

National Tuberculosis Program Nepal

**Annual Report
2075/76 (2018/19)**



**Government of Nepal
Ministry of Health & Population
Department of Health Services
National Tuberculosis Control Center**

मा. भानु भक्त ढकाल
Hon. Bhanu Bhakta Dhakal

स्वास्थ्य तथा जनसङ्ख्यामन्त्री
Minister for Health and Population



नेपाल सरकार
Government of Nepal



स्वास्थ्य तथा जनसङ्ख्या मन्त्रालय
Ministry of Health and Population



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: ०१-४-२६२५३४

फ्याक्स

: ०१-४-२६२५६५

Fax

: ०१-४-२६२५६५

Website: www.mohp.gov.np

निजी सचिवालय
Personal Secretariat

रामशाहपथ, काठमाडौं, नेपाल ।
Ramshahpath, Kathmandu, Nepal

पत्र सङ्ख्या (Ref. No.):-

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Preface

Tuberculosis (TB) remains as an important public health challenge and it is recognized as one of the ten leading causes of death in Nepal. The Government of Nepal is fully committed to eliminate TB from the country by engaging all levels of leaders, empowering people living with tuberculosis and communities and securing required resources for the programme.

Ministry of Health and Population together with many partners from the public and private health care sectors are dedicated to further improve the tuberculosis programme in order to sustain the achieved progress and to ensure the TB elimination targets linked to the Sustainable Development Goals to End TB from the country by 2030.

It is my great pleasures to bring out this Annual Report of National Tuberculosis Control Programme for the fiscal year 2075/76. This report includes the progress made during the year. It will be a useful reference document for all national and international planners, implementers, researchers, donors, medical professionals and students committed to fight against TB.

I would also like to extend my sincere appreciations and thanks to all the donors, development partners and other governmental and non- governmental sectors for their invaluable contributions for TB prevention, care, elimination and management in Nepal.

March, 2020.


Minister

Bhanu Bhakta Dhakal
Minister for Health and Population

नवराज रावत
Navraj Rawat



नेपाल सरकार
Government of Nepal

फोन : ०१-४-२४३६७२
Phone : 01-4-243672
फ्याक्स : ०१-४-२६२४६८
Fax : 01-4-262468

मा. राज्यमन्त्री
Hon. State Minister

स्वास्थ्य तथा जनसङ्ख्या मन्त्रालय
Ministry of Health and Population

रामशाहपथ, काठमाडौं, नेपाल ।
Ramshahpath, Kathmandu, Nepal

पत्र संख्या (Ref.No.): ०७६/०७७

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Message

The National Tuberculosis Program (NTP) is priority program of the Ministry of Health and Population (MoHP) and has continuously been successful among the health interventions in the country since many years. It is focused to provide quality tuberculosis services under the framework of universal health coverage and aligned with an integrated treatment and diagnostic services within health system.

It is matters of pleasure that National TB Program has already adopted and moving to achieve the targets set in the Sustainable Development Goals (SDG), after achieving Millennium Development Goals (MDGs) targets to stop tuberculosis in Nepal.

The Ministry of Health and Population is committed to implement and achieve the targets of "END TB Strategy" recommended by the WHO by 2030. Tuberculosis is a well performing program in the country and had been recognized as a model in the South East Asia (SEA).

Government of Nepal, Ministry of Health and Population has developed the 5 years National Strategy Plan (NSP) for TB (2016-2021), which has been providing strategic directions for the execution of innovative and novel approaches for searching, finding and treating people with Tuberculosis as early as possible.

National Tuberculosis Program (NTP) had adopted WHO recommended STOP TB Strategy in 2006 as a TB control guiding principles and made remarkable progress and entered on a new era of tuberculosis control under which several new initiatives have been launched successfully including Multi-Drug Resistant (MDR) and Extensive Drug Resistant (XDR) TB management and that is now considered as a global model for ambulatory treatment for Drug Resistant Tuberculosis management.

I would like to take this an opportunity to acknowledge and extend my sincere thanks to all the National Tuberculosis Control Centre staff and partners for their supports, dedication, and commitments and hope, to continuously receive similar support in the future as well.

Mr. Navraj Rawat
Hon'ble, State Minister for Health and Population
March 2020

राज्य मन्त्री
स्वास्थ्य तथा जनसङ्ख्या



Ref.:

Government of Nepal

Ministry of Health & Population

Phone: 4.

262987
262590
262802
262706
262935
262862

Ramshahpath, Kathmandu
Nepal

Date :

Message

It is my immense pleasure to bring out the annual report of National Tuberculosis Program (NTP) for the fiscal year 2075/76. This program is recognized as a priority and successful program of the Government of Nepal. It is impressive to note that NTP has achieved the targets recommended by the World Health Organization (WHO) and set by Government of Nepal and it has moved to implement and achieve the targets set for ending TB inline with Sustainable Development Goals (SDGs).

The Ministry of Health and Population (MoHP) has developed the National Strategy Plan (NSP) for 2016-2021 and its main goal is to reduce 20% TB incidence by 2021 compared to the incidence of 2015 (158/1,00,000) by finding the missing people with TB and treating them as early as possible successfully.

The progress of the program has been possible with the supports from the government, non-governmental partners, donor agencies and other national and international stakeholders. NTP has also been addressing issues of drug resistant tuberculosis (DRTB), enhancing private public partnership approach, community system strengthening (CSS) as high priority components of NTP.

This report will give enough information on the activities of the NTP and their partners for fiscal year 2075/76. The successes and limitations observed during the year will also help the program to develop strategy for the future.

I would also like to take an opportunity to extend my sincere thanks to all the staff of Ministry of Health and Population, stakeholders and development partners, whose contribution was uncountable and hoping to their continued support to fight against TB in the upcoming days as well.

Mr. Yadav Prasad Koirala

Secretary

March 2020



Government of Nepal
Ministry of Health & Population
DEPARTMENT OF HEALTH SERVICES

Tel : 4261436
: 4261712
Fax : 4262238

Pachali, Teku
Kathmandu, Nepal

Foreword

Ref. No.

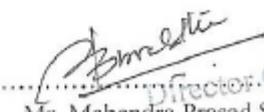
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Tuberculosis remains a public health threat to Nepal as well to global communities. Recognizing the situation, MoHP, Department of Health Services has developed inclusive long-term national strategy plan (NSP) for TB 2016-2021. The NSP has documented the actions to address the problems identified while implementing activities to expand TB service throughout the country. Department of Health Services (DoHS) has been managing tuberculosis program through active leadership of National Tuberculosis Control Centre (NTCC).

National TB Program has achieved global targets set in the Millennium Development Goals (MDGs) in 2015 and has been moving forward to achieve the targets of END TB Strategy which is in line with Sustainable Development Goals. Nevertheless, there are still many challenges to end TB from the country. The comprehensive access to TB care in high risk and vulnerable groups, delivery of TB services in hard to reach areas, collaboration with private health sectors and mainstreaming them in the government system, promoting Community System Strengthening (CSS) including patient centered care and Programmatic Management of Drug Resistant (PMDT) Program are some of the areas, which needs to be strategically addressed and implemented in the country.

It is my great pleasure to publish this report of National TB Program for the fiscal year 2075/76 and hope this report gives detail information and analysis on progress of NTP, which would be helpful for setting the future course of action and direction for the program. The report will also provide ample information to the institutions and individuals involved in TB prevention and control to design policies program and implement TB control interventions in the country effectively.

Finally, I would like to appreciate and thank the director of National Tuberculosis Control Center and his entire team for their hard work and best efforts in getting this valuable report published in time.


.....
Director General
Mr. Mahendra Prasad Shrestha
Director General
March 2020



Nepal Government
Ministry of Health and Population
Department of Health Services
National Tuberculosis Control Center
Thimi, Bhaktapur, Nepal
(.....Section)

Phone : 6630706
6630033
Fax : 6635986
Email : ntpdirector@nepalntp.gov.np

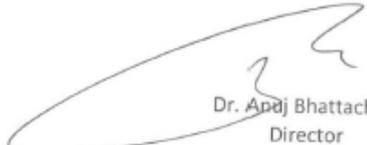
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Acknowledgment

It is our pleasure to bring this annual report of the National Tuberculosis Programme (NTP) for the fiscal year 2075/76. This report was prepared by a core team at NTC led by Dr. Sharad Kumar Sharma, Chief SMEAR Section, and supported by other members from National Tuberculosis Control Centre (NTCC) and partner organizations. All preface and messages for the report were drafted by Gokul Mishra (LSTM) and reviewed by Dr. Sharad Kumar Sharma, executive summary was written by Dr. Ashish Shrestha (WHO) and supported by Gokul Mishra. Introduction chapter and chapter 2 on National commitments were also written by Gokul Mishra. The burden of disease was prepared by Ratna Bhattarai (SCI/GF) and Lok Raj Joshi (SCI/GF). Chapter 4 on Tuberculosis diagnosis and treatment was written by Dr. Suvesh Shrestha (SCI/GF), supported by Dr. Pramod Raj Bhattarai (Damin Foundation) and Meera Hada (NTCC) whereas Chapter 6 on universal health coverage, multisectoral action and social determinants was drafted by Gokul Mishra. Similarly, chapter 7 on planning, monitoring, and evaluation were written by Pushpa Raj Joshi (NTCC) who also wrote a chapter on key constraints and challenges, supported by Dr. Sharad Kumar Sharma. Chapter 8 on TB financing was written by Rajesh Pokharel (SCI/GF), chapter 9 on research and innovation was drafted by Basundhara Sharma (NTCC) and Lok Raj Joshi (SCI/GF) and Rameshwar Adhikari (SCI/GF), chapter 10 on capacity building and development by Chitra Jung Shahi (NTCC), chapter 11: logistics management by Ajudey Shrestha (SCI/GF) and chapter 12 on human resources management by Dr. Sharad Kumar Sharma and Partner's Contribution in TB was written by Rajendra Basnet (SCI/GF). Naval Kishor Shrestha (SCI/GF) has prepared all the annexes, compiled and formatted the overall document, supported by Lok Raj Joshi and Dr. Ashish Shrestha has reviewed and edited the contents of the whole documents.

In addition, I would like to express my sincere appreciation and thank all the NTP staffs, partners, donors, health workers, and concern stakeholders for their valuable supports and contributions to the programme. I would also like to appreciate the hard work and dedication of the NTCC team members, WHO, Save the Children/Global Fund team, Damien Foundation and Liverpool School of Tropical Medicine (LSTM) for their support, but a special appreciation goes to Dr. Sharad Sharma for his leadership and the entire team for their efforts in preparing and producing this very an important document on time and with maintaining level of high quality.


Dr. Anuj Bhattachan
Director
March 2020

Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ARI	Acute Respiratory Infection
ART	Anti-Retro Viral
BCG	Bacille-Calmette-Guérin
CNR	Case Notification Rate
DoAA	Department of Ayurveda and Alternative Medicine
DDA	Department of Drug Administration
DoHS	Department of Health Service
DM	Diabetes Mellitus
DOTS	Directly Observed Treatment Short Course
DST	Drug Susceptibility Test
DRTB	Drug-Resistant Tuberculosis
XDR	Extensive Drug-Resistant Tuberculosis
EQA	External Quality Assessment
EP	Extrapulmonary
FLD	First Line Drug
FQ	Fluoroquinolones
GENETUP	German Nepal Tuberculosis project
GDF	Global Drug Facility
GFATM	Global Fund to fight AIDS, TB and Malaria
GDP	Gross Domestic Product
HMIS	Health Management and Information System
HIV	Human Immunodeficiency Virus
IHIMS	Integrated Health Information Management Section
ISTC	International Standard for TB Care
IPT	Isoniazid Preventable Therapy
LTBI	Latent TB Infection
LPA	Line Probe Assay
LQAS	Lot Quality Assurance Sampling
MoHP	Ministry of Health and Population
M&E	Monitoring and Evaluation
MDR-TB	Multidrug-Resistant TB
MTB	Mycobacterium Tuberculosis
NCASC	National Centre for AIDS and STD Control
NIP	National Immunization Programme
NRL	National Reference Laboratory
NSP	National Strategic Plan
NTCC	National Tuberculosis Control Center
NTP	National Tuberculosis Programme
OoP	Out-of-pocket
PLHIV	People Living with HIV/AIDS
PS	Prevalence Survey
PMU	Programme Management Unit

PPMO	Public Procurement Monitoring Office
PPM	Public-Private Mix
RAD	Return After Defaulter
RIF	Rifampicin
RR	Rifampicin Resistance
SCI	Save the Children International
SLD	Second Line Drugs
SDGs	Sustainable Development Goals
TSR	Treatment Success Rate
TB	Tuberculosis
UVGI	Ultraviolet germicidal irradiation
UHC	Universal Health Coverage
WHO	World Health Organization

Executive Summary

The NTCC has been publishing the annual TB report every year since 1997. Its purpose is to provide a comprehensive and up-to-date TB related information. The information included in this report for FY 2075/76 were reported by 4382 health facilities (private and public).

Burden of TB

Tuberculosis (TB) is a communicable disease that is a major public health problem and one of the top 10 causes of death worldwide as well as in Nepal.

Globally, an estimated 10.0 million people fell ill with TB in 2018. Nepal population contributed to 0.35% of the global population, but with regards to TB, Nepal accounted for 0.45% of global TB cases.

In Nepal, an estimated 42000 fell ill with TB in 2018 (incidence rate of 151 per 100 000), a number that had been relatively stable in recent years. Compared to the estimates, Nepal reported 32043 newly diagnosed TB cases for 2075/76, resulting in nearly 24% estimated cases being missed.

Bagmati Province reported the highest proportion of TB cases (24%). Kathmandu valley (Bhaktapur, Kathmandu, Lalitpur) alone reported around 55% of the TB cases notified from the Bagmati Province, which accounted for 13% in the national total. Whereas in terms of eco-terrain distribution, the terai belt reported more than half of the TB cases (59%). In terms of case notification rate (CNR) it was highest in Province 5 (127/100000 population) and lowest in Karnali province (78/100000 population).

This gap was mostly due to a combination of underreporting of detected cases and under-diagnosis. In 2074/75, there was registered 32313 TB cases, among them 91% were successfully treated (TSR >91%).

There were an estimated 1.2 million TB deaths globally. In Nepal, estimated deaths because of TB was 5500 (3.9 –7.4 thousand). The death rate compared to 1990 (52 per 100000) have significantly decreased. In 2075/76, 1013 deaths were reported because of TB (nearly 80% underreported vs estimates), indicating the need to strengthen and link to the vital registration system of the country.

TB cases distribution by age and sex

Most cases were reported in the working age group (15 – 65 Yrs) where highest number cases were reported in age group (15 – 24 Yrs), childhood TB was around 5.5%. While men were 1.77 times more than women among the reported TB case.

TB and HIV

Among all TB cases, 0.7% were people living with HIV (PLHIV), which was lower than the global context as Nepal is a low HIV prevalent country. The percentage of notified TB patients who had a documented HIV test result in 2075/76 was 69%, up from 67% in 2074/75.

Drug-resistant TB

392 MDR /RR-TB cases were enrolled (out of 635 notified) during FY 2075/76; 0.6% among new TB cases and 20% among the previously treated case (compared to 3.4% of new TB and 18% of previously treated cases globally). There had been some progress in testing, detection, and treatment of MDR/RR-TB during this period. People with bacteriologically confirmed TB were tested for rifampicin resistance, up from 57% in 2074/75 to 78% in 2075/76. The coverage of testing was 79% for new and 74% for previously treated TB patients. Among 344 registered cases, 71% were successfully treated (compared to global TSR 56 %). 5% of MDR TB were treated with the new shorter regimen with 65% success rates.

TB prevention services

The main health care intervention available to reduce the risk of a latent TB infection progressing to active TB disease is TB preventive treatment. During FY 2075/76, 2397 children and 2026 PLHIV received the TB preventive therapy which has improved since FY 2074/75. BCG vaccine can also confer protection, but mostly from severe forms of TB in children. BCG coverage in Nepal was more than 90%.

Progress towards the 2020 milestones of the End TB Strategy and global targets

In line with global commitments, Nepal also aims to reduce the incidence of TB by 20% by 2021 (by identifying 20000 more cases) and 90% by 2035, to reduce the TB deaths by 35% by 2020 and 95% by 2035 (by maintaining treatment success rates of 90% or more) and to reduce the catastrophic cost to families due to TB to 0% by 2035.

Nepal has also reduced the annual incidence and death rate of TB, but the catastrophic cost couldn't be measured due to a lack of baseline data. TB preventive services in Nepal is improving but still is significantly lower than the target set for 2018 for Nepal by UN high-level meeting (Adult- 8500, Children – 2500, PLHIV – 5412).

Financing for TB prevention, diagnosis, and treatment

Funding for the provision of TB prevention, diagnostic and treatment services has decreased in 2075/76, falling far short of what is needed as per the National Strategic Plan for 2016-2021.

The total budget for the TB program in 2075/76 was USD 14.14 million. The domestic source contributed more than half (51.27%) of the budget, still, the

international donor funding remained crucial, accounting for 47.14 % of the funding supported by Global Fund, 1.58 % By WHO and other partners. Among domestic funding (i.e. USD 7.25 million), 66.15% was for the central government investment, 17.99 % was for the provincial government and 15.86 % for the local level government.

Universal health coverage, multisectoral action, and social determinants

The End TB Strategy milestones for 2020 and 2025 can only be achieved if TB diagnosis, treatment, and prevention services are provided within the context of progress towards universal health coverage (UHC) and if there is multisectoral action to address the broader determinants that influence TB epidemics and their socioeconomic impact. UHC means that everyone can obtain the health services they need without suffering financial hardship. SDG Target 3.8 is to achieve UHC by 2030.

In Nepal, there is still no baseline data on catastrophic expenditures on health care because of TB. Basic TB tests and TB drugs are freely available to all TB patients. Programs like cash incentives and nutritional allowance and hostel-like in-patient services for DR TB patients were provided. Additionally, as a part of a health insurance scheme, DR TB patient and their families were freely covered for medical services. Cash incentives were also provided for referral of childhood TB cases for diagnosis.

TB research and development

The SDG and End TB Strategy targets set for 2030 cannot be met without intensified research and development. Technological breakthroughs are needed by 2025.

Nepal has for the first time carried out the National TB Prevalence survey with support from the World Health Organization, RIT/JATA, Save The Children and other partners. The fieldwork had completed by June 2018 and the final report is planned to be published by March 2020. The report will have high impact information on the actual burden of TB in Nepal, the health-seeking behavior and health service utilization of TB patients, which will be used for better planning in the coming years.

Studies like Drug resistance TB survey, catastrophic cost study, patient pathway modeling, and inventory study are key researches planned for the coming years.

Conclusion

Nepal is committed to “ending the global TB epidemic” by 2030, backed up by concrete milestones and targets, as a part of the global community and commitments.

Several progresses have been made in TB program with increased access to better diagnosis, care, and prevention. There is also significant domestic financing for TB in addition to donor funding.

However, the progress needs to be accelerated to achieve end-TB targets. The programme needs to scale up modern diagnostics (e.g. X-ray, Xpert MTB/RIF, LPA, etc.), expand TB preventive treatment, improve human resources at all levels, improve quality of care and increase investments in TB, and harness multisectoral action for meeting the national TB targets.

The results from the National TB prevalence survey 2075/76, will provide better disease burden estimates and important information for the national TB programme for better planning and setting realistic goals towards ending TB in Nepal.

