunga	DTCO Ampara
17.	Dr Iresha	DTCO Galle
18.	Dr Deepthini Waidyarathne	DTCO Anuradhapura
19.	Dr S Thayalan	DTCO Mullathivu
20.	Dr Arani	DTCO Batticaloa
21.	Dr S Aninthita	DTCO Trincomalee
22.	Dr Kavinda Amarasinghe	DTCO Kandy
23.	Dr M. Kalaichchelvan	DTCO Vavuniya
24.	Dr Susil	DTCO Monaragala
25.	Dr Kapila Kulathilaka	DTCO Kurunegala
26.	Dr Kaushalya Rajapaksha	DTCO Gampaha
27.	Dr Jeewani Samaraweera	DTCO Polonnaruwa
28.	Dr Thasleem	DTCO Puttalam
29.	Dr Thushari	DTCO Matara
30.	Dr Senaka Rajagamuwa	DTCO Matale
31.	Dr Awanthi Senadheera	Medical Officer/ NPTCCD
32.	Dr Shashika Abeysekara	Medical Officer/ NPTCCD
33.	Dr Kishan Suriaaratchie	Medical Officer/ NPTCCD
34.	Dr S. Kajanan	Medical Officer/ NPTCCD
35.	Dr Amali Senanayake	Medical Officer/ NPTCCD

Discussion with Technical Support Group members - 14th October 2020

1.	Dr Paul Nunn	International Consultant/ Team Lead
2.	Dr Holger Sawert	International Consultant
3.	Dr Vithal Prasad	International Consultant
4.	Dr Vineet Bhatia	International Consultant
5.	Dr Shamini Prathapan	National Consultant
6.	Dr Aindralal Balasuriya	National Consultant
7.	Dr Shirani Chandrasiri	National Consultant
8.	Dr Neranjan Dissanayake	National Consultant
9.	Prof Indika Karunathilake	President– Sri Lanka Medical Association
10.	Dr Nirupa Pallewatte	Deputy Director/ NPTCCD
11.	Dr Dushani Jayawardene	Consultant Microbiologist - NTRL
12.	Dr Dushantha Madegedara	Consultant Respiratory Physician
13.	Dr Amitha Fernando	Consultant Respiratory Physician
14.	Dr Suharshi Silva	Consultant Respiratory Physician
15.	Dr Channa De Silva	Consultant Paediatric Pulmonologist
16.	Dr Thashi Chang	Consultant Neurologist
17.	Dr Senaka Bandusena	Consultant Neurologist
18.	Dr Thilak Jayalath	Consultant in Internal Medicine
19.	Dr Anuradha Abeygunasekara	Consultant Urological Surgeon
20.	Dr Tirusha Nawaratne	Consultant Oncologist
21.	Dr Sumitha Peiris	Consultant Oncologist
22.	Dr Pavithri Bandara	Consultant Microbiologist
23.	Dr Rajanthi Ramachandran	Consultant Microbiologist
24.	Dr Bhagya Piyasiri	Consultant Microbiologist
25.	Dr Rohini Wadanamby	Consultant Microbiologist
26.	Dr A. Riyaaz	Consultant Physician
27.	Dr Lasanthi Siriwardena	Consultant Venereologist
28.	Dr Darshanie Mallikarachahi	Consultant Venereologist
29.	Dr S. Mathu	Consultant Nephrologist
30.	Dr Monika De Silva	Consultant Rheumatologist
31.	Dr Sumudu Hewage	Acting Consultant Community Physician
32.	Dr Awanthi Senadheera	Medical Officer/ NPTCCD
33.	Dr Shashika Abeysekara	Medical Officer/ NPTCCD
34.	Dr Kishan Suriaaratchie	Medical Officer/ NPTCCD
35.	Dr S. Kajanan	Medical Officer/ NPTCCD
36.	Dr Amali Senanayake	Medical Officer/ NPTCCD

Briefing (05-10-2020)