Fact Sheet

Program Indicators	National Level			FY 2075/76 by Province						
	2073/74	2074/75	2075/76	1	2	Bagmati	Gandaki	5	Karnali	Sudurpaschim
Number of Service Sites										
DOTS Center	4221	4323	4382	716	826	841	557	652	363	427
MDR Treatment Centers	18	21	21	4	3	2	3	3	2	4
MDR Treatment Sub-Centers	81	86	81	15	15	26	6	15	2	2
DR Homes	1	1	1	-	-	-	1	-	-	-
DR Hostel	6	6	6	1	1	1	-	2	-	1
Microscopy Centers	604	624	604	102	79	136	58	99	33	97
GeneXpert Facility	27	55	56	7	10	15	4	11	4	5
Culture Labs and DST	2	2	2	-	-	2	0	0	-	-
Line Probe Assay (LPA)	2	2	2	-	-	2	-	-	-	-
TB Case Notification										
Case Notification Rate (All Forms of TB)	111	112	109	89	112	123	90	127	78	110
Case Notification Rate (PBC New and Relapse)	59	62	62	50	66	64	50	77	37	65
Types of TB										
PBC	17354	18438	18490	2498	4124	4135	1270	3884	680	1899
PCD	5216	4499	4171	426	1244	770	245	843	257	386
EP	9194	9537	9382	1432	1476	2809	745	1620	437	863
Distribution By Age and Sex										
Female %	36	37	36	35	35	40	35	36	33	35
Male %	64	63	64	65	65	60	65	64	67	65
Child (<15) %	5.6	5.5	5.5	5	6	4	4	6	15	6
Contribution by Sectors (%)										
Community	21	20	18	2	10	4	1	1	1	1
Private	23	19	18	4	3	4	1	3	1	1
TB/HIV (%)										
Total HIV Test	54	67	69	78	65	51	62	86	55	83
Total Positive	1.3	0.9	0.7	0.5	0.2	0.5	1.9	0.8	0.5	1.6
Total ART enrollement	93	94	97	94	88	100	100	95	100	100
Microscopic Examination										
Presumptive Examined	172588	196362	10672	33629	43958	41210	14190	45673	7308	21996
Sputum Positive	13170	12062	207964	1874	2460	1647	607	2856	257	971
Positivity Rate (%)	8	6	5	6	6	4	4	6	4	4
GeneXpert Test										
Total Test performed	21077	40159	70749	8184	10240	25802	3852	14545	2333	5793
MTB Notified	5220	9897	12874	1492	1880	3717	717	3572	348	1148
Rif Resistance Detected	451	641	606	85	79	162	36	178	5	61
TB Detection Rate (%)	25	25	18	18	18	14	19	25	15	20
Treatment Outcome (%)										
Treatment Success Rate	91	91	91	90	91	91	94	90	94	88
Death Rate	3	3	3	3	3	2	3	4	3	4

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CHAPTER 1: INTRODUCTION

BOX 1.1 BASIC FACTS ABOUT TUBERCULOSIS

TB is an airborne and infectious disease caused by the bacillus *Mycobacterium tuberculosis* discovered by Robert Koch; the cause remained unknown until 24th March 1882. It particularly affects the lungs (pulmonary TB) but can affect other parts of the body as well (extra pulmonary TB). The disease is spread in the air when sick people with pulmonary TB expel bacteria into the air, for example, by coughing. Overall, a relatively small proportion of people infected with *tuberculosis bacilli* will develop active disease during their lifetime (only 5-10%). However, the probability of developing disease is much higher among people living with HIV and risk populations such as contacts of TB patients, undernutrition, diabetics, smoking, poor housing and economic conditions and high alcohol consumption groups. In addition, TB is also more common among men than women, and affects mainly adults in the most economically productive age groups.

Diagnostic methods for identifying TB disease is; smear microscopy, rapid molecular tests (PCR base) and sputum culture. TB that is resistant to first line and second line anti TB drugs can be detected through rapid tests, culture method and sequencing technique.

Without treatment, the mortality from the disease is high, 50% died within 5 years, 25% remained sick and 25% recovered naturally. The effective drug treatments were developed in the 1940s first time and the currently recommended treatment for drug susceptible TB disease is a 6-month regimen with Isoniazid, rifampicin, ethambutol and pyrazinamide. As per the Global Drug Facility (GDF), the full course of treatment costs about USD 40 per person.

Treatment success rate of drug susceptible tuberculosis was 91% for new cases reported in 2074/75. Likewise, treatment for people with rifampicin resistant TB (RR-TB) and multidrug-resistant TB (MDR-TB) is longer and requires more expensive (> USD 1,000 per person) and more toxic drugs. The treatment success rate of drug resistant TB is 71%

1.1 Background

Globally, an estimated 10 million people developed TB disease in 2018, of whom approximately 3 million were not diagnosed, treated, or notified to national tuberculosis programs (NTPs). Of the remaining 7 million, many experienced substantial delays in accessing and receiving appropriate diagnosis and care. This unacceptable situation leads to unnecessary disability and loss of life and impedes tuberculosis control because of onward transmission of TB at both a household and community level. To rectify these shortcomings and eliminate tuberculosis, new strategies are urgently required to find the missing cases, enhance tuberculosis case notification rates, and support people with TB to access quality care and become cured (Global Tuberculosis Report-2019).

In 2019, Nepal had an estimated incidence of 151/100,000 per year. These estimations based on calculations by WHO, which are informed by expert opinions, tuberculin skin test surveys, and trends in TB case notification, imply that rates of TB have been static in Nepal since 2015. There are multiple, interlinked risk factors associated with TB exposure, infection, and progression to TB disease, which may explain the reasons behind this trend. First, exposure to TB (e.g. the number of viable TB bacilli to which an individual is exposed) and transmission rates are influenced by proximity to and duration of exposure to symptomatic individuals with pulmonary TB and the amount of TB that individual is producing. Thus, transmission can be affected by the extent of pulmonary TB disease, duration, and frequency of cough, poor cough hygiene or self-isolation measures, overcrowded living circumstances (e.g. due to poverty, incarceration, shared accommodation), occupation (e.g. high-risk jobs such as mining and healthcare), or belonging to an underserved group (e.g. indigenous populations). Second, many other individual-level risk factors influence the likelihood of acquiring TB infection and the development of TB disease. Such risk factors include human immunodeficiency virus (HIV), poverty, malnutrition, chronic renal impairment, diabetes, extremes of age, excess alcohol consumption, smoking and indoor air pollution, and emerging risk such as the use of immunosuppressive drugs (including chemotherapy but also newer biological agents for autoimmune diseases such as rheumatoid arthritis).

Tuberculosis (TB) remains a public health threat in Nepal and responsible for making ill health to thousands of people each year. TB ranks as the top ten leading cause of death in the country in 2075/76 as well. During this reporting year, 32043 TB cases (all forms of TB) were registered at the NTP system which includes 31397 were incident TB cases (new and relapse). Out of total incident TB cases (new and relapse), 18106 (58%) bacteriologically confirmed (PBC), 4,112 (13%) pulmonary clinically diagnosed (PCD) and 9,179 (29%) extrapulmonary. Among the registered cases at NTP, there were 37% female and 63% male TB patients. Among PBC cases, 78 % of cases were tested with rapid DST.

According to the latest WHO Global TB report 2019, the tuberculosis mortality rate was 20 per 100,000 populations in Nepal, which excludes (HIV negative and HIV positive people). However, TB death among registered TB patients was 3% (1,013 deaths) among 32,313, registered TB cases in FY 2074/75. The mortality from TB is unacceptably high given that most deaths are preventable if people can access tuberculosis care for the diagnosis and the correct treatment is provided. NTP has already adopted the END TB Strategy recommended by WHO as the TB control strategy of the country and moving ahead to achieve the set targets to eliminate the disease from the country.

All member states of the World Health Organisation (WHO) and United Nations (UN) committed to ending the TB epidemic through the endorsing of WHO's End TB Strategy at the world health assembly in May 2014 and by adopting the Sustainable Development Goals (SDGs) in September 2015. Following the commitments made at the international levels, the Government of Nepal has also translated the promise in the policies and strategies and being implemented to ending the TB epidemic from the country. The framework of END TB Strategy as mentioned below;

Box 1.2 Vision of END TB Strategy-2016-35 recommended by WHO

VISION: A world free of TB

Zero deaths, disease and suffering due to TB

GOAL: End the Global TB Epidemic

MILESTONES FOR 2025:

1. 75% reduction in TB deaths (compared with 2015)
2. 50% reduction in TB incidence rate (less than 55 TB cases per 100,000 population)
3. No affected families facing catastrophic costs due to TB

TARGETS FOR 2035:

4. 95% reduction in TB deaths (compared with 2015)
5. 90% reduction in TB incidence rate (less than 10 TB cases per 100,000 population)
6. No affected families facing catastrophic costs due to TB

PRINCIPLES:

- Government stewardship and accountability, with monitoring and evaluation
- Strong coalition with civil society organizations and communities
- Protection and promotion of human rights, ethics and equity

1.2 NTP strategic aim and policies

1.2.1 Vision

TB Free Nepal

1.2.2 Goal

To reduce the TB incidence by 20% by the year 2021 compared to 2015 and increase case notifications by a cumulative total number of 20,000 from July 2016 to July 2021, compared to the year 2015.

1.2.3 Objectives

Objective 1: Increase case notification through improved health facility-based diagnosis; increase diagnosis among children (from 6% at baseline to 10% of total cases by 2021); examination of household contacts and expanded diagnosis among vulnerable groups within the health service, such as PLHIV (from 179 cases at baseline to over 1,100 cases in 2020/21), and those with diabetes mellitus (DM).

Objective 2: Maintain the treatment success rate at 90% of patients (all forms of TB) through to 2021

Objective 3: Provide DR diagnostic services for 50% of persons with presumptive DR TB by 2018 and 100% by 2021; successfully treat at least 75 % of the diagnosed DR patients

Objective 4: Further expand case finding by engaging providers for TB care from the public sector (beyond MoH), medical colleges, NGO sector, and private sector through results-based financing (PPM) schemes, with formal engagements (signed MoUs) to notify TB cases.

Objective 5: Strengthen community systems for management, advocacy, support and rights for TB patients to create an enabling environment to detect & manage TB cases in 60% of all districts by 2018 and 100% by 2021

Objective 6: Contribute to health system strengthening through HR management and capacity development, financial management, infrastructures, procurements and supply management in TB

Objective 7: Develop a comprehensive TB Surveillance, Monitoring and Evaluation system

Objectives 8: To develop a plan for the continuation of NTP services in the event of natural disaster or public health emergency

1.3 Brief Organizational Overview for NTP

The Ministry of Health and Population (MoHP) guides the Department of Health Service (DoHS) as well as provincial and local level governments to deliver promotional, preventive, diagnostic, curative, and palliative health care services and carries out functions related to policy, planning, human resource, financial management and monitoring, and evaluation.

The structure of the MoHP is shown in figure 1.1, Department of Health Services (DoHS), the Department of Ayurveda and Alternative Medicine (DoAA) and the Department of Drug Administration (DDA) come under MoHP. These three departments are responsible for formulating and implementing programmes, the use of financial resources and accountability, and monitoring and evaluation. The disease control programs fall under the DoHS (figure 1.2)

Figure 1.1: The structure of the Ministry of Health and Population (MoHP)

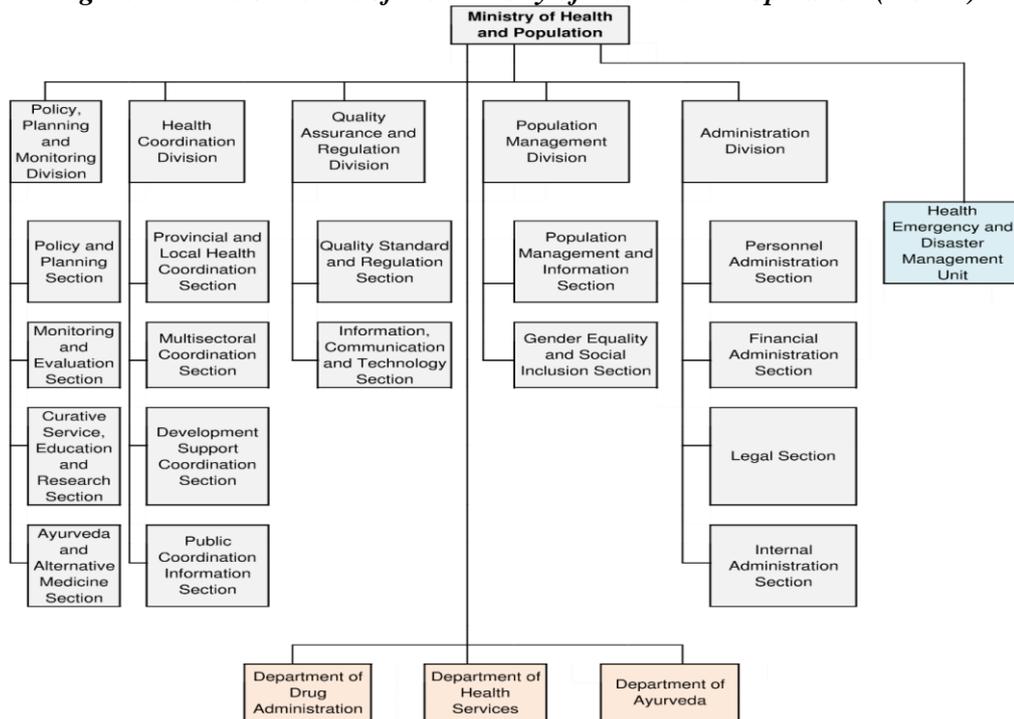
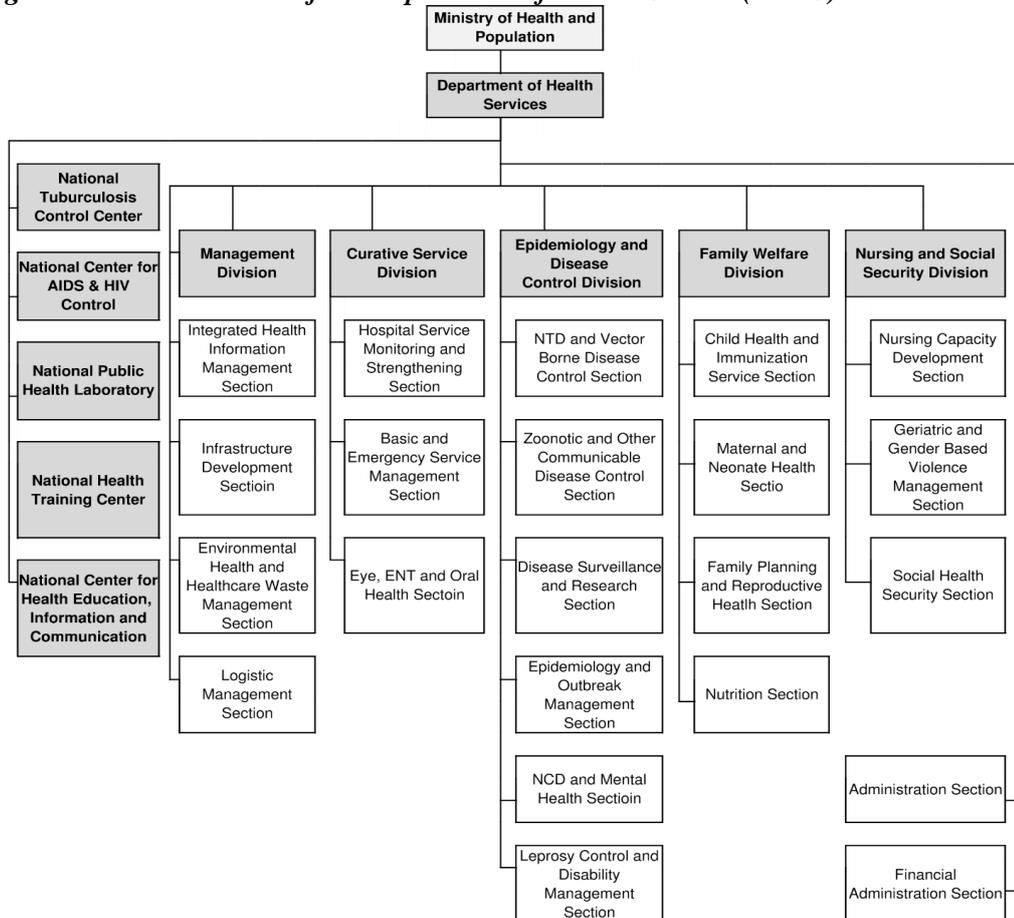


Figure 1.2: The structure of the Department of Health Service (DoHS) under the MoHP



Within the organizational structure of the Department of Health Services (DoHS), National Tuberculosis Control Centre (NTCC) is the focal point of the NTP and responsible for formulating policies, strategy, planning, monitoring, and quality assurance. The National Tuberculosis Program (NTP) is fully integrated and being implemented within the health system of the Government of Nepal.

The health facilities are organized under the authority of the Provincial Health Directorate. The population can access the public or private health facilities in their area. In the country, the public health services are delivered by 11 central-level hospitals, 125 provincial hospitals, 77 health offices, 198 primary care centers, 3808 health posts, 374 urban health centers, 299 community health units, 59 other health units. Also, 11 974 primary health care and outreach clinics, 15 853 EPI/outreach clinics and 51420 female community health volunteers provide health service in Nepal (DoHS).

NTCC has also managed Program Management Unit (PMU) at the central level for the overall management of the International grants (Including Global Fund) and provide technical inputs to formulate policies, program, implementation, monitoring and evaluation for the Program.

The core objective of the report is to provide a comprehensive and updated situation of the TB epidemic and progress in the prevention, diagnosis, treatment, care, and supports of the disease at national, provincial, district levels and local levels based on primary data that were reported from different levels to NTCC in annual rounds of TB data collection.

CHAPTER 2: THE GLOBAL, REGIONAL AND NATIONAL COMMITMENTS

BOX 2.1 PARLIAMENTARIANS MADE VARIOUS COMMITMENTS TO END TB IN NEPAL

- Form the SAARC level parliamentarian to achieve the goals of TB and HIV to end TB from the SAARC countries.
- Develop the action plan to execute the commitments that are already promised at National and International levels.
- Take action to develop leadership at all levels to fight against Tuberculosis in the countries.
- Take initiation to manage the required funding for the TB and HIV Programme.
- Take a positive role to manage necessary human resources in line with the federal context.
- Provide support to initiate TB/HIV free Palikas and social protection programme for the TB patient and people living with HIV in the country
- Support and develop the required law and acts for controlling HIV and ending

2.1 The global, regional and national commitments

The first highly successful World Health Organization's Global Ministerial Conference on Ending Tuberculosis in the Sustainable Development Era, resulted in the Moscow Declaration, with commitments to accelerate progress to end TB, from ministers and other leaders from 120 countries. The declaration outlines the importance of international action to address key areas to respond to TB: sustainable financing, pursuing science, research, and development and the establishment of a multi-sectoral accountability framework.

Following the Moscow Ministerial meeting, the United Nations General Assembly High-Level Meeting on TB in 2018 with the Theme: "United to End Tuberculosis: An Urgent Global Response to a Global Epidemic", the Member States made vital contributions to the Political Declaration on the Fight against Tuberculosis.

At the regional level, in March 2017, each of the Region's Member States issued Delhi Call for Action, highlighting the political, technical and strategic interventions needed to rout the disease. The leaders of the region committed to lead the implementation of the National TB response in the countries, increase budgetary and human resource allocations by the governments, ensure national TB plans are evidence-based and fully funded, enable using innovative communication, the engagement, and literacy of the communities and individuals with TB and provide best possible care for everyone and supplement medical care for TB patient-centered, community empowering and necessary social and financial protection in a holistic manner through collaborations across and beyond the health sector. All the

leaders of the SEA region called upon leaders, policymakers, partners, civil society and the public in the region and around the world to actively support this call of action towards Ending TB. In March 2018, at the Delhi End TB Summit, Member States unanimously adopted a Statement of Action pledging to intensify efforts towards ending TB by or before 2030. During the meeting, Minister for Health and Population committed that **the Government of Nepal highly prioritizes the response to tuberculosis and is committed to reducing the people's suffering from this preventable and treatable illness. We have adopted the End TB Strategy to eliminate tuberculosis from Nepal by 2035.** The Ministry for Health and Population has translated the commitment into the actions by developing policies and strategic plans.

In December 2018, the SAARC TB and HIV-AIDS and National Tuberculosis Control Centre (NTCC) jointly organized a meeting with the Health and Education Committee of Parliament and the parliamentarians made various commitments to end TB in the country.

2.2 The response of the Government of Nepal

The Government of Nepal recognizes the responsibility of contribution towards the global efforts to ending the TB epidemic by 2030 by improving accessibility and availability of quality TB services in the country. The National Strategic Plan (NSP) for Tuberculosis Prevention, Care and Control (2016-2021) has included the feelings of the constitution of Nepal, the current health policies, aligns to the international strategy such as the Sustainable Development Goals and End TB Strategy and takes into consideration the rights of the people, inclusive of vulnerable population and community affected by tuberculosis.

The implementation of this strategy through the tuberculosis programme under the federal, provincial and local governments by strengthening TB services at all levels, which will increase access to affordable, patient-friendly prevention, diagnosis, treatment, and care to end TB epidemic in the country which will, in turn, contribute towards to achieve the global targets.

The NSP set ambitious targets to reduce TB incidence by 20% by 2021. Increase diagnosis and treatment gaps of MDR/RR-TB (multidrug-resistant TB and rifampicin-resistant TB) and ensure treatment success rate reached and maintained above 90% for drug-sensitive (DS) tuberculosis and 75% for DR/RR-TB cases. The NSP also envisages improved drug-susceptible testing coverage and improved access to newer diagnostics and newer TB drugs where required. The estimated cost for the implementation of this NSP is USD 105 million of which more than 50% was identified.

The Government of Nepal and the partners have completed the fieldwork for national TB prevalence survey and data analysis and report writing is underway.

Also, to understand the disease burden, the information and findings of the survey will be used to identify strategies to improve programme coverage and quality in line with the Universal Health Coverage (UHC).

Funding for the provision of TB prevention, diagnostic and treatment services has decreased in 2075/76, falling far short of what is needed as per the National Strategic Plan for 2016-2021.

The total budget for the TB program in 2075/76 was USD 14.14 million. The domestic source contributed more than half (51.27%) of the budget, still, the international donor funding remained crucial, accounting for 47.14 % of the funding supported by Global Fund, 1.58 % By WHO and other partners. Among domestic funding (i.e. USD 7.25 million), 66.15% was for the central government investment, 17.99 % was for the provincial government and 15.86 % for the local level government.

The Government of Nepal has steadily engaged multi-sectorial agencies to increase the partnership in TB by developing innovative approaches including community engagement, use of newer diagnostics and new drugs and shorter MDR-TB regimen in responding to the TB epidemic.

To ensure the full impact of these actions, Nepal is committed to government stewardship and engagement of the wider set of collaborators across government, partners, civil society organizations and affected communities in expanding the scope and reach of interventions for TB care and prevention. Nepal is committed to playing its part in contributing to the global targets to “End TB”.

CHAPTER 3: TB DISEASE BURDEN

BOX3.1 BURDEN OF TB IN NEPAL

- TB is one of the top ten leading cause of death in Nepal
- Almost half of Nepal's population are infected with TB
- Every year about 42000 Nepalese develop new TB
- Every year about 5500 people die due to TB in Nepal
- A total of 32043 TB cases Notified in NTP during FY2075/76 in Nepal

3.1 The Burden of TB

The burden of tuberculosis (TB) disease can be measured in terms of prevalence, incidence, and mortality rate of TB.

Global targets and milestones for reductions in the burden of TB disease have been set as part of the Sustainable Development Goals (SDGs) and WHO's End TB Strategy. SDG3 includes a target to end the global TB epidemic by 2030, with TB incidence (per 100 000 population) defined as the indicator for measurement of progress.

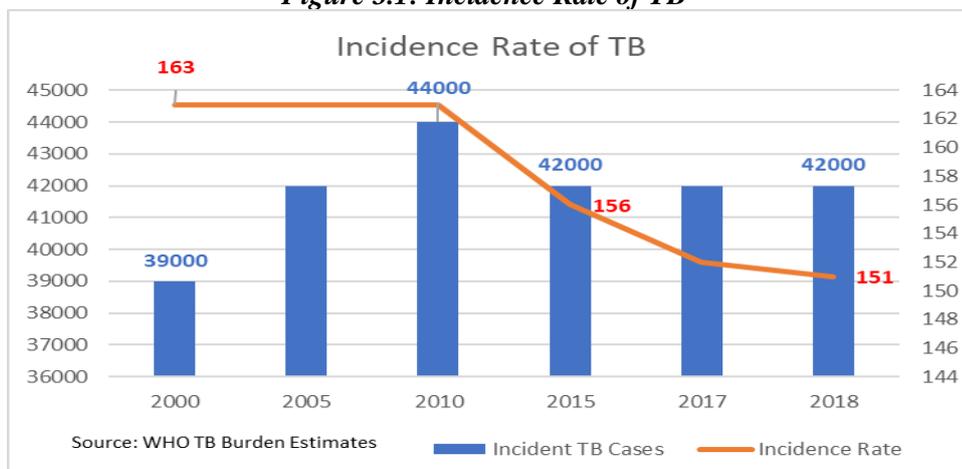
Table 3.1: Targets for percentage reductions in TB disease burden set in WHO's End TB Strategy

INDICATORS/MILESTONES	MILESTONES		TARGETS	
	2020	2025	2030	2035
Percentage reduction in the absolute number of TB deaths (<i>compared with 2015 baseline</i>)	35	75	90	95
Percentage reduction in the TB incidence rate (<i>compared with 2015 baseline</i>)	20	50	80	90 (~10/100k population)

TB Incidence Rate

TB incidence had never been measured at the national level, however prevalence survey is being conducted and planned to be accomplished by end of March 2020. For now, NTP is relying on WHO estimation to measure the national incidence rate (151/100000 Population 2075/76). The incidence rate has decreased by 19% compared to 2000 and 2.5% compared to 2015. The incidence rate is compared with the annual TB notification rate of TB cases to measure the missing TB cases in the country.

Figure 3.1: Incidence Rate of TB

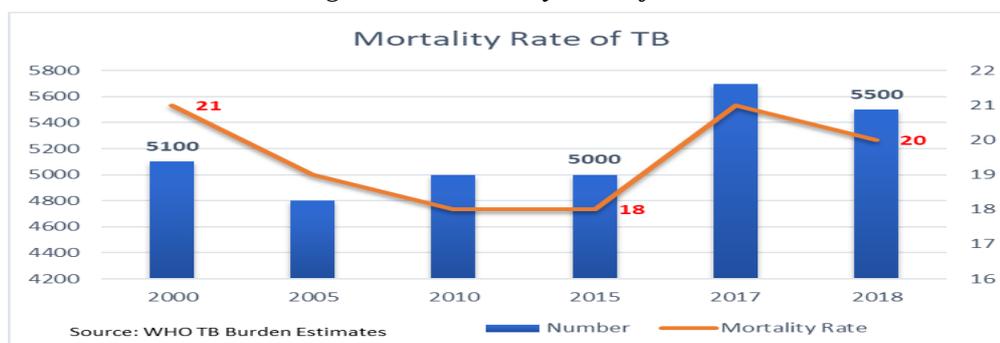


In 2018, there were an estimated 42 thousand (37 000-48 000) annual incident cases with an incidence rate of 151 (133–170) per 100 000 population, of which 31397 incident TB cases have been notified to NTP, with an annual case notification rate of 107/100,000 in FY 2075/76.

TB Mortality Rate

TB mortality rate measures the deaths caused by TB in the specified population in a given period, usually in a year. It gives the death per 100,000 population.

Figure 3.2: Mortality Rate of TB



The following graph shows the trend of mortality rate, estimated by the WHO, from 2020 to 2018. In 2018, there was an estimation of 5.5 (3.9–7.4) thousand deaths from TB measuring mortality rate of 20 (14–26) per 100,000 population, while only 3/100,000 (1 013 TB deaths) mortality rate measured among the TB cases enrolled in treatment during the period, which showed a huge gap between estimated vs. reported deaths in the country. This gap showed still many people with TB are dying either due to the barriers in accessibility to diagnosis and treatment or the poor health service utilization behaviors of people which has led to the underdiagnosis of TB in the country. The TB mortality rate seems stagnant during the period of 18 years from 2000 to 2018 however there were some fluctuations between the periods.

In 2018, the TB mortality rate per 100,000 population increased by 2 compared with 2015 in 2018 however there was a decrease by 1 compared to 2017.

There was a total of 45% (635) of MDR TB cases notified in FY 2075/76 against the estimation of 1400 DR TB cases of WHO this year. Whereas 392 DR TB cases among notified enrolled in treatment, with nearly 38% of cases primary loss to follow up. The death of DR patients reported 12% in the fiscal year. TB HIV sentinel survey, Nepal, 2074/75 has revealed that 9.9% of HIV patients were co-infected with TB while around 2.5% of TB patients were coinfecting with HIV in Nepal. NTP evaluated around 69% of all TB patients for HIV in Nepal where 0.7% of them had HIV positive. Childhood TB is reported around 5.5% among all TB cases which have been stagnant over a few years now. The prevalence of TB among men reported by 1.64 times higher in men compared to women which are similar to the regional and global scenarios.

Tuberculosis Profile, 2019 Nepal

Estimates of TB burden, 2074)	Number	Rate (per 100000 Population)
Total TB incidence	42000	151 (133-170)
HIV positive TB incidence	380	1.4 (1.1-1.6)
MDR/RR-TB incidence	1400	5 (2.8-8)
HIV negative TB mortality	5500	19 (13-26)
HIV positive TB mortality	93	0.33 (0.25-0.42)

Estimated proportion of TB cases with MDR/RR-TB, 2074/75	
New cases	2.2% (1.1-3.6)
Previously treated cases	15% (9.6-22)

TB case notifications, 2075/76	
Total new and relapse	31397
- % tested with rapid diagnostics at time of diagnosis	
- % with known HIV status	69%
- % pulmonary	71%
- % bacteriologically confirmed	58%
- % children aged 0-14 years	5.5%
- % women	36%
- % men	64%
Total cases notified	32043

Universal health coverage and social protection	
TB treatment coverage (notified/estimated incidence), 2074/75	75% (67-85)
TB patients facing catastrophic total costs	
TB Case fatality ratio (estimated mortality/estimated incidence), 2074/75	13% (9-18)

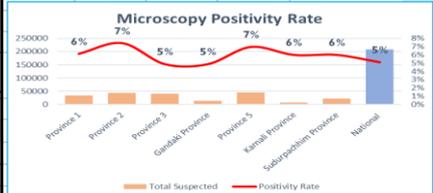
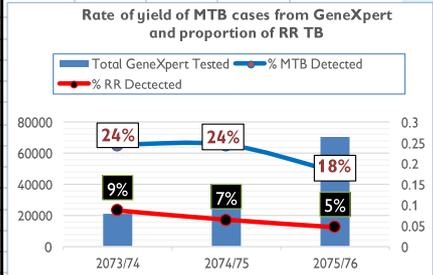
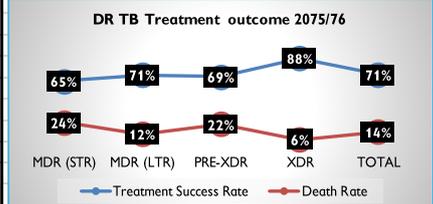
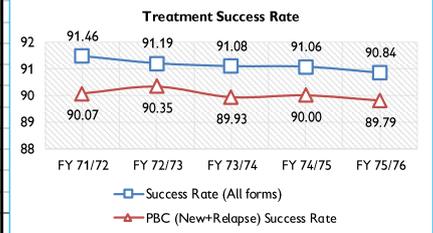
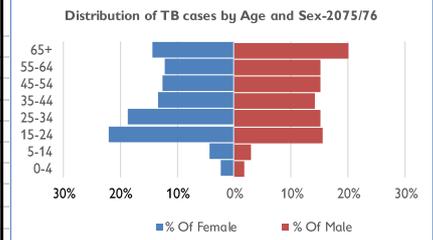
TB/HIV care in new and relapse TB patients, 2075/76	
Patients with known HIV-status who are HIV-positive on antiretroviral therapy	
Number	(%)
159	0.7%
155	97%

Drug-resistant TB care, 2075/76	
% of bacteriologically confirmed TB cases tested for rifampicin resistance	
New cases	79%
Previously treated cases	74%
Laboratory-confirmed cases	MDR/RR-TB:606, XDR-TB: 29
Patients started on treatment	MDR/RR-TB:378, XDR-TB:14
MDR/RR-TB cases tested for resistance to second-line drugs	417

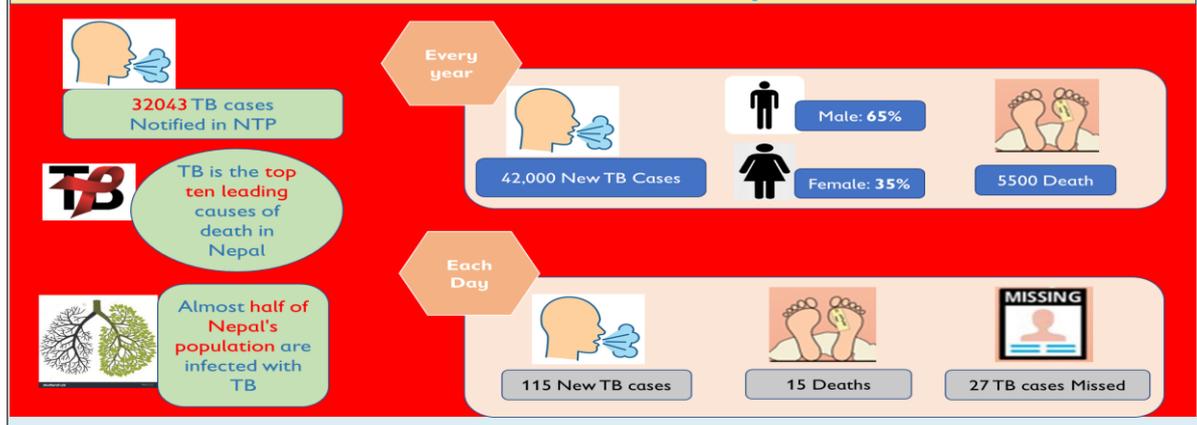
Treatment success rate and cohort size		
New and relapse cases registered in 2074/75	Success	Cohort
	91%	31,184
Previously treated cases, excluding relapse, registered in 2074/75	88%	1,129
HIV-positive TB cases registered in 2074/75	79%	125
MDR/RR-TB cases started on second-line treatment in 2073/74	70%	328
XDR-TB cases started on second-line treatment in 2073/74	88%	16

TB preventive treatment, 2019	
% of HIV-positive people (newly enrolled in care) on preventive treatment	
% of children (aged <5) household contacts of bacteriologically-confirmed TB cases on preventive treatment	66%

TB financing, 2019		
	Funding Source	(US\$ Million)
National TB budget	Nepal Gov:	7.25
	Global Fund	6.67
	WHO and other Partners	0.22



Burden of TB in Nepal



CHAPTER 4: TB DIAGNOSIS AND TREATMENT

BOX4.1 KEY FACTS AND MESSAGES

In 2075/76, 32,043 people with tuberculosis (TB) were notified to National TB Program (NTP). Of these, 31,397 had an incident episode (new or relapse) of TB disease. There was still large gap (9957) between estimated incident cases (42,000) and the actual number of reported new and relapse cases. The gap may exist due to a mixture of underreporting of detected cases, and underdiagnosis (either because people do not access health care or because they are not diagnosed when they go).

In Nepal, the treatment coverage (the number of people notified and treated divided by estimated incidence) was around 76% in 2075/76 which was above global coverage of 69% as per WHO Global TB report 2019.

Country was intensifying its efforts to improve TB diagnosis and treatment and narrow down incidence–notification gaps, so the proportion of notified cases that are bacteriologically confirmed needs to be monitored, to ensure that people are correctly diagnosed and started on the most effective treatment regimen as early as possible. NTP aims to increase the percentage of bacteriologically confirmed TB cases by scaling up the use of WHO recommended more sensitive rapid diagnostics tools and methods in place of smear microscopy. In 2075/76, 82% of pulmonary cases were bacteriologically confirmed, a slight increase from 2074/75.

Nationally, total of 635 cases of DR-TB were notified in 2075/76 (excluding 27 Indian nationals who went back to India after diagnosis and 12 who died before enrollment in Tx). Out of 1400 estimated incident cases of MDR/RR-TB, only 46% of it notified to NTP. Among those notified, only 62% (392) enrolled in treatment resulting in high initial lost of follow up.

Closing the incidence-treatment enrolment gap for MDR/RR-TB requires increasing one or more of the following: the proportion of TB cases detected; the proportion of TB cases bacteriologically confirmed; the proportion of bacteriologically confirmed cases evaluated for drug resistance; and the proportion of detected cases of MDR/RR-TB started on treatment.

In 2075/76, 68.7% of notified TB patients had a documented HIV test result, up from 67% in 2074/75 and representing a 9-fold increase since 2071/72. Globally in 2018, 64% of notified TB patients had documented HIV test. A total of 159 (0.7%) HIV cases among TB patients were reported; of these, 97.5% were enrolled antiretroviral therapy (ART).

The latest treatment outcome data of the year show success rates of 91% for DS TB and 71% of MDR/RR-TB, 69% for Pre-XDR TB and 88% for extensively drug-resistant TB.

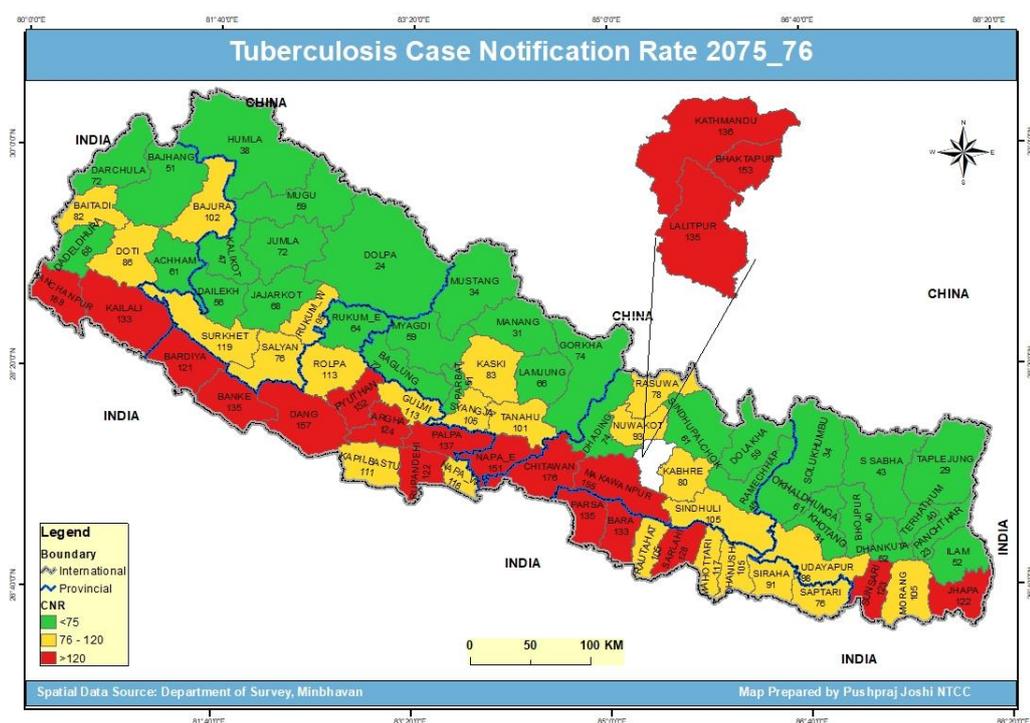
This chapter provides the latest national data on the diagnosis and treatment of TB in 2075/76 (2018/19). Section 4.1 presents and discuss data for 2075/76 on notifications of TB cases and associated coverage of diagnostic testing as well as trend. It includes data on contribution of case finding efforts of public-public and public-private mix and community engagement initiatives. Section 4.2 focuses on treatment coverage (and on detection and treatment gaps) for patients with TB and HIV-associated TB comparing numbers detected and treated with underlying estimates of disease burden. Section 4.3 contains the most recent data on treatment outcomes, for new and relapse TB patients.

4.1 Case notification and testing coverage

4.1.1 Distribution and TB case notification in fiscal year 2075/76

Based on the CNR (figure 4.1), there are 20 districts with CNR ≥ 120 , while 24 districts had CNR between 75-120 and remaining 33 districts had below 75 CNR. Among 20 districts with comparatively higher TB notification, 13 districts are from the Tarai belt while remaining 7 are from the Hilly region. Almost half of the districts with CNR > 120 are concentrated in Province 5.

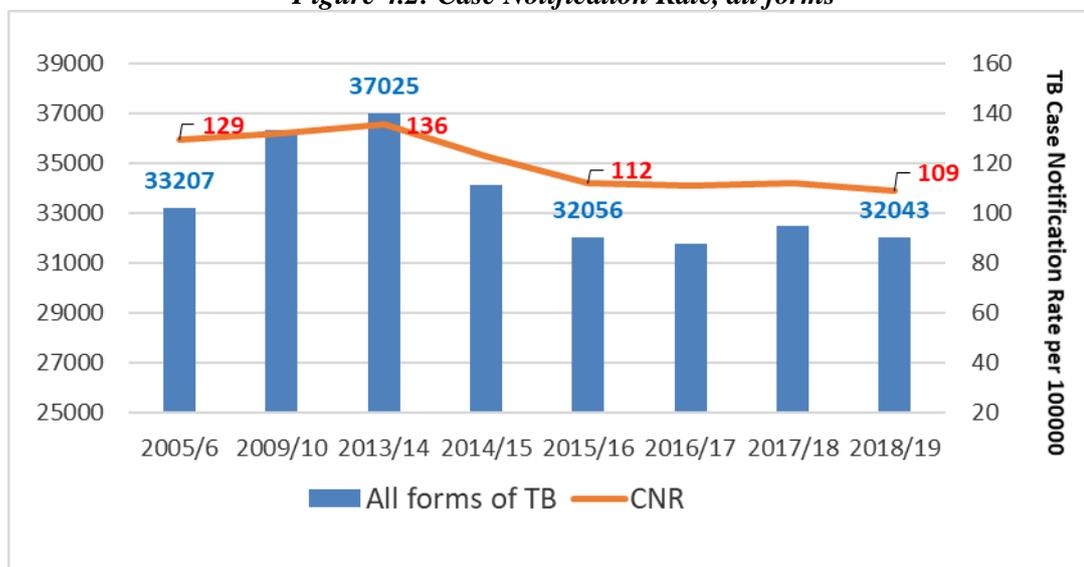
Figure 4.1: Distribution of TB, all forms



The graph below shows the trend of CNR from FY 2005/6 to 2018/19, during the period of 14 years, The CNR has not increased significantly however during the period of 2009/10 to 2014/15 there was a remarkable increase in CNR. In 2013/14, the CNR reached up to 136/100,000 population and then started falling and reached

109 in the fiscal year 2018/19. Despite the investment and effort of NTP in the case finding approach the CNR did not rise again to the level of achievement of 2013/14.