1.	Dr Paul Nunn	International Consultant/ Team Lead
2.	Dr Holger Sawert	International Consultant
3.	Dr Vithal Prasad	International Consultant
4.	Dr Vineet Bhatia	International Consultant
5.	Dr Shamini Prathapan	National Consultant
6.	Dr Aindralal Balasuriya	National Consultant
7.	Dr Shirani Chandrasiri	National Consultant
8.	Dr Neranjan Dissanayake	National Consultant
9.	Dr Nirupa Pallewatte	Deputy Director/ NPTCCD
10.	Dr Arax Hovhannesyan	International Consultant – TB Epidemiological Review 2020
11.	Dr Priyadarshani Samarasinghe	National Consultant – TB Epidemiological Review 2020
12.	Dr Dushani Jayawardene	Consultant Microbiologist - NTRL
13.	Dr Janakan Navaratnasingam	Consultant Community Physician - WHO
14.	Dr Padmal de Silva	Consultant Community Physician - WHO
15.	Dr Preshila Samaraweera	Consultant Community Physician - WHO
16.	Dr Mizaya Carder	Consultant Community Physician - WHO
17.	Dr Rajanthi Ramachandran	Consultant Microbiologist
18.	Dr Sumudu Hewage	Acting Consultant Community Physician
19.	Dr Nadeeja Liyanage	Senior Registrar in Community Medicine
20.	Dr Chathurani Wickramarachchi	Senior Registrar in Community Medicine
21.	Dr A. Ramachandran	Medical Officer – Chest Clinic Colombo
22.	Dr Nayana De Silva	DTCO - Colombo
23.	Dr Kaushalya Rajapaksha	PMDT Coordinator
24.	Dr Awanthi Senadheera	Medical Officer/ NPTCCD
25.	Dr Shashika Abeysekara	Medical Officer/ NPTCCD
26.	Dr Kishan Suriaaratchie	Medical Officer/ NPTCCD
27.	Dr S. Kajanan	Medical Officer/ NPTCCD
28.	Dr Amali Senanayake	Medical Officer/ NPTCCD
29.	Lasith Jayathunga	Chief Pharmacist – Central Drug Stores
30.	Awanthi Dissananyake	Accountant - GF
31.	Sujith Perera	Finance Assistant - GF
32.	Maduka Rupasinghe	Procurement Officer - GF

33.	Blanca Gil Antunano Vizcaino	Representation - GF
34.	Vladimir Mikic	Representation - GF

Debriefing (19-10-2020)

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4.	Dr Vineet Bhatia	International Consultant
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7.	Dr Shirani Chandrasiri	National Consultant
8.	Dr Neranjan Dissanayake	National Consultant
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13.	Dr Dushani Jayawardene	Consultant Microbiologist - NTRL
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15.	Dr Amitha Fernando	Consultant Respiratory Physician
16.	Dr Dushantha Madagedera	Consultant Respiratory Physician
17.	Dr Manil Peris	Consultant Respiratory Physician
18.	Dr Aflah Sadikeen	Consultant Respiratory Physician
19.	Dr Thushara Galabada	Consultant Respiratory Physician
20.	Dr Geethal Perera	Consultant Respiratory Physician
21.	Dr Channa De Silva	Consultant Paediatric Pulmonologist
22.	Dr Lasanthi Siriwardena	Consultant Venereologist
23.	Dr Tirusha Nawaratne	Consultant Oncologist
24.	Dr Janakan Navaratnasingam	Consultant Community Physician - WHO
25.	Dr Padmal de Silva	Consultant Community Physician - WHO
26.	Dr Preshila Samaraweera	Consultant Community Physician - WHO
27.	Dr Mizaya Carder	Consultant Community Physician - WHO
28.	Dr Rajanthi Ramachandran	Consultant Microbiologist
29.	Dr Bhagya Piyasiri	Consultant Microbiologist
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33.	Dr Chathurani Wickramarachchi	Senior Registrar in Community Medicine
34.	Dr A. Ramachandran	Medical Officer – Chest Clinic Colombo
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38.	Dr Shashika Abeysekara	Medical Officer/ NPTCCD
39.	Dr Kishan Suriyaaratchie	Medical Officer/ NPTCCD
40.	Dr S. Kajanan	Medical Officer/ NPTCCD
41.	Dr Amali Senanayake	Medical Officer/ NPTCCD
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43.	Dr Danoja Punyasoma	DTCO Kegalle
44.	Dr Devika Wijethunga	DTCO Ampara
45.	Dr R.Manivasakan	DTCO Jaffna
46.	Dr S. Aninthita	DTCO Trincomalee
47.	Dr Iresha	DTCO Galle
48.	Lasith Jayathunga	Chief Pharmacist – Central Drug Stores
49.	Awanthi Dissananyake	Accountant - GF
50.	Sujith Perera	Finance Assistant - GF
51.	Maduka Rupasinghe	Procurement Officer - GF
52.	Blanca Gil Antunano Vizcaino	Representation - GF
53.	Vladimir Mikic	Representation - GF
54.	Victoria Jhong Chung	Representation - GF

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