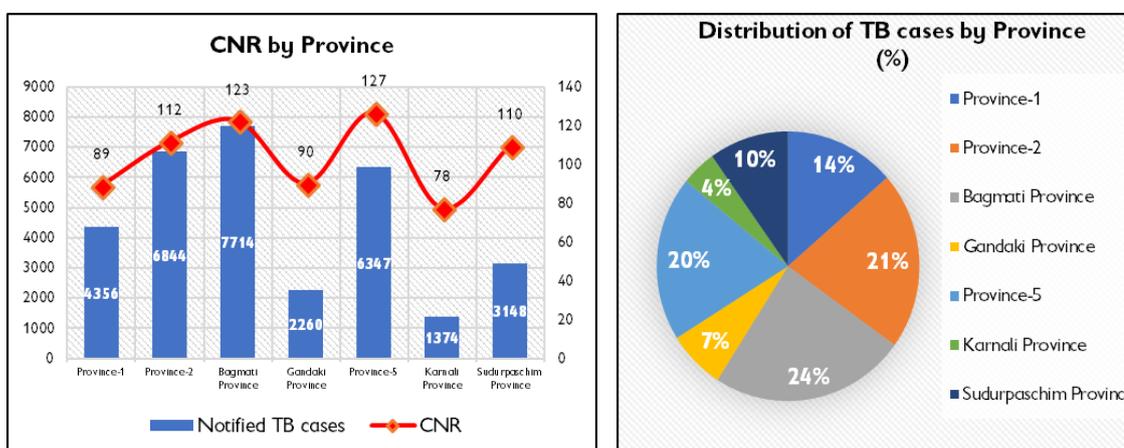
Figure 4.2: Case Notification Rate, all forms



4.1.1.1 Province Wise Case Distribution and Case Notification Rate

In the fiscal year 2075/76, 65% of TB cases were reported collectively from Province 2, Bagmati Province and Province 5 respectively. Karnali Province reported the lowest number of TB cases (1374, 4%) during this reporting period. The distribution of new and retreatment cases was also like the trend of province wise distribution of TB cases notification. Province 5 has the highest TB case notification where as Karnali province, Gandaki province and province 1 has CNR below 100, which demands the increased investment and effort of NTP in these provinces to raise the level of CNR above 100/100,000 population.

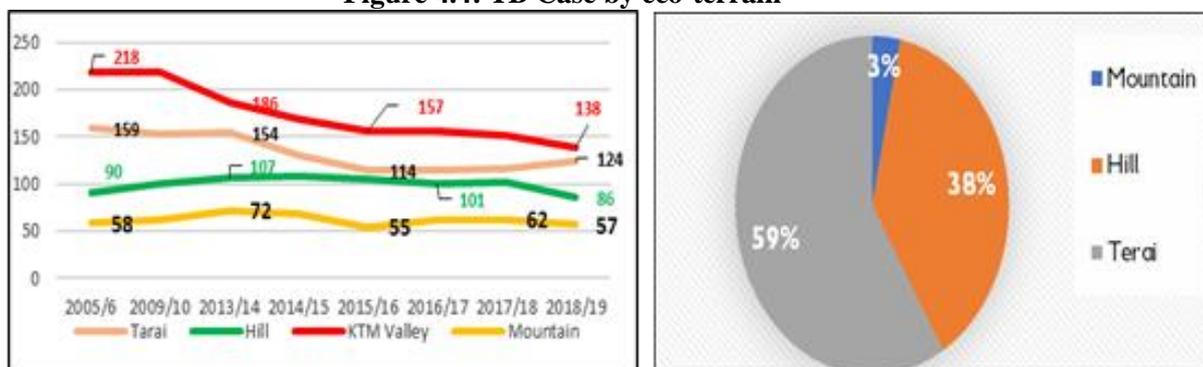
Figure 4.3: TB Case by Province



4.1.1.2 Percent distribution of case registration by type – Eco-Terrain wise comparison

In the fiscal year 20765/76, the distribution of TB cases among eco-terrain region (Figure 4.3) of Nepal, CNR varied among Mountain, Hill, and Tarai. Among the notified TB cases, Tarai held the highest number of TB case i.e 59% whereas Hill held 38% while Mountain had the least with 3% of all forms of TB. At a glance it seems that the TB case notification rate was highest in Kathmandu valley and the least in Mountain, but the decreasing rate of TB notification was highest (37%) in Kathmandu valley in FY 2018/19 compared to the achievement of 2005/6. The Tarai belt was second that had significant fall in CNR during the period. A stable CNR observed in Hilly and Mountain region during the period from 2009/10 to 2017/18 however there was a significant fall from 101 to 86. in FY 2018/19 compared to 2017/18 in the hilly region.

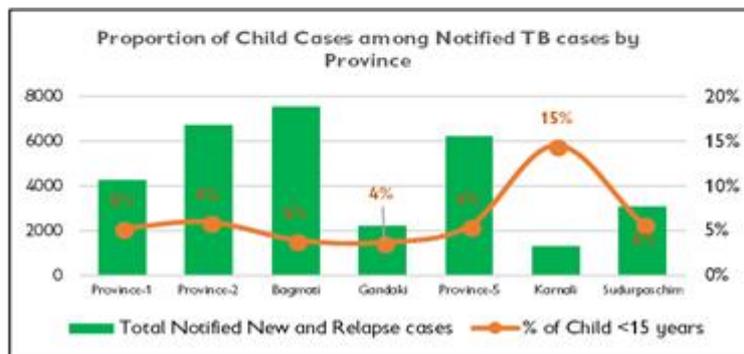
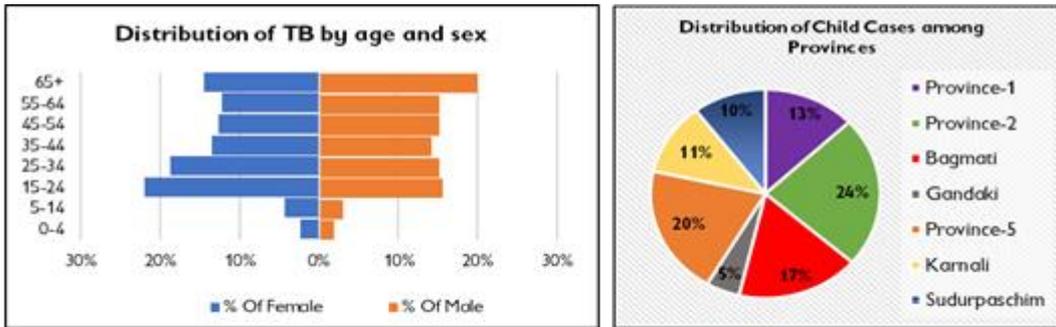
Figure 4.4: TB Case by eco-terrain



4.1.1.3 Percent Distribution by Age and Sex

In the fiscal year 2075/76, the burden of disease was highest in the age band of 15 to 24 years which was similar in previous years too, and after this the age group of 65+ was the second highest age group having burden of TB, however almost half of the TB case (48%) was in the economically active age group of 15 to 44 years in total. The females between the age of 15 to 24 had highest TB compare to other age groups, on the contrary The burden in male was found highest in the age group of 65+ years. In FY 2075/76, around 5.5% of cases were reported as child TB (New and Relapse) cases. Among the child TB cases, most of them (63%) were between (5-14) years of age group. The highest proportion of child TB among the provinces was observed in the Karnali province as it had 15% child proportion among the reported TB cases. Bagmati and Gandaki provinces had comparatively lower proportion (4%) of child TB compared to other provinces.

Figure 4.5: TB Case by age and sex

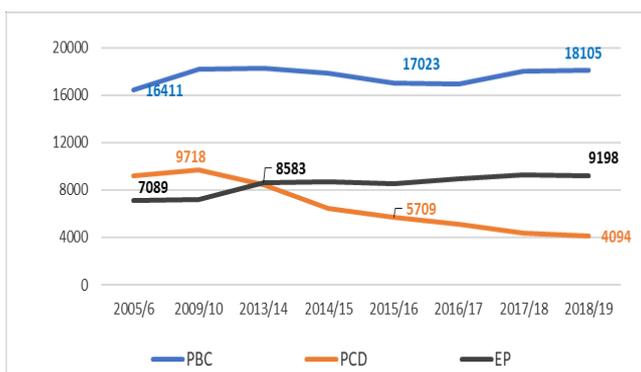


In the fiscal year of 2075/76, there was a child proportion of 5.5% which is stagnant from couple of past years.

Province 2 held 24% of child TB among the notified TB cases in FY 2075/76 which was the highest among all the provinces. Similarly, province 5 and Bagmati Pradesh held simultaneously 20%, and 17% TB cases after province 2, which was 61% altogether among all notified TB cases. In-country context like Nepal, where access to health services is still a big challenge where >30% of cases are estimated to be missed from the diagnosis every year, and the proportion of children among notified TB cases was rounding to 5.5% against the estimation of 10-15% suggests the increased efforts of NTP in coming years.

In Nepal, men were nearly twice (1.77 times) as reported to have TB than women which was nearly the same in the region and global context (M/F = 1.7:1).

4.1.1.4 Distribution of Disease by Type of TB, New and Relapse



The figure shows the trend of TB notification by type of TB. The trend of PBC showed the increment of PBC cases from the FY 2009/10 and remained almost stagnant until 2014/15. From 2015/16 there was a slight fall in the notification of PBC however

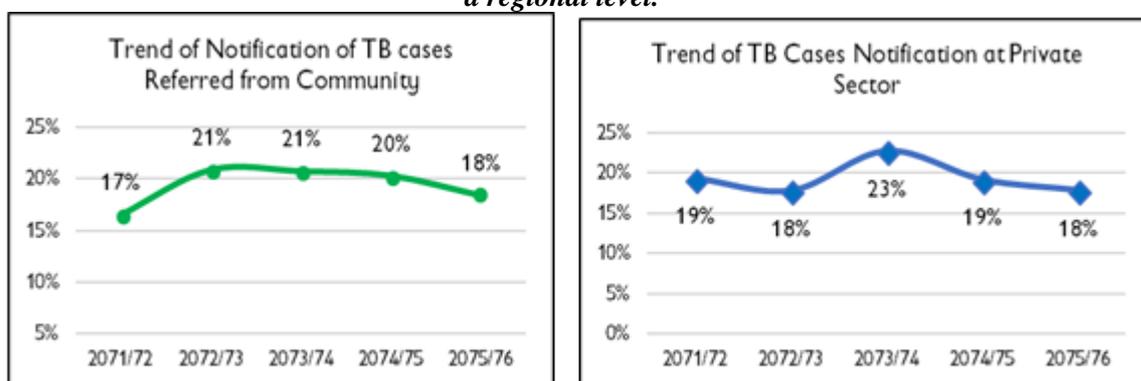
later from 2016/17 started to increase and reached to the level of notification of 2009/10. In summary, the notification of PBC TB were revolving around 18000. On the contrary PCD TB has fall almost by double compared to the achievement of 2009/10. In 2018/19 the PCD cases decreased by 58% compared to the achievement of 2009/10.

On the other hand, the trend of EP cases showed the steady increase in the notification of EP cases. While comparing the achievement of 2018/19 with the FY 2009/10 there was an increment of 22% in the notification of EP cases.

4.1.1.5 Proportion of notified TB cases contributed by private and community

PPM is one of the major components of NTP that was being implemented since 2005/6 as a part of Stop TB Strategy which has been further strengthened since 2015/16 onwards. Similarly, community engagement in TB diagnosis and management was another major component of NTP. The graph below shows the trend of the contribution of the private sector and community in TB management. Almost (35 to 40) % of TB cases notified to the country were contributed by the private sector and community collectively (with similar contributions) and similar over the last 5 years.

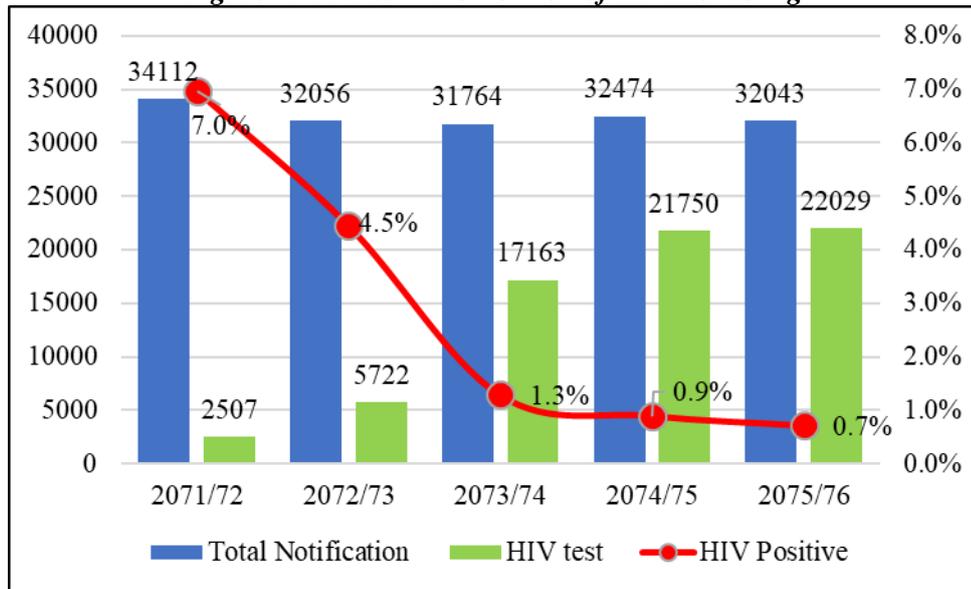
Figure 4.6: Percent distribution of private sector and community referral to TB program on a regional level.



4.1.2 TB/HIV Co-infections

Among the registered TB cases 69% of them tested for HIV, there was a slight increment in the TB cases with HIV status known however still there is a need for focused effort to achieve the universal coverage of HIV test among TB patients. Among those tested for HIV, 0.7% was found HIV positive which continued to decrease steadily from the previous years. The trend showed a significant decrease in the prevalence of HIV among TB however the TB HIV sentinel surveillance conducted in 2017 had shown the 2.5% prevalence of HIV among TB patients.

Figure 4.7: Percent Distribution of TB HIV testing



4.1.3 TB Diagnostic Services

The early and accurate diagnosis followed by prompt appropriate treatment is the foundation for ending TB. Laboratory services are provided free of cost to patients attending public health facilities as well as for those referred from the private sector.

Direct sputum smear microscopy with Ziehl-Neelsen /Fluorescence Microscopy are still used as primary tools for the diagnosis of patients where Xpert MTB/RIF facility is unavailable. Moreover, it is also used for monitoring their response to treatment. The Xpert MTB/RIF has been gradually expanded to cover the entire country. Xpert MTB/RIF is offered for diagnosis of TB in priority population including PLHIV, children, extrapulmonary TB and those who have access to Xpert MTB/RIF facility.

MDR TB diagnosis is offered to presumptive DR-TB patients who remain smear-positive on any follow up including failures of the first-line treatment and those at high-risk such contacts of MDR-TB cases. Patients at risk of Multi-drug resistant TB are diagnosed by using Xpert MTB/RIF whereas LPA is used for isoniazid resistance detection. Responses to treatment for MDR is monitored by culture.

4.1.3.1 TB Laboratory Network

The TB laboratory network consists of the existing and upcoming Culture and LPA laboratories, GeneXpert centers, and designated microscopy centers.

There will be five culture and LPA laboratories across the country including the existing laboratories of NTCC and GENETUP and the other three which are established at Provincial Hospital Surkhet, Regional TB Center, Pokhara and BPKIHS, Dharan. The TB Culture and DST lab at NTCC will function as the National TB Reference Laboratory (NTRL) and the other four culture labs will function as TB Reference Laboratory (TRL).

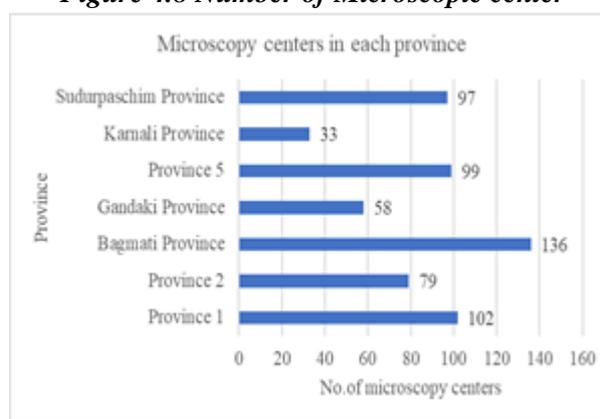
Microscopy centers are still considered as the base units for diagnosis of TB which will be gradually replaced with GeneXpert as a primary diagnostic tool. Sputum/sample collection centers further under Microscopy or GeneXpert centers with a robust sample transportation system needs to be developed for increasing the access of patients to diagnostic services.

There are seven TB quality assurance centers for microscopy in seven provinces who are responsible for EQA, reagent supply, training and monitoring and supervision to microscopy centers.

4.1.3.2 Smear Microscopy Network Coverage

Currently, there are 604 microscopy centers registered as microscopy centers in Nepal 2075/76. The majority of the microscopy centers are established within the government health facilities; some are established in non-governmental organizations as well as in the private sector. NTP is responsible for providing laboratory consumables and other equipment to each of the microscopy centers.

Figure 4.8 Number of Microscopic center



4.1.3.3 Rapid testing of TB through Xpert MTB/RIF

There has been a scale-up of GeneXpert facilities. 60 GeneXpert machines have been deployed, across 56 GeneXpert centers in the country. The number of tests has increased over each quarter of 2075/76 reaching 29027 tests in the third quarter from 24447 in the first quarter of the year. TB has been detected in 18.19% of persons screened and 4.7% (606) of Rifampicin Resistance was detected among them (Figure 4.9). There is a considerable increase in GeneXpert utility in the fiscal year 2075/76. Utilization rate is calculated based on no. of runs of samples done in a module taking 3 runs per module in a day as the national standard. Although the utilization rate of Xpert MTB/RIF is in an increasing trend (Figure 4.10), but still not satisfactory against the target and testing capacity in terms of number (Figure 4.11). Utilization rate is influenced by many factors like the functionality of the machine, availability of cartridges and machine breakdown. For the optimal utilization of Xpert MTB/RIF, NTCC has focused its effort on immediate maintenance, module replacement as well as expanding the scope of its coverage in terms of presumptive TB patients with the revision of its algorithm.

Figure 4.9: Xpert MTB/RIF result 2075/76

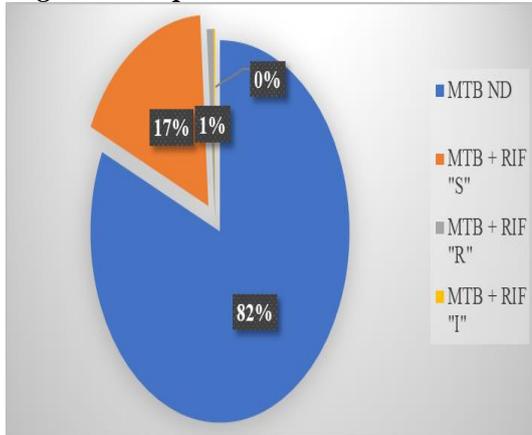


Figure 4.10: Xpert MTB/RIF utilization rate per module

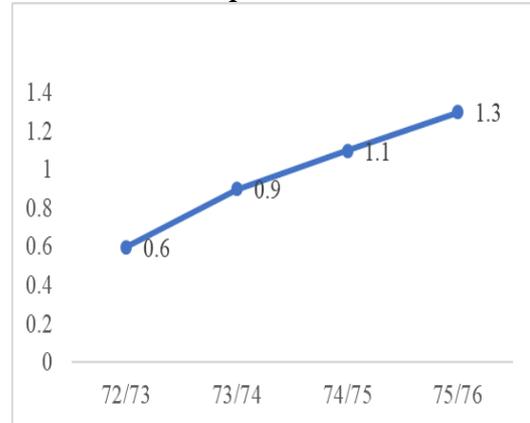
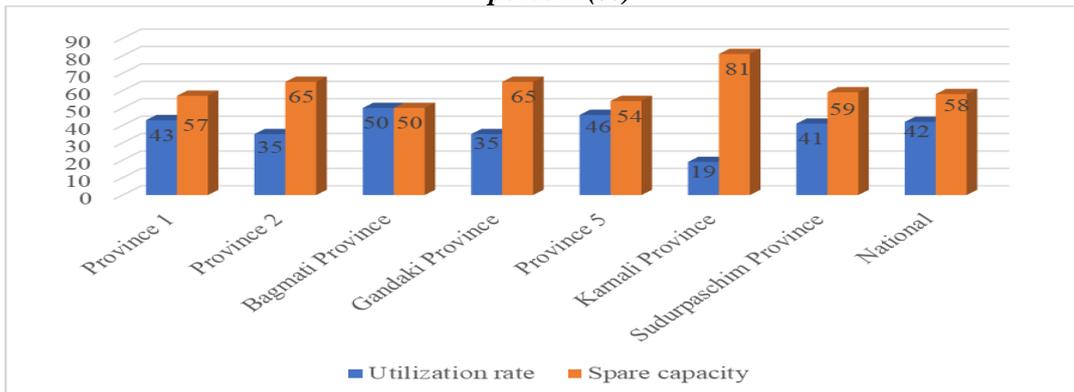


Figure 4.11: Proportion of utilization rate and spare capacity of GeneXpert 2075/76 in percent (%)



4.1.5.4 Culture and Drug Susceptibility Test (DST)

All patients with Rifampicin resistant TB identified by Xpert MTB/RIF should have specimens sent for TB culture and DST and LPA where applicable.

Line Probe Assay used to identify *M. tuberculosis* complex and drug-resistant to anti-TB drugs. First-line LPA detects drug-resistant to Rifampicin and Isoniazid whereas second-line LPA detects drug-resistant to fluoroquinolones and Second-line injectable drugs. First-line LPA is performed on a specimen from patients diagnosed as Drug Susceptible TB in retreatment cases for screening Isoniazid resistance and Second Line LPA on specimens from patients detected as Rifampicin Resistance and registered as MDR TB. In 2075-76 382 first-line LPA tests were conducted and 7.59% among them were detected as MDR. Further, 417 second-line LPA tests were also conducted. Fluoroquinolone resistance was detected in 36.45%- and second-line injectable resistance was diagnosed in 1.67% and 6.95% were detected as XDR TB.

Susceptibility pattern through LPA

In FY 2075/76, 382 first-line LPA was done among which 7% was resistant to both Rifampicin and Isoniazid. 417 second-line LPA was done, among which 36% had FQ resistance. The result of the 1st and 2nd line LPA for FY 75/76 is shown in Fig 4.12 and 4.13.

Figure 4.12: Result of First line LPA FY 2075/76

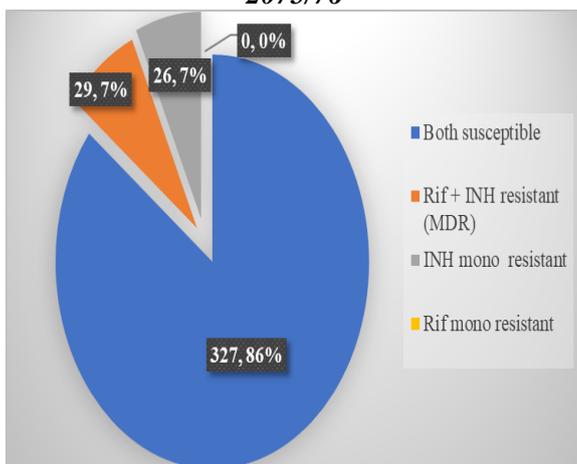
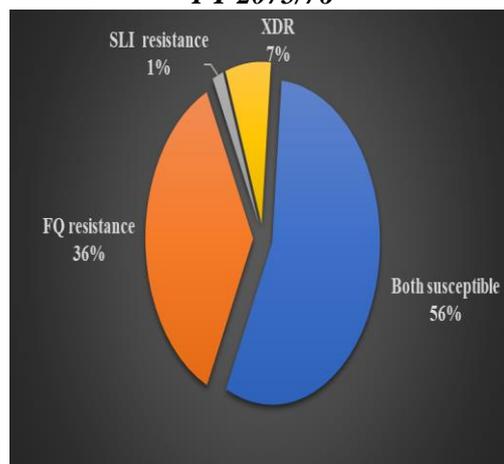


Figure 4.13: Result of Second line LPA FY 2075/76



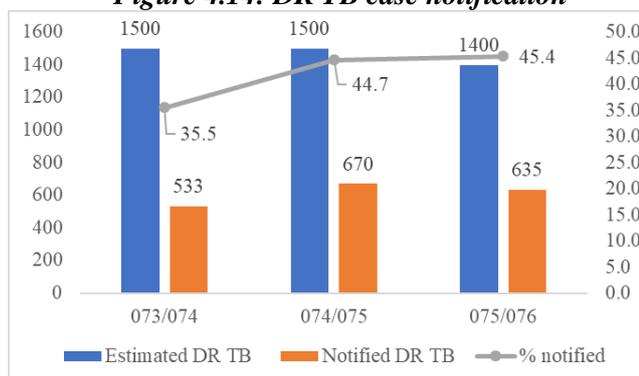
4.1.3.5 National TB Laboratory Plan:

National TB Programme is in the process of finalizing the national TB lab plan. The lab plan will guide the programme regarding the structure of the TB laboratory network. It will set the criteria for the establishment of microscopy centers, GeneXpert centers, and quality assurance centers along with their roles and responsibilities. It will work as a guiding document for all the TB laboratory related activities.

4.1.4: Case notification of DR TB

Nationally in 2075/76, 635 DR TB cases were notified to the national TB programme (NTPs). The trend of notification of TB cases since 073/74 is shown in figure 4.14. There is still a huge gap (45.4%) between estimated vs notified DR TB cases.

Figure 4.14: DR TB case notification

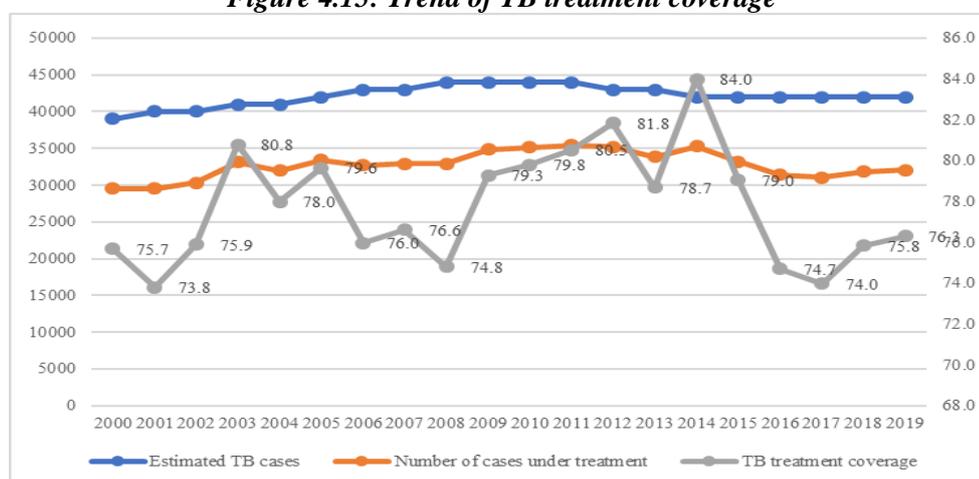


4.2 Treatment coverage

The Sustainable Development Goals (SDGs) include a target to “Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all”. One of the indicators for Target 3.8 of SDG 3 is the coverage of essential health services; this is a composite indicator based on 16 tracer indicators, one of which is TB treatment. Achieving UHC is a fundamental requirement for achieving the milestones and targets of the End TB Strategy; hence, priority indicators for monitoring progress in implementing the End TB Strategy include both TB treatment coverage and the percentage of TB patients and their households that face catastrophic costs as a result of TB disease.

TB treatment coverage is defined as the number of new and relapse cases detected and treated each year, divided by the estimated number of incident TB cases in the same year, expressed as a percentage. In this section, numbers of notified new and relapse cases in 2075/76 are used as the numerator for the indicator, because these are the available data. However, as discussed further below, there are people with TB who are treated but not notified to the national TB program. Antiretroviral therapy (ART) is recommended for all HIV-positive TB patients, and a second line MDR-TB treatment regimen is recommended for people with MDR/RR-TB. This section includes estimates of treatment coverage for these two interventions as well.

Figure 4.15: Trend of TB treatment coverage



The annual trend of notification and estimated incidence are shown in Figure 4.1. TB treatment coverage from the year 2000 until 2075/76 is shown in Figure 4.15. Nationally, TB treatment coverage in 2075/76 was around 76% which is slightly higher compared to 2000 and slightly less compared to 2010. Globally, TB treatment coverage was 69% in 2018.

4.2.1 Treatment coverage

Nationally, in 2075/76 there was a gap of about 10000 cases between the new and relapse cases there were notified and estimated incident TB cases in the same year.

The main reasons for a gap between notifications and estimated incidence as per WHO global report 2019 are:

Underreporting of detected TB cases. In many countries, levels of underreporting may be high; this is especially the case for those countries that lack policies on the mandatory notification and other measures to ensure reporting of detected cases by all care providers, and that have large private health sectors.

Underdiagnosis of people with TB. Underdiagnosis can occur for reasons such as poor geographical and financial access to health care; lack of or limited symptoms that delay seeking of health care; failure to test for TB when people do present to health facilities; and diagnostic tests that are not sufficiently sensitive or specific to ensure accurate identification of all cases

4.2.2 Treatment coverage for MDR/RR TB

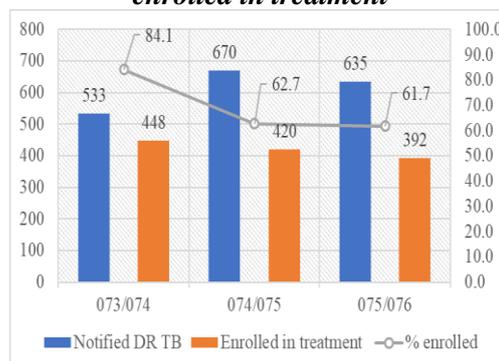
Trends in the number of patients enrolled in MDR/RR-TB treatment nationally since FY 71/72 is shown in Fig. 4.2. The number of people enrolled in treatment was nationally 307 down from almost 14% in 2074/75. The number of enrolments of MDR/RR TB in seven provinces is shown in Fig. 4.18.

Nationally, 307 patients starting second-line MDR-TB treatment in 2075/76 represented 22% of the estimated 1400 incident cases of MDR/RR-TB in 2018. This achievement is below global achievement which is 32% of the estimated incident cases of MDR/RR-TB in 2018. Province 1 accounts for the highest number of MDR treatment enrolment followed by Bagmati Province.

Treatment coverage will not improve nationally unless there is an intensification of efforts to diagnose and treat MDR/RR-TB. As per WHO, closing on the incidence-treatment enrolment gap requires increasing one or more of the following; the proportion of TB cases detected, the proportion of TB cases bacteriologically confirmed, the proportion of bacteriologically confirmed cases tested for drug resistance; and the proportion of detected cases of MDR/RR-TB started on treatment.

Out of 635 DR-TB patients notified in 2075/76, 62% were enrolled in treatment (Fig. 4.16). This achievement is below global achievement which is 84% of notified cases. These low percentages show that progress in detection is outstripping the capacity to provide treatment and to follow up (Initial lost to follow-up 38%). They may also reflect weaknesses in data collection systems. In these settings, the risk of transmission of drug-resistant TB is high, and efforts are needed to rapidly close gaps in diagnosis and treatment enrolment

Figure 4.16: DRTB case notified and enrolled in treatment



In Nepal, one of the barriers to adequate access to treatment of drug-resistant TB is that the network for the programmatic management of drug-resistant TB is too centralized and too reliant on hospital-based models of care. Greater decentralization of services and expansion of ambulatory models of care are needed. To achieve the treatment target, NTP plans to establish and operationalize a formal DR TB management structure at various levels of healthcare and expand 14 additional MDR-TB treatment centers and 52 treatment sub-centers in the next 5 years. At present, there are 21 DR TB treatment centers and 81 DR TB treatment sub-centers across the country.

In 2075/76, 71 patients with Pre-XDR TB and 14 XDR-TB were enrolled in treatment (Fig. 4.17). As mentioned in the Global TB report, 2019 there are widespread unmet needs in terms of palliative care as well as inadequate data gathering on this issue which is also applicable to Nepal.

Figure 4.17: Treatment enrollment of MDR, Pre-XDR, XDR TB patient

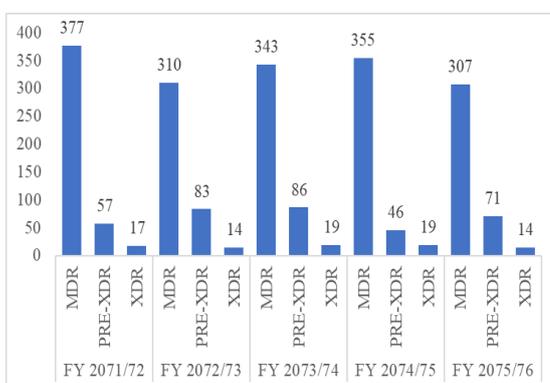
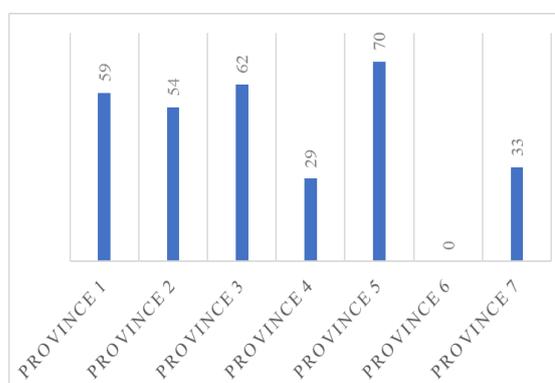


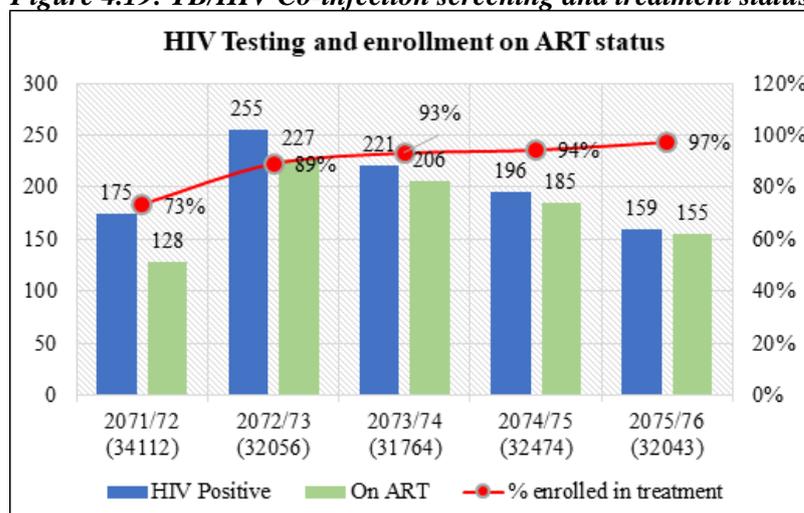
Figure 4.18: Province wise treatment enrollment of MDR/RR TB cases



4.2.3 Treatment coverage of ART for HIV-positive TB cases

The number of notified HIV-positive TB patients on ART reached 155 in 2075/76, equivalent to 97.% of the notified TB patients known to be HIV-positive.

Figure 4.19: TB/HIV Co-infection screening and treatment status.



4.2.4 Treatment of tuberculosis

Once the decision is made to initiate treatment for tuberculosis, the patient is classified according to the site of TB disease (Pulmonary or Extra Pulmonary), the bacteriological confirmation status (bacteriologically confirmed or clinically diagnosed), and previous TB treatment status if any (new or retreatment). The patient is then enrolled in the appropriate treatment regimens. National TB Control Program uses standardized TB treatment regimens using the drugs with a fixed-dose combination and employs directly observed treatment (DOT) strategy. There are around 4382 TB treatment centers all over the country, among them 80% of health facilities have TB patients during this reporting fiscal year.

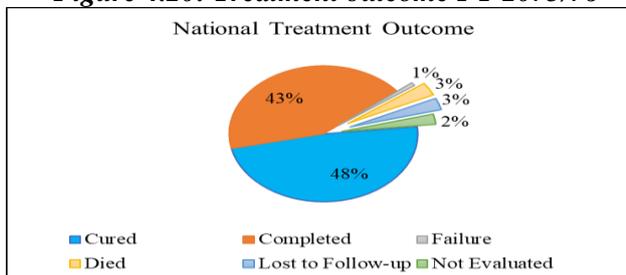
NTP no longer recommends Category II which included streptomycin to be used and have officially phased out Cat II regimen. For detail refer to “**National Tuberculosis Management Guidelines, 2019**, published by NTCC.

For DR TB treatment, National TB Program has also transitioned its regimen based on the revised WHO recommendation (WHO consolidated guidelines on drug-resistant tuberculosis treatment, 2019). The details are available in **National Guideline on Drug Resistant Tuberculosis Management, 2019**, guidelines published by NTCC.

4.3 Treatment outcomes

This section summarizes the latest results of treatment for new and relapse cases of TB who started treatment on a first-line regimen in 2074/75 (including people with HIV-associated TB). The treatment outcome for the year 2075/76 is shown in Fig.4.20.

Figure 4.20: Treatment outcome FY 2075/76



4.3.1 Treatment outcomes for new and relapse TB patients

Data on treatment outcomes for new and relapse cases of TB in 2075/76 are shown in Fig. 4.22. The national trend for 2071/72–2075/76 is shown in Fig. 4.23. Nationally, the treatment success rate for new and relapse cases who were treated in 2075/76 was 90% which is higher than the global achievement of 85%. Province wise treatment success rate is compared in Fig. 4.21 which shows the treatment success rate highest in Gandaki and Karnali province (94%) and least in Sudurpachhim Province (88%).

Figure 4.21: Province wise treatment success rate

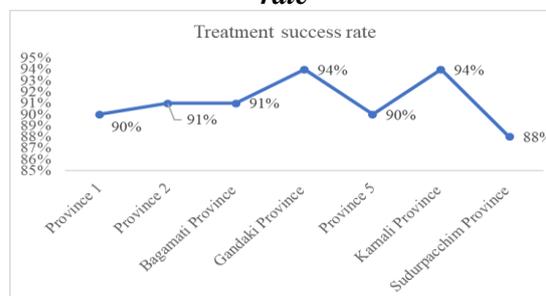


Figure 4.22: National PBC New and relapse treatment outcome

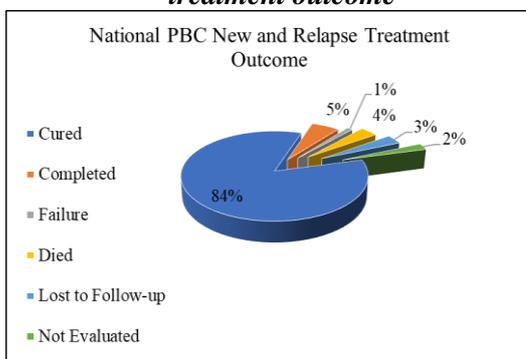
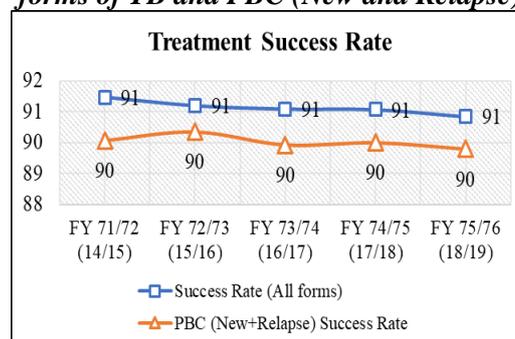


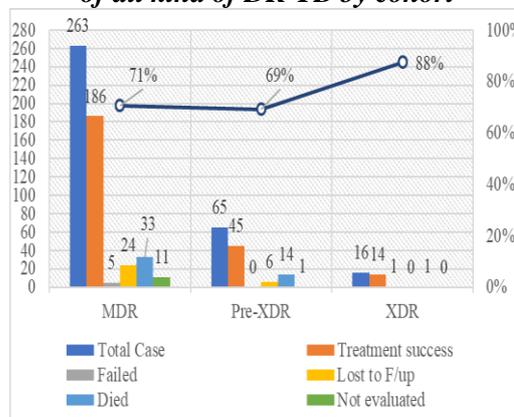
Figure 4.23: Trend of treatment success rate of all forms of TB and PBC (New and Relapse)



4.3.2 Treatment outcomes for TB patients with drug-resistant TB

Figure 4.24 shows the treatment outcome of RR/MTB, Pre-XDR, and XDR TB, which is evaluated in FY 2075/76. The trend of treatment success rate almost remains the same for MDR TB cases as previous years but increased in Pre-XDR and XDR. The treatment success rate (TSR) of RR/MDR TB is 71%, Pre-XDR TB is 69% and XDR TB is 88%. The death rate is quite high among Pre-XDR TB cases (21.5%), 6.3% and 12.5% among XDR TB and MDR TB respectively. Lost to follow-up among RR/MDR TB and Pre-XDR TB is around 9% but there is not any lost to follow-up among XDR TB cases found.

Figure 4.24: Trend of treatment outcome of all kind of DR-TB by cohort



CHAPTER 5: TB PREVENTION SERVICES

BOX5.1 KEY FACTS AND MESSAGES

Preventing new infections of *Mycobacterium tuberculosis* and its progression to active TB disease is crucial to achieving what the National TB Program of Nepal has envisioned to end by 2035.

Currently, health care interventions for TB prevention are the treatment of LTBI for people living with HIV (PLHIV) and contact of children under 5 years; prevention of transmission of *M. Tuberculosis* through infection prevention and control; and Bacille-Calmette-Guérin (BCG) vaccine.

NTP recommends TB preventive treatment for PLHIV, household contacts under 5 years of bacteriologically confirmed pulmonary TB cases. A total of 2026 PLHIV were started on TB preventive treatment in 2075/76, based on data from NCASC. TBPT for children under five years who are the contacts of TB cases increased by 4-fold compared to FY 74/75 to 2,397.

At the first United Nations (UN) high-level meeting on TB on 26 September 2018, Nepal committed to providing TB preventive treatment to at least 216,404 people in the 5 years 2018–2022: 55,336 people living with HIV (PLHIV), 38,968 children aged under 5 years who are household contacts of people affected by TB, and 122,100 other household contacts. National TB program managed to achieve 27% of UNHLM target

BCG vaccination is being provided as part of national childhood immunization programmes. The coverage of BCG vaccine was 92% in FY 74/75.

Prevention of new infections of *Mycobacterium tuberculosis* and their progression to tuberculosis (TB) disease is critical to reduce the burden of disease and death caused by TB and to achieve the End TB Strategy targets set for 2030 and 2035. The targets of an 80% reduction in TB incidence from the 2015 level by 2030, and of a 90% reduction by 2035, will require a historically unprecedented acceleration in the rate at which TB incidence falls after 2025. This accelerated rate (an average of 17% per year between 2025 and 2035) is possible only if the probability of progression from latent TB infection (LTBI) to active TB disease among the approximately 13 million people already infected in Nepal is substantially reduced. Health-care interventions that could help to cut the risk of progression from LTBI to active TB disease include more effective drug treatments for LTBI and the development of a vaccine to prevent the reactivation of LTBI in adults.

Nepal has three major categories of health interventions that were done for TB prevention in 2074/75:

- Treatment of LTBI – Through TB preventive therapy (TBPT), with particular attention to people living with HIV (PLHIV) and children under 5 years who are the contacts of TB cases;

- Prevention of transmission of *Mycobacterium tuberculosis* through infection control; and
- Vaccination of children with the Bacille-Calmette-Guérin (BCG) vaccine.

The three main sections of this chapter present and discuss the status of progress in the provision of these services.

5.1 Treatment of latent TB infection

This section presents the latest data reported to NTP on the provision of TB preventive treatment. For PLHIV, household contacts of aged under 5 years are reported and those aged 5 years and older are not reported as NTP have not initiated preventive therapy in that age group.

5.1.1 People living with HIV

There has been a considerable increase in the provision of preventive TB treatment in recent years. As shown in the table below, PLHIV started on preventive treatment has increased from 43 in the year 2014 to 2026 in the year 2075/75.

Table 5.1 Number of PLHIV enrolled in IPT

Year	Number of PLHIV enrolled in IPT
2075/75	2026
2074/75	2044
2073/74	1929
2073/74	1886
2072/73	43

5.1.2 Children contacts under 5 years who are household contacts of TB cases

Even though the importance of TB preventive treatment (TBPT) among children under 5 years has always been identified in NTP, TBPT was only initiated in the year 2017. Initiation of TBPT among children under 5 years old has been highlighted in the National Strategic Plan of TB, 2016-21, and NTP has been implementing TBPT among children under 5 years old, in 38 high burden districts of Nepal where contact tracing is being done (Fig. 5.1).

A total of 2,397 children aged under 5 years were reported to have been initiated in preventive treatment in 2075/76. This was an almost 4-fold increase from 613 in 2074/75.

Among enrolled 59.2% had already completed the treatment and 2% of children discontinued the treatment.

Figure 5.1: District with contact tracing and TBPT



NTP has now transitioned into 3 months of Isoniazid and Rifampicin (3HR) and replaces 6 months of Isoniazid as a preventive therapy for the children under 5 years who are the contacts of bacteriologically confirmed pulmonary TB.

At the first United Nations (UN) high-level meeting on TB on 26 September 2018, Nepal committed to providing TB preventive treatment to at least 216,404 people in the 5 years 2018–2022: 55,336 people living with HIV (PLHIV), 38,968 children aged under 5 years who are household contacts of people affected by TB, and 122,100 other household contacts. National TB program managed to achieve 27% of the UNHLM target and the breakdown is shown in Table 5.2.

Table 5.2: Achievement against UNHLM target for the year 2019

	2075/76	UN high-level meeting target for 2019	Percentage achieved
Adult	0	8500	0%
Children	2397	2500	96%
PLHIV	2026	5412	37%

5.2 TB infection control

TB infection control is one of the key components of the End TB Strategy. TB infection control as part of national infection prevention and control policy and TB infection programmes at the national and below level have been envisioned in NSP-TB 2016/21 as well as several interventions have been planned to achieve it.

Currently, as a part of infection control, 21 DR treatment centers were provided with exhaust fan, Ultraviolet germicidal irradiation (UVGI), N95 mask and a simple

surgical mask. Besides this infection, prevention sessions are incorporated in all TB related training.

As a part of administrative infection control NTP has also initiated FAST (Finding Actively, Separate temporarily and Treat effectively) approach in 15 major hospitals of Nepal. FAST is an intensified, refocused administrative approach to TB transmission control in healthcare facilities. In FY 2075/76, 756 TB cases were diagnosed for FAST activity.

5.3 BCG Vaccination

BCG is the only approved vaccine against TB; it provides moderate protection against severe forms of TB (TB meningitis and military TB) in infants and young children. A more effective vaccine to reduce the risk of infection with Mycobacterium tuberculosis and the risk of progression from infection to active TB disease in adults is needed. After many years, a positive signal has emerged from the global vaccine pipeline, indicating that a promising new vaccine against TB might be on the horizon.

As per the Annual Report by the Department of Health Services 2074/75, National Immunization Programme (NIP) is one of the government’s highest priority programmes. It made a large contribution to Nepal’s achievement of Millennium Development Goals (MDG) 4 and 5 by reducing morbidity and mortality among children and mothers from vaccine-preventable diseases.

Table 5.3 Coverage of BCG vaccine has increased in 2074/75 compared to the previous year

Immunization	2071/72 (2014/15)	2072/73 (2015/16)	2073/74 (2016/17)	2074/75 (2074/75)
% of children under one year immunized with BCG	94	87	91	92

Annual Report, Department of Health Services, 2074/75

CHAPTER 6: UNIVERSAL HEALTH COVERAGE, MULTISECTORAL ACTION, AND SOCIAL DETERMINANTS

Box6.1. Social Protection Program in NTP

- Nutritional and transportation support
- Inpatient (Hostel like) facilities
- Diagnosis and Treatment support
- Health Insurance to MDR patients
- Patient Cost Survey (PCS)

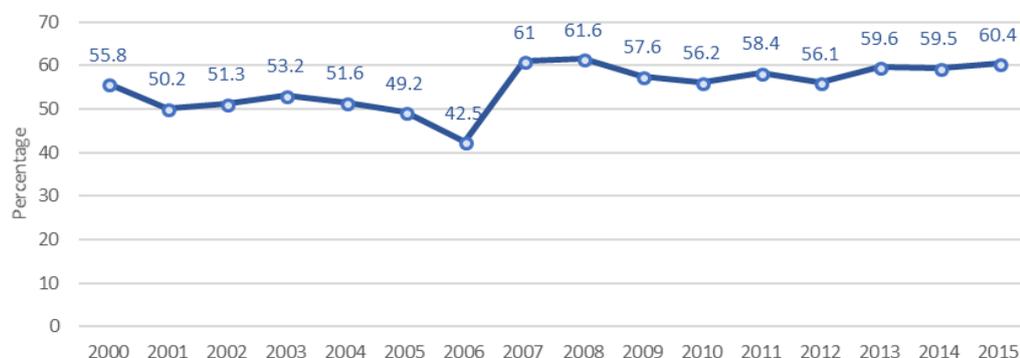
To achieve the targets and indicators of the End TB Strategy and the target set for TB in the Sustainable Development Goals (SDGs) requires the provision of TB care and prevention within the framework of universal health coverage (UHC), and multisectoral actions to address the TB risk factors.

The World Health Organization (WHO) developed a TB-SDG monitoring framework with 14 indicators that are associated with TB incidence in 2017. Among fourteen indicators, comprise four health risk factors under the health goal (SDG 3), three indicators related to health service coverage and expenditures (also under SDG 3) and seven indicators (related to poverty, social protection, undernutrition, income growth, income inequality, housing quality, and indoor air pollution) underneath other SDGs.

UHC means that everyone can obtain the health services they need without suffering financial hardship. SDG Target 3.8 is to achieve UHC by 2030; the two indicators to monitor progress are a UHC service coverage index (SCI), and the percentage of the population experiencing household out-of-pocket expenditures on health care that are large with regards to household expenditures or income.

Health care financing in Nepal is largely dependent on out-of-pocket (OoP) payments: as of 2015 60.4% of total health, expenditure was covered by OoP. From 2000 to 2007 OoP declined from 55.8% to 42.5%, but in 2008 again it sharply increased and has been largely stable since then. OoP health expenditure in Nepal is much higher than the $\leq 25\%$ benchmark set by WHO. It is known that OoP payments by their nature are highly regressive, as poorer households are forced to pay a greater proportion of their income for health services than richer households. This suggests that access to quality health care is not affordable for many vulnerable people at the highest risk of TB, and thus limited access to care is likely to drive the TB epidemic upward (Source: EP Review Report-2019).

Figure 6.1: Out of pocket expenditure as % of current health expenditure, Nepal, 2000-2015



Data source: World Bank

The End TB Strategy includes a target that no TB patients and their households face total costs (including direct medical expenditures, non-medical expenditures, and income losses) that are catastrophic costs. The patient costs survey has not been done in the country to measure the direct and indirect costs of people living with TB and it is planned to carry out in 2021.

The attributable risk factors; like undernourishment, smoking (especially among men), alcohol abuse, HIV infection, diabetes, contact, poor housing, poverty are also fueling to increase the TB disease, which will consider with high priority during planning and implementation in coming days. The activities were implemented in the country under the social protection programme for TB patients

6.1 Social Protection Programme in NTP

6.1.1 Nutritional and transportation support

NTP has been providing nutritional and transportation allowances to DRTB cases in the country. During the reporting year, numbers of DRTB patients received nutritional and transportation allowances (NPR 3,000 per patient/month) as social protection costs.

6.1.2 Inpatient (Hostel like) facilities

During the reporting year, 6 hostels and 1 Drug Resistant (DR) home located in different parts of the country offered accommodation, food, treatment, and care supports to the needy DRTB patients for intensive and continuation phase of treatment. 190 DRTB patients were benefited from the hostels throughout the year. This support also helped to improve treatment adherence of the patients.

6.1.3 Diagnosis and Treatment support

NTP provided diagnosis and treatment support to presumptive TB patients, basically TB diagnostic support for malnourished or ARI children- every presumptive TB cases among malnourished get supports up to 2,000 for diagnosis other than free services (Gene-Xpert, culture, and sputum microscopy) provided to them, similarly, they also get NRs 2000 for travel and accommodation to reach to referral hospitals from Global Fund support. Likewise, there was a budgetary provision (NRs 2000) for the travel and accommodation for DST in Gene-Xpert for all presumptive DRTB patients through the domestic resources in 40 districts of Nepal; other districts are covered by sputum courier mechanism through SR from the Global Fund support.

6.1.4 Patient Cost Survey (PCS)

National Tuberculosis Programme has already adopted End TB Strategy as a country policy to eliminate the disease. Out of three major indicators, one of them is zero catastrophic cost due to TB. Therefore, the TB programme is planning to start a cost survey in the country in 2020/2021.

6.2 Partners Contribution

6.2.1 Save the Children

Save the Children is the world's leading independent children's rights organization with members in 30 countries and programs in more than 120 countries. Save the Children fights for children's rights and delivers lasting improvements to children's lives in Bhutan, Nepal and around the world. Save the Children has been working in Nepal since 1976 focusing on programs on Child Rights, Governance and Protection, Education, Health and Nutrition, Livelihood and Humanitarian response and preparedness in all 77 districts of the country through four offices in Bardibas, Kathmandu, Butwal, and Surkhet. Through its various programs, Save the Children aims to create an environment that enables a child to reach his/ her full potential.

Save the Children is the Principal Recipient for all three Global Fund grants (HIV, Malaria, and Tuberculosis) in Nepal since 16 July 2015. Save the Children works together with the National Tuberculosis Control Center (NTCC) for the National Tuberculosis Program (NTP) all over the country. A Program Management Unit (PMU) is based at NTCC Bhaktapur to provide financial and technical support to various NTP and GF related activities including National TB Prevalence Survey. Six Sub-recipient (SRs) partner organizations for case finding activities, two SRs for DR TB management and one SR for implementation of public-private partnership (PPM) activities are managed by Save the Children as the Principle recipient (PR) in coordination with the NTCC. A total of 38 districts are covered by SR activities. The

total budget of the Global Fund for tuberculosis for FY 2075/76 was **USD 6.67** million.

The key activities for FY 2075/76 are as follow:

- Contributed to the revision of all key guidelines relating to the Diagnosis and management of both DS and DR TB.
- Financially and technically supported the national TB Prevalence Survey.
- Supported in strengthening Laboratory capacity of NTP at NTCC, at provincial (eg. Culture DST labs) and at the local level (eg. microscopic, GeneXpert centres)
- Supported in continuation of TB treatment and diagnosis by assuring the uninterrupted supply of anti TB drugs and medical equipment including GeneXpert cartridges
- Key support to NTP in overall programmatic management:
 - Childhood TB management
 - Private Public Mix related activities.
 - Sputum transportation
 - Contact investigation
 - Preventive therapy for children
 - Pay for performance
 - TB screening among migrant and prisoners

6.2.2 SAARC Tuberculosis and HIV/AIDS Centre (STAC)

SAARC TB and HIV/AIDS Centre (STAC) is one of the Regional Centers of South Asian Association for Regional Cooperation (SAARC). The Centre supports the National TB Control Programmes (NTPs) and National HIV/AIDS Control Programme (NACPs) of the SAARC Member States (Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka). The Centre coordinates the progress and new findings of NTPs and NACPs among the SAARC Member States and supports for implementation of SAARC Regional Strategies on controlling /elimination of tuberculosis as well as prevention of HIV/AIDS in the Region.

Overview of Tuberculosis in the SAARC Region

In the year 2018, the SAARC region, with an estimated annual incidence of 3.7 million TB cases equivalent to 206 cases per 100 000, carries 37% of the global burden of TB incidence. Three of eight Member States in the SAARC Region are high TB and MDR-TB burden countries among 30 high burden countries. India accounting for 27%, Pakistan 6% and Bangladesh 4% of the world's TB cases. An estimated 0.5 million (30 cases per 100 000) TB deaths in the region.

HIV/AIDS Situation in the SAARC Region

The overall adult HIV Prevalence in the SAARC region remains below 1%. In 2018, an estimated number of 2.35 million HIV infected people and 0.07 million deaths

List of major activities performed in year 2019

- 1.SAARC Regional Training of Trainers (ToT) on Diagnosis, Treatment and Programmatic Management of Pediatric TB, *13-18 March, 2019*, Sri-Lanka
- 2.SAARC Regional Meeting of Programme Managers on TB and HIV/AIDS Control Programmes, *20-22 June, 2019*, Sri-Lanka
- 3.SAARC Training on Gene-Xpert Machine Operation and Maintenance Training for Laboratory Personnel, 6-8 August, 2019, Bhutan
- 4.SAARC Training of Mid-level Clinical Managers on Programmatic Management of Drug Resistance TB (PMDT), 15-19 September, 2019, Bangladesh
- 5.SAARC Regional workshop for the mid-level HIV/AIDS managers on Community Led Testing (CLT) on HIV/AIDS, 11-13 November, Pakistan
- 6.SAARC Regional workshop for implementation on TB -Tobacco collaborative activities and development of guidelines on TB –Tobacco, 4-5 December 2019, Jaipur, India
- 7.SAARC Training on Gene-Xpert Machine Operation and Maintenance Training for Laboratory Personnel, 13-15 December, 2019, Nepal
- 8.Video Conferencing on Cross border issues and migrant health on TB and HIV/AIDS in SAARC Member Countries

Key achievements/Research

- SAARC Regional Strategy on Elimination Tuberculosis (2018-2023)
- SAARC Regional Strategies on HIV/AIDS (2018-2023)
- SAARC Regional Strategy on ACSM (2018-2023)
- SAARC Regional Strategy on Migration Health on TB and HIV/AIDS (2018-2023)
- Occupational risk (prevalence and risk factors) of Latent Tuberculosis Infection among Health Care Workers, Nepal (Done)
- Trend (frequency and distribution patterns) of opportunistic infections associated with HIV/AIDS – A multi-centric study-) Afghanistan (Done-report awaited), Bhutan (under process)
- HIV Prevalence Study in key population in Afghanistan (Done- report awaited)
- Assessment of compliance of shorter regimen of MDR-TB treatment in Bhutan (under process)

6.2.3 World Health Organization (WHO)

WHO is the key technical partner to the National TB Programme and provides technical leadership and coordination in matters related to TB prevention, care and control, and monitoring and evaluation. WHO provides overall technical guidance and support in monitoring and evaluation and development of policy and strategic framework for TB control in the country with the vision of Ending TB in Nepal by 2030.

Major interventions/activities

In 2018-19, WHO provided critical support in completing a very high-quality TB prevalence study. The first national TB prevalence survey for Nepal was quality assured by the WHO internal team at the country level on day to day basis as well as by fielding in top Global TB prevalence experts for midterm and end of the survey reviews. WHO also provided technical and financial support for data validation, policy brief and report preparation of the survey. The Nepal TB prevalence survey is branded as one of the best surveys in the world.

WHO supported both technically and financially, the development of National TB management guidelines and National guidelines on Drug resistant TB management in line with the latest WHO recommendations and supported all the endorsement processes. WHO also supported technically and financially the TB epidemiological review and high level external joint monitoring mission (JMM) where the successes and gaps of the TB programme for last five years' implementation of the current NSP (2016-21) was assessed and came up with concrete recommendations that will enable Ending TB in Nepal.

Following these critical evaluations, WHO supported technically and financially, the development of the National Strategic Core Plan (2021-26) taking all these evidences from TB prevalence survey, TB epidemiological assessment, and JMM into consideration. WHO also provided technical advice for the implementation of TB services including PPM and FAST strategies and provided critical advice to the national programme and PR (SCi)/TGF on critical technical matters related to TB policies and implementation aspects and partner coordination.

Key achievements

- Provided excellent technical support for the quality assurance, data validation and report preparation of the first TB prevalence survey in Nepal.
- Nepal is one of the first countries to adopt the WHO global guidance on drug resistance TB management
- Developed National TB management guidelines and National guidelines on Drug resistant TB Management in line with the latest WHO recommendations
- Developed national strategic core plan (2021-26) taking into consideration all evidence from the TB prevalence survey, TB epidemiological assessment and TB JMM (2019)
- TB team of Nepal is best coordinated and functions in close collaboration with the National TB Programme, WHO, PR and all TB related partners as one exemplary team.

Planned activities for FY 2076/77

- Provide support for the publication of the National TB prevalence survey report and dissemination

- Support costing and finalization of the National TB Strategic Plan (2021-26)
- Technically support preparation, submission and grant negotiation of the Global Fund funding application for TB programme.
- Support development of the standard training modules for DR-TB and DS-TB in line with the new national guidelines
- Support capacity building on TB, DR-TB management including aDSM for trainers (mTOT) using the new standard training manuals
- Continue to provide technical advice to the national programme on critical technical matters related to TB policies and implementation aspects

6.2.4 Birat Nepal Medical Trust (BNMT Nepal)

Birat Nepal Medical Trust (BNMT Nepal) is a Nepalese non-governmental organization dedicated to improving the health and well-being of Nepalese people. BNMT Nepal continues to work in close integration with the National TB Control Centre (NTCC) to develop innovative and optimized approaches to accelerate tuberculosis elimination.

Major Interventions and Achievement

- DrOTS Nepal (Drone Optimized Therapy System) is a pioneering approach to address one of the biggest challenges facing rural healthcare in Nepal- transport networks for samples and medicines. BNMT, in collaboration with the government health services, and DroNepal has developed a network linking eight rural health posts in Pyuthan district to two GeneXpert testing hubs, at the district hospital and Primary Health Care Centre (PHC) in Bhingri
- IMPACT TB is an EU Horizon2020 project to scale-up and evaluate TB active case finding strategies to support the achievement of the END-TB targets. International consortium partners include Karolinska Institute (Sweden), KNCV (Netherlands), Liverpool School of Tropical Medicine (UK) and Friends for International TB Relief (Vietnam). IMPACT TB was implemented from 2017-2019 in four districts with a high burden of undiagnosed TB cases, namely, Dhanusha, Mahottari, Chitwan, and Makwanpur.
- Developing a locally-appropriate sociocultural & economic support package for people with TB in selected districts of Nepal
- BNMT is a sub-recipient of Global Fund financing for the National TB Programme service delivery in five districts in Province 1 (Ilam, Jhapa, Morang, Sunsari and Udayapur), via the Primary Recipient Save the Children International.
- Implementation Modeling and Validation to accelerate TB elimination in Nepal (IMPACT 2 TB)
- TARGET TB (Understanding TB transmission dynamics in the context of the rapid urbanization of Asia to optimally target interventions and accelerate the End-TB strategy)
- Management of the Eastern Region TB Quality Control Centre

6.2.5 Japan-Nepal Health and Tuberculosis Research Association (JANTRA)

Introduction

Japan-Nepal Health and Tuberculosis Research Association (JANTRA) is a non-profitable and public service-oriented organization affiliated with the Research Institute of Tuberculosis/Japan Anti-Tuberculosis Association (RIT/JATA), Japan.

Key interventions

1. Urban TB-Control program

The program has been implemented in partnership with RIT/JATA in Kathmandu Valley since 2008 delivering quality and patient-friendly TB diagnosis and treatment services. During the fiscal year, 66 TB patients were enrolled in the JANTRA DOTS Clinic and 86 % were successfully treated and 14% is not still evaluated in the clinic. A total of 99 presumptive TB cases sputum was tested for TB. Likewise, 175 patients' follow up sputum samples were tested for TB. A total of 12 DR patients were enrolled for treatment and 2 have been cured. Furthermore, at the community level, 210 school students at project sites were awarded on TB. Similarly, 170 factory workers were oriented on TB and its available services.

2.GFATM-NTP Support Programme

JANTRA is a sub-recipient for the Global Fund grant to implement the national tuberculosis programme in four districts (Kaski, Tanahu, Syanja, and Nawalpur) of the Gandaki province. The major interventions of the project are sputum transportation, contact tracing, screening of TB among malnourish children, TBPT for under five years children, screening of presumptive DR TB, Engagement of private sectors, implementation of FAST strategy in major hospitals and active case finding in refugee and slums. This project aims to increase case finding among high-risk groups and presumptive TB patients visited in the OPD of periphery health facilities by mobilizing Frontline health workforces and linking health facilities with microscopic and Gene X-Pert centres for the early diagnosis of the TB cases in the community.

6.2.6 Bagmati Welfare Society Nepal (BWSN)

Introduction

Bagmati Welfare Society Nepal (BWSN) was established in 1995 A.D (2051 B.S.) and registered as a non-profit making, a non-political and non-governmental organization in District Administration Office, Sarlahi. BWSN was formed to engage marginalized and vulnerable people in development activities with their enhanced capacity which ensures the livelihood improvement opportunities for poor, deprived and destitute community people living in Sarlahi and surrounding districts of the terai region. The thematic area of BWSN is Disaster Risk Management, Climate change, Human Rights, Child Rights,

Peace and Democracy, Livelihood and Enterprises Development, Education, Health, Nutrition, and WASH.

BWSN has working experience in 29 districts that is in all 7 provinces of Nepal (Jhapa, Morang, Udayapur, Siraha, Saptari, Mahottari, Dhanusha, Sarlahi, Rautahat, Bara, Parsa, Sindhuli, Gulmi, Gorkha, Syanga, Lamjung, Dhading, Kathmandu, Bhaktapur, Lalitpur, Pyuthan, Rukum, Salyan, Jajarkot, Arghakhanchi, Dang, Banke, Bardia and Bajura)

Major interventions/activities performed in FY 2075/76

- Presumptive sputum transportation carried out from HF's (hard to reach area) to microscopic center.
- Contact tracing carried out to index TB household.
- Childhood TB management in major hospitals and TB presumptive child referrals from HF's.
- TB preventive therapy to under-5 children of index TB case household.
- FAST Strategy in major hospitals to decrease the risk and intensity of TB infection in OPD.
- Sputum courier of presumptive DR TB cases and contact tracing in the household of index DR TB cases.
- Pay for performance to the private doctors; to enhance case notification through eTB online registration.

Financial contributions to NTP in FY 2075/76

Total NRs.31887655 /- was expensed for NTP supported activities through BWSN during this period which is 70% of the total available budget. This expenditure includes Program management, TB Care and Prevention, MDR-TB Management, RSSH-Health Management Information Systems, and Program Management, Integrated service delivery, and quality improvement and Community responses and systems.

Key achievements:

- As SR BWSN has identified 1512 TB cases (with all intervention) in province-2.
- There is total of 877 children enrolled for TB Preventive Therapy (TBPT), which is 134% achievement against the target.
- There are 220 childhood TB cases identified and among them, 215 cases were enrolled for treatment.
- BWSN was more economical in expenditure per case, which is lesser than the average expenditure of all SR.

Planned activities

- Link at least 80% HF's for sputum courier in every district of province-2.
- Supervised contact tracing and enhance the sputum test in Genexpert.
- Enhance DR TB management activities and ensure enrollment for treatment.
- Expand presumptive TB children referral from HF's by coordinating and mobilizing HW's/Volunteers/local authority.
- Emphasis on FAST Strategy.
- Expand coordination with private doctors to increase case notification on eTB online registration.

- Strong coordination with SCI, PHD, DPHO and local government to avoid stock out of logistic and smooth implementation of the program.
- Enhance monitoring and supportive supervision in the district. Mentoring approach to enhance learning among the team for better team building.

6.2.7 Kapilvastu Integrated Development Services (KIDS)

Kapilvastu Integrated Development Services (KIDS) is a non-governmental and non-profitable organization working in the field of Health, Agriculture, Climate change, livelihood, Good Governance and Water and Sanitation since 2005. (KIDS) was awarded as Sub Recipient (SR) effective from 16th April 2018 to work with majorly case finding activities covering of 9 districts under province # 5 named Banke, Bardiya, Dang, Kapilvastu, Nawalparasi-west, Palpa, Pyuthan, Rolpa, and Rupandehi.

Major interventions and key achievement:

1. **Sputum courier:** Total 207 non-microscopic centers are linked with microscopic centers under program coverage districts of Province 5 to increase the accessibility of TB services from hard to reach population to bring them in early diagnosis and early treatment where sputum of 16121 presumptive cases was collected and examined. As a result, 571 new TB cases are diagnosed and enrolled for treatment which contributed to additional new case findings.
2. **Contact tracing:** This activity is focused to identify the presumptive family members of TB Index cases after systematic screening as per guideline from which 4754 TB patients household are made contact tracing in returns 100 from Smear microscopic and 30 MTB and 2 RR new TB cases from negative case referral to GX are diagnosed and ensured to treatment.
3. **Childhood TB management:** This activity is designed to catch up Malnourished/ARI children from major hospitals and HFs from where 3421 children were found presumptive and 3300 children were referred for TB investigations from where 352 (346 PCD and 6 PBC) new child TB cases were diagnosed and 351 cases were enrolled at treatment.
4. **DR TB management:** To contribute to increasing coverage of DR Service, 408 HFs were linked to Gene Xpert. During the period, 803 DR suspects cases accessed Gene Xpert test through sputum courier and contact tracing from where 22 new MTB+ Rif. Resistant and 3 MTB+ Rif sensitive cases were detected and ensured for treatment.
5. **Establish pay for performance:** Support to engage the private sector and mainstream them into NTP reporting, total 4 private practitioners engaged under pay for performance scheme through online reporting system from where 109 cases were reported to NTP.
6. **FAST strategy:** FAST strategy is an innovative and fast track activity to support infection control and new case finding at a major hospital. A total of 3 major hospitals implemented the FAST strategy and with this strategy, 2357 presumptive TB cases were examined and 440 (388 PBC, 52 PCD) new TB cases were identified.
7. **Isoniazid Preventive Therapy (IPT) / Tuberculosis Preventive Therapy (TBPT):** To prevent TB transmission among children under 5 years age from TB case within the family member, this therapy is initiated to those children under 5 years age who have TB cases on treatment within their family member

and do not have any sign and symptoms of the disease. During the period, 520 U5 children were identified through contact tracing and initiated IPT/TBPT, including the previous year of enrolled cases total 573 have completed the full course.

Overall Contribution

Planned activities for FY 2076/77

- Continuation of regular activities in coverage districts as per SR implementation guideline
- Onsite orientation at health facilities about SR activities
- Coordination with health facilities and other stakeholders at the provincial level and local level
- Joint monitoring with government staffs along with the executive committee.
- Ensuring enrollment of TB cases identified from the program in treatment.
- Increasing participation of the private sector in case finding and notification in the NTP program.

6.2.8 TB Nepal

TB Nepal was founded in 2060 BS (2003 AD) as a non-governmental. TB Nepal began treating TB patients in the Midwestern region (MWR) of Nepal since 2003 (2060 BS) as a DOTS and sputum microscopy center. Nepalgunj TB Referral center Banke is the center for the diagnosis and treatment of complicated TB cases with 24 hours of in-patient's care facilities. This Center provides services mainly to the people of the Bheri, Rapti area, Karnali province, province 7, and from the border side of India. It is the busiest center of tuberculosis and Leprosy providing services to a large number of people.

OPD service

Nepalgunj TB Referral Centre (NTRC) has 2 separates (TB and Leprosy) OPD services. Near about 35385 patients were visited (Male 20636 and 14749female) in OPD in this year 2075 / 076.

MDR TB Service

Nepalgunj TB Referral Center (NTRC) is the MDR TB center. The centre also supervises and monitors MDR TB activities in the 12 MDR TB sub-centers of the various part of the Mid-Western region. 24 new MDR and 18 Pre XDR TB-cases were registered. And currently 64 DR TB patients taking 2nd line TB treatment. The DR TB treatment success rate is 81 % at TB Nepal.

In-patients facility

25 bedded in-patient services are provided TB patients who require in-patient care at TB Nepal. 728 TB patients were admitted in 2075 / 2076 (2018 / 2019 AD). The bed occupancy rate was 71 % and the average length of stay was 10 days at TB side.

DR TB Hostel service

TN Nepal runs a hostel for TB patients mainly for DR TB patients.

6.2.9 Nepal Anti Tuberculosis Association

NATA is a non-governmental organization established in 1953 with a vision of TB free Nepal. Its mission is promoting public health by ensuring quality service and rights to health care against TB and other lung diseases. It works in close coordination with NTP of National Tuberculosis Centre (NTC), Ministry of Health and Population (MoHP), Save The Children International (SCI), Kuratorium Tuberculose (Germany). NATA is affiliated to The Union and Social Welfare Council (SWC) and is one of the prominent members of the South East Asian Region (SEAR). It has branches in 35 different districts of Nepal and has been expanding its activities for the prevention and control of TB through the health education program and curative services since its establishment. NATA has been working as a sub-recipient for Global Fund Grant for DR TB management Program.

Current Project

- German Nepal Tuberculosis Project, Kalimati Chest Hospital, Global Fund DR TB Management Program and RIFASORT(Clinical trial)

\Key Achievements

- Programmatic activity:
 - Advocacy, communication, Social Mobilization (ACSM) Programme: NATA had conducted ACSM programme in its 12 district branches with support from the Global Fund TB Programme and also through district branches of NATA. The district branches were Dang, Banke, Kathmandu, Chitwan, Lalitpur, Palpa, Rupandehi, Bara, Sarlahi, Jhapa, Rautahat, Sunsari respectively.
 - Clinica

Key Activities of the Global Fund (Kathmandu and Morang)	Achievements
Presumptive TB cases screened in OPD	9881
TB cases enrolled for treatment in the center among the case diagnosed in own center	269
Presumptive DR TB cases screened in OPD	1281
DR patients tested for side-effect management	760
DR TB cases enrolled for treatment in the center	40
New admission in hospital	217
First-line TB Patients Admitted	145
Total patients received services from DR Hostel (Kathmandu + Morang)	89
Total number of presumptive DR cases tested for culture	691
Total number of presumptive DR cases found culture positive	146
Total number of MDR cases diagnosed from c/dst	58
Total number of XDR and Pre-XDR cases diagnosed from c/dst	91
HIV test among OPD Patients	734
Total no. of test conducted from General Lab	20,218

6.2.10 Health Research and Social Development Forum (HERD) and HERD International

Introduction

Health Research and Social Development Forum (HERD) is a non-governmental organization, established in 2004 to promote the quality of life of people, especially women and children, the poor and the disadvantaged. HERD International, which is operating as a sister organization of HERD, is a national research and development agency established in 2014, with a vision to promote the health and well-being of people through evidence-informed people-centered approaches. We (HERD/HERD International) strongly believe in evidence-based actions and focus our expertise on generating high-quality evidence, and informing policy, strategies and most importantly, practice.

Fight against TB has been one of the priority areas for HERD/HERD International. HERD has a trusted history of collaboration with NTP Nepal since its inception, providing technical support in policy and programme design and implementation. HERD, as a partner of NTP, has implemented Global Fund Round-7 and NSA grants (Phase I and Phase II), TB REACH project in urban areas of 22 districts to reach the unreached high-risk population through a mobile van with embedded GeneXpert and other TB diagnostic services. HERD also implemented a four-year operational Research project on psychosocial support to MDR TB and a two-year project in Tobacco cessation within the NTP. HERD International recently implemented a multi-country TB-Tobacco study in Kathmandu valley, which aimed to facilitate the integration of tobacco cessation services within NTP. HERD/HERD International has also been closely working with NTCC and providing technical expertise in various aspects such as evidence-based planning and NSP development. HERD is one of the Sub-Recipients of GFATM, implementing projects from April 2018- 2021 in seven districts of province 3 namely Kathmandu, Lalitpur, Bhaktapur, Kavre, Dhading, Chitawan, and Makwanpur.

Key Activities and Achievements in FY 2075-76

In 2019 (FY 2075-76), through the NTP-SR project, HERD identified 851 cases through major interventions such as sputum courier, contact tracing, management of childhood TB, PPM, DR TB management and FAST in Province 3. HERD has been providing diagnostic services through Gene Xpert and smear microscopy in its laboratory in Kathmandu, which serves as a drop-in center for sputum testing for major districts of Province 3 and receives many clients referred from private providers including major private hospitals in Kathmandu. In the fiscal year 2075/76 among 3493 samples tested through Gene Xpert, 392 samples showed MTB detected Rif sensitive, 9 samples showed MTB detected Rif resistant, 228 samples showed error, 3 MTB + RIF "I" and 2861 samples had no MTB detection. HERD International was also actively involved, in partnership with NTCC, in developing, revising and implementing the use of recording and reporting forms to include tobacco-related indicators by 18 health facilities in Kathmandu valley. Behavioral support IEC materials (flipbook, poster, leaflets, desk guide, and video) on tobacco cessation were developed for TB service providers and training was provided to DOTS facilitator on delivering counseling to TB patients to quit tobacco. Currently, we are collecting data from the 18 sites to assess the effectiveness of the intervention process.

For more information, visit: www.herd.org.np; www.herdint.com or email us at: info@herd.org.np; info@herdint.com

6.2.11 Sahayog Samittee Nepal

Sahayog Samittee Nepal (SS Nepal), a non-political and non-profit making organization devoted towards community development was established by the input of several youths of Bara who are devoted towards social work with a slogan to be *Helping Hands for Community*.

KEY INTERVENTIONS/ACTIVITIES IMPLEMENTED IN FY 075/076

Engaging Private Health Care Providers to intensify TB case Detection in Province 2 (TB REACH Wave 6 Project): The project was implemented in Dhanusha and Parsa districts.

- a. Established a cough screening desk (CSD) in 60 private clinics.
- b. Screened the patients visiting the private clinics at CSDs for TB symptoms by the health volunteers (staff of the private clinic).
- c. Collection of sputum samples of presumptive TB cases at CSDs.
- d. Mobilize health Mobilizer for sputum sample transportation and examination as well as follow up of the patient.
- e. Incentivize private health care providers for TB case detection: NRs 1.5 was paid to health volunteers for screening patient who visits OPD, NRs 265 was paid to health volunteers for regular follow up of diagnosed TB cases and NRs 200 was paid to doctors for diagnosis of each TB cases.
- f. Regular Supervision and Monitoring: Supervision and monitoring of the project were done by the supervisor and monitoring visit was made in CSD, the interaction was done with health volunteers and doctors to understand the gaps and action was taken based on finding for improvement of the project.

KEY ACHIEVEMENTS:

- 63 CSD was established in private clinics.
- Altogether 93415 patients were screened for TB.
- In total 7996 presumptive TB patients identified.
- 5448 number of people identified with TB symptoms were collected and tested for TB
- 287 people were diagnosed with Bacteriologically confirmed TB.
- Altogether 443 people were diagnosed with all forms of TB.
- 279 PBC cases were enrolled in treatment.
- 435 all forms of TB cases were enrolled in treatment.

6.2.12 International Organization for Migration

International Organization for Migration (IOM) is the United Nation Migration Agency and has extensive global, regional and country-level experience of leading and working on TB among Migrants in multiple contexts and multiple jurisdictions. At global levels, IOM engages with the WHO Global TB Program, Stop TB

Partnership, The Global Fund, the International Union for TB and Lung Diseases and other relevant stakeholders to specifically address TB in Migrants and Mobile Populations. In 2017, IOM launched The TB and Migration Portal to provide a one-stop service website to promote new research, information exchange and dialogue, intended to fill the existing data, research and knowledge gaps on TB and Migration. Operationally, IOM has several decades of experience working on TB specifically in migration settings and has dedicated technical expertise in a range of areas including TB radiology, TB Laboratory, and diagnosis, service delivery, operational research, and policy support. IOM has implemented multiple TB REACH projects across various countries in several rounds of TB REACH dating back from round 1. IOM has been involved in supporting the Government of Nepal (GoN) in various migration and humanitarian activities in Nepal since 2007. Among the many different activities, migration health and TB is one of the areas that IOM Nepal has been working on and provides support to the GoN including the National TB Programme (NTP).

Below are the key activities and achievements of IOM Nepal:

1. In the year 2019, IOM identified 112 (female 52, and male 60) TB cases and enrolled in treatment. Similarly, 1 case of MDR TB was identified and enrolled in treatment at the NTP DR center. The overall treatment success rate among DS TB was over 99 %.
2. From May 2018 till May 2019, IOM also provided support to the NTP to carry out testing of sputum specimens collected during field operation of the Prevalence Survey. During this time, 7,645 Gene X-pert, 7,645 Direct Smear, 3,233 Solid Culture, and 152 Liquid Culture were tested by IOM Laboratory located at Damak;
3. IOM researched the health vulnerability of cross-border migrants from Nepal; TB related issues were also explored among the study participants. The report can be obtained from the below link:
https://nepal.iom.int/sites/default/files/publication/Research_on_The_Health_Vulnerabilities_of_The_Cross_Border_Migrants_from_Nepal_0.pdf
4. IOM Nepal has been awarded Wave 7 of TB Reach and details are provided below.

A brief overview of Wave 7 TB Reach Project

IOM Nepal has been awarded the TB REACH project to support early and improved TB case detection, timely referral, access to rapid TB diagnostics, and early initiation of TB treatment among aspiring migrants from three provinces: i.e. province 1, province 2 and Bagmati province through NTP's Public-Private Mixed approach.

This project aims to establish a linkage between the TB program and the existing pre-departure health assessment program for TB care and prevention among prospective migrants with abnormal CXR images. For this, IOM will select 40 health assessment centers, build on their current capacity for TB care and prevention and increase referral of those prospective migrants with abnormal CXR images suggestive of TB.

Similarly, as part of the project activities, IOM will conduct operational research to see the impact of artificial intelligence augmented CXR reading in selected health assessment centers and the findings will later help roll out the intervention at a larger scale.

6.2.13 Damien Foundation Belgium Nepal

The Damien Foundation is a Belgian, national, pluralist and apolitical NGO established in 1964. Damien Foundation (DF) is active in Nepal since 2017. Damien Foundation provides support especially in MDR TB and Leprosy control programs in Nepal.

Support Activities: [Fiscal Year 2075-76]

1. Finalization, printing, and distribution of Shorter Treatment Regimen [STR] guideline.
2. DOTs and patients' waiting rooms construction in Lumbini Zonal and Rapti Sub_Regional Hospital.
3. STR Training in Simara, Lalgadh, Ghorai, and Nepalgunj
4. Draft development, printing, and distribution of CBDOTs guideline and TB Referral Center Guideline.
5. Interim STR Assessment in Biratnagar, Butwal, Nepalgunj and Genetup Kathmandu.
6. TB orientation programs in different health facilities of Nawalparasi.
7. Human Resource support in Dadeldhura Hospital and supporting the operation of TB Referral Center in Midpoint Community Hospital and Dadeldhura Hospital.
8. Renovation and construction of Laxmi Narayan TB Treatment Referral and Research Center at Godawari Municipality.
9. Renovation of TB OPD building and DRTB ward in Dadeldhura Hospital.
10. Soil filling and boundary in Midpoint TB Referral Center, Mid-Point Hospital.
11. RO Plant [Drinking water] support in Seti Zonal Hospital and Dadeldhura Sub-Regional Hospital.
12. Support DRTB Hostel run by NAPID Nepal at Dhangadhi, Kailali
13. World TB Day Celebration
14. Delamanid Purchase support to NTP.
15. LPA kits/ Purchase support to NTCC.
16. Income Generation Support for DRTB Patients.
17. Technical Support in TB PS and Training activities organized by NTP.

6.2.14 The National Association of PLWHA in Nepal (NAP+N)

The National Association of PLWHA in Nepal (NAP+N) was established after the first national consultation of PLHIVs in 2003. This historic event succeeded in bringing 30 PLHIV participants from across the country to agree to one common goal: to unite all those living with the virus in Nepal and fight back.

Save the Children International, National Tuberculosis Centre and National Association of PLWHA in Nepal (NAP+N) works collaboratively to carry out the National Tuberculosis Programme and to facilitate the delivery of services to the beneficiaries in Achham, Dadeldhura, Doti, Kailali, Kanchanpur and Surkhet districts of Nepal in close coordination with Ministry of Social Development, Provincial Directorate of Health, Health Office and Palikas.

Major Interventions:

1. Sputum Transportation at Hard to reach areas
2. Contact Tracing
3. Childhood TB Management
4. DR TB Management
5. IPT/TBPT (Tuberculosis Preventive Therapy)
6. FAST Strategy
7. Active case finding among Migrants

Key Achievements:

- 168 TB Cases were diagnosed and enrolled in treatment through Sputum transportation.
- 114 TB cases were diagnosed and enrolled in treatment through Contact Tracing.
- 89 Childhood TB cases were diagnosed and enrolled in treatment during the period.
- 8 DR TB cases were diagnosed through DR suspect courier and enrolled in treatment.
- 4 DR cases were diagnosed through DR contact tracing and 1 DS TB case was diagnosed through DR contact investigation and were enrolled in treatment.
- 342 Children were enrolled in IPT and 215 Children completed IPT treatment.
- 320 cases were diagnosed through FAST and were enrolled in treatment.
- 15 TB cases were diagnosed through AFC migrants and enrolled in treatment during the reporting period.

Planned Activities for FY 2076/77

- Strengthen coordination with Local bodies, Health Facilities through events of onsite coaching.
- Sputum Courier
- Regular monitoring of RR MTB cases through the online system of GX and tracking initial defaulter of RR MTB
- Active case finding of MTB through screening in seasonal migrants at Border Site.
- Onsite coaching to newly recruited DPCs and rows
- Screening and testing of Family members of DR TB Cases.
- Screening and testing of all DR TB suspects (all PBC and PCD)
- TB screening in malnourished children in major hospitals
- Contact tracing to Family members of DS TB (all PBC and Child TB)

CHAPTER 7: PLANNING, MONITORING, AND EVALUATION

BOX7.1 KEY FACTS AND MESSAGES

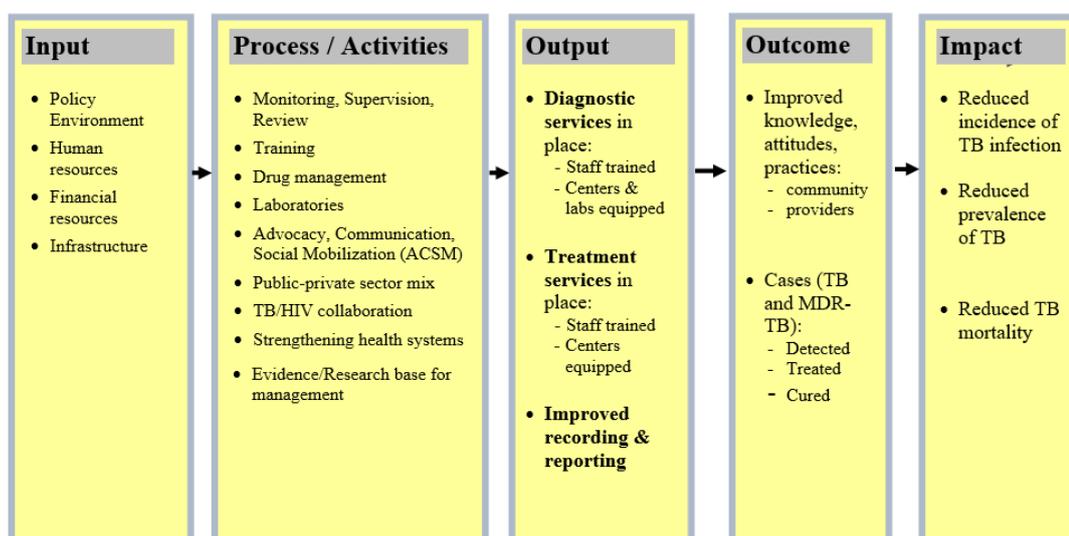
- Reports to Global Indicators and Global TB Report annually
- NTP developed online reporting system to capture the individuals details information of TB clients
- Use RDQA/DQR tool for the verification of data
- Revised TB recording and reporting tools as pe the need
- Complete Data collection of TB program through HMIS

7.1 Planning, Monitoring & Evaluation

The planning and implementation activities of the National Tuberculosis Programme (NTP) are guided by the National Strategy Plan (NSP). Currently, NTP is implementing its activities as per the strategy, objectives, and targets of NSP 2016-21. NTCC also develops and revises its annual work plan based on strategic information and recommendations of Palika and Province.

Figure 7.1: M&E Framework of NTP

M&E Framework of NTP



7.1.1 NTP Monitoring System

Current characteristics of the TB surveillance and vital registration systems

The Nepal NTCC oversees a paper-based system that aggregates data as it moves from Local- & Province- level government to center. The paper-based system relies

on health facility staff to compile and aggregate 4-monthly TB cohort data for the local level government. These are reviewed for timeliness, completeness, and accuracy at the local level government and brought to the Province and national levels for further review and action. Health facility staff also compiles aggregate data monthly to enter into the web-based Health Management and Information System (HMIS). Currently, these two systems are running in parallel and some discrepancies exist over the two sources. However, NTCC in coordination with the Integrated Health Information Management Section (IHIMS) is working to make the data received through the two systems consistently. IHIMS has upgraded the online reporting system into DHIS2 from 2016. All the NTP recording and reporting tools have been incorporated in the revised DHIS2 platform. Also, NTCC has developed custom NTP information system as below:

NTCC has developed web-based system eTB register as a tool for recording, analyzing and reporting: Patient Details, Treatment History and Outcome. The eTB system had already been rolled to at all district level as case-based reporting. However, this system is revised in the federal context, where local-level government will be reporting unit. With coordination with IHMIS, now eTB register can upload monthly TB reports to HIMIS. NTP has planned to roll out eTB at local level government by the end of next fiscal year.

eTB register for private practitioners is tailor made software to collect, manage and analyses transactional case-base tuberculosis data from private / non-dots centers and track individual patients with unique ID throughout its treatment stages. e-TB register for private practitioners has advanced features for data analytics, feedback mechanism, reporting, and dashboard which lets user explore and bring meaning to raw data. In FY 2075/76 46 TB cases were report in NTP as case hold by private sector.

NTP has also introduced online case-based recording and reporting system for MDR TB, genexpert, C/DST laboratory and sputum microscopy in DHIS2 which has been rollout at all service sites. This system also provides SMS notifications to geneXpert RIF Resistance patient, lab Focal person and Outreach worker of RIF resistance test results and notification. As both DRTB Patient Tracking and TB Laboratory System are incorporated within the same system, a patient can be tracked with single system ID within both systems.

To manage and monitor GeneXpert machines in real time NTP has developed web-based system that receive GeneXpert test results in real-time and stores it in central database, show active and passive GeneXpert sites with interactive GIS map and notify users on warranty date and calibration due date for GeneXpert machine.

NTCC is making a web-based GIS map of vulnerable group and diagnostic service sites of NTP. At GIS mapping has been carried out at 27 cities for vulnerable group

and all 77 district has been mapped for diagnostic service. This system will be ready to be use by end of this fiscal year.

All NTP information system can be accessed on following URL:
<https://ntpmis.gov.np/>

Supervisory visits to the health facility are carried out by the health coordinators of respective local level government, using a supervisory checklist. Focal persons for the NTP are identified for Health Service (District)- and Provincial Directorate-level.

NTP data flows on a 4-monthly basis from the local level government to provincial-level government and federal government. Health coordinator with support from TB focal person of local-level government is responsible for organizing quarterly cohort analysis workshops, compiling the data and reporting it to HMIS. Currently, TB service provided by private health facilities is under-reported to the HMIS

The MDR surveillance system is functioning relatively better with a central national MDR-TB register, which is updated monthly and regular review meetings are carried out where data quality is assessed. Timeliness of data collation at the national level has been improved with the introduction of online case-based MDR TB reporting.

Since the main strategy for TB control is to identify and cure infectious patients, NTP's key indicators include the case finding of new infectious (Pulmonary Bacteriologically Confirmed TB) patients and treatment outcomes of the identified TB cases. The monitoring of treatment outcomes relies on a cohort analysis of patients registered during the reported year (every four months in Nepal). These cohorts are followed throughout treatment, their outcomes are recorded, and the proportion of achieving treatment success (sum of those cured and completed treatment) is calculated.

The NTP monitoring and evaluation system relies on the following documents and tools, copies of which are kept in the NTCC:

- Four-monthly (trimester) reporting forms detailing the following data
 - Patient data for basic DOTS and MDR TB management:
 - Case finding (disaggregated by gender, age-groups and diagnosis type; bacteriologically confirmed or clinically diagnosed)
 - Treatment outcome by type
 - Drug utilization and requirements
 - Program activities:
 - DOTS clinics and coverage expansion, participating laboratories,
 - Target vs. achievements (based on LLG level work plan) of smear examination, training, and advocacy, supervision, etc.
- Laboratory: Sputum smear examination report for quality control forms
- Supervision & Monitoring Checklist
- Sub-Recipient (SR) Reporting Template
- MDR TB central register

Documents kept at treatment Center level include:

- TB patient register,
- Tuberculosis patient treatment card
- Laboratory register
- Store register

The forms and procedures generating these reports are described in Section 5, Data Collection and Reporting.

7.1.2 M&E Management

The NTP has a well-established monitoring and evaluation system with the central unit, Statistics, and Planning Section, at the National Tuberculosis Control Center (NTCC). No specific section for TB M&E is formed at provincial- and local-level government, however, based on guidance from MoHP and MoFAGA, provincial- and local-level government have identified TB focal person to implement TB related activities under the respective government. Currently, the routine monitoring and reporting activities within the NTP are managed by specific focal persons responsible for NTP implementation at four levels, National, Province (& Health Office), LLG and DOTS Center.

In addition to TB focal person from government, there is an additional M&E team including M&E Specialist, M&E Coordinator, Data Management Coordinator, Data and IT Officer at the central level with GF support. The team supervises M&E activities associated with the GF grants as well as provides support for budgeting and planning of annual NTP activities and in the preparation of annual and other periodic reports. With the establishment of a Program Management Unit (PMU) to support NTCC's management of GF grants, the M&E staff funded by the GF are administratively located in the PMU, while their activities are directly coordinated with the Planning, Monitoring, and Statistical Section.

The DOTS Center in-charge completes the TB register and relevant NTP forms. All these staff have defined responsibilities and work according to fixed timelines and targets.

Data Collection Sources

Data sources primarily come from routine reporting based on health services statistics which originate in the TB Register, patient TB cards, laboratory registers. Outside the routine reporting, there are other two surveillance systems, the TB/HIV co-infection, and MDR TB system.

Data from the patient TB cards are recorded in the TB register at the DOTS Center level. The DOTS Center staff aggregates the patient data to complete the monthly forms. These forms are submitted to the health coordinator at Palikas and are entered into web-based online software. TB focal person at Province reviews and validates the summarized data of his/her respective Palikas at the time of trimester PME workshop

in coordination with the Statistical Officer, and which later submits to NTCC. Apart from this, from FY 2016/17 onwards, districts used to feed the individual data of TB patients in the eTB register. Reported information has been used by NTCC to triangulate reported TB cases in HMIS for assurance of data quality.

Table 7.1: Summary of Data Sources

Data Source	Type of Data	Frequency of Collection	Institutional Responsibility
TB Registers	<ul style="list-style-type: none"> Case Detection Sputum Conversion Treatment Outcome 	Monthly Four Monthly	HMIS Trimester Review
Laboratory register, etc.	Slides examined <ul style="list-style-type: none"> Positivity Quality 	Every 4 months	NTCC
Gene-Xpert Register	TB cases tested <ul style="list-style-type: none"> MTB with RIF Resistant MTB with RIF Sensitive 	Every 4 months	NTCC
C/DST Register	TB cases tested TB Cases Detected Susceptible TB Cases with first-line TB drug resistance/sensitive MDR TB Cases with second-line TB drug resistance/sensitive		
MDR TB Register	<ul style="list-style-type: none"> Case Detection Sputum Conversion Treatment Outcome 	Every 4 months	NTCC
National MDR-TB Survey	TB Information on TB cases resistant to first-line TB drugs (rifampicin and isoniazid)	Regular, and every 2-3 years from sentinel sites	NTCC / GENETUP
Surveillance of HIV among TB patients	Information on HIV burden on TB Information on TB burden on HIV	Regular, and every 2-3 years from sentinel sites	NTCC
Trimester SR Report (non-government data)	Achievements against agreed work plan	Every 4 months	NTCC PMU

Data Quality Assurance

There will be periodic field monitoring visits by NTCC team to ensure quality data recording and reporting. During the field visit, there will be support to the health facilities on program management, data verification of the reported number and to ensure the standard forms/formats are in use for recording/reporting, as well as to ensure national protocols, guideline and procedures. The quality of M&E data is assured through several independent approaches or methods:

- assigning M&E activities to staff and training them on the activities;
- verifying the accuracy of reported data;
- examining the consistency among data from several sources (“triangulation”).

In addition, data quality is supported using unique patient identifiers (to ensure patient tracking for cohort analysis and to reduce the risk of double counting) and through training reports.

Data Review

The review of data is conducted in two ways:

- Internal checking (paper-based) for consistency, and
- Direct observation during supervisory visits.

Internal checking for consistency

The heart of the NTP's M&E system is the DOTS workshop, where DOTS Centers meet at Palikas to review their data before submitting it to the Provinces. During the provincial trimester Planning, M&E workshops, the focal person present their Palika wise data for the previous four months, review each other's data, identify problems, and plan how to resolve problems.

At the national level, the Planning and Statistics Section staff review data submitted by the GoN and INGO health facilities. When data appear inaccurate or insufficient, NTCC staff contacts the relevant Province or Palika to solve the problem.

Direct observation

When a problem is identified by an individual or the group, the health coordinator at Palika, Province, and Provincial TB Coordinator leads the process for resolving the problem. Normally, they visit the DOTS treatment center that is the source of the data.

Re-checking a sample of sputum smear slides

A sample of slides, based on Lot Quality Assurance System (LQAS), is re-checked by the Provincial Quality Control Assessor, and feedback is provided to the sending laboratory. Slides on which the assessor disagrees with the sending laboratory are sent to the National QC Assessor, who makes the final decision and determines the need for supervision and training. Laboratory procedures are described in the TB Laboratory Training Module and the TB Laboratory Manual.

Triangulation

Triangulation examines the relationship and consistency among data from different sources to determine the level agreement among them; greater agreement of results from these sources increases confidence in the data. These cross-checking activities (Table 10.2) are carried out at various levels.

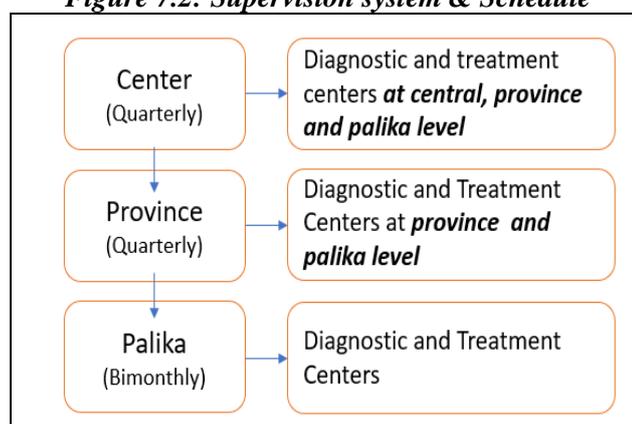
Table 7.2: Data Quality Assessment Using Triangulation

Triangulation Activity	Frequency	Who
Checking the TB patient treatment card against the TB register, and the laboratory register	During supervision visits	Health Coordinator at Palika and Province, provincial TB coordinator, NTCC staff
Analyzing the number of patients, amount of drugs needed, drug stock movement, analyzing consistency between reporting periods	Every 4 months (DOTS Workshop)	Health Coordinator at Palika and Province, provincial TB coordinator, NTCC PSM Coordinator
Comparing trends in HMIS reports with trends in NTP reports generated from e TB register	Every 4 months	Health Coordinator at Palika and Province, provincial TB coordinator, NTCC M&E Staff
Data Quality Review (DQR/RDQA) with the standard tool in selected service sites	Every Year	DTLO/A, NTCC M&E Staff

Supervision System

Supervision and monitoring are carried out through regular visits to all levels of the service delivery points as per the NTP policy. In addition to supervision and monitoring, quarterly reporting of activities is carried out at the trimester Planning, Monitoring and Evaluation (PME) workshop at all levels.

Figure 7.2: Supervision system & Schedule



7.1.3 NTP Data Review Monitoring System

The NTP maintains a regular monitoring system, which includes case finding, smear conversion, treatment outcome, and programme management reports from all levels. Data is initially analyzed by the Palika level; during the Palika level Planning, Monitoring and Evaluation workshops. Health coordinator of Palika report on treatment center-level data during the Provincial Planning, Monitoring, and Evaluation workshops. Finally, the focal person for TB at Provinces report at national PME workshops. Planning, Monitoring and Evaluation workshops take place every four months each level.

Figure 7.3: Monitoring & Evaluation Process

Level	Process	Frequency
International	International Review	Annual
National	National Reporting & Planning Workshop	Biannual
Provincial	Provincial Reporting & Planning Workshop	Biannual
Palika level (Local body)	Palika Level Reporting & Planning Workshop	4 <u>monthly</u>
Treatment Centre	Treatment Center Reporting & Planning Workshop	4 <u>monthly</u>

7.1.4 Global Indicators and Global TB report:

The National Tuberculosis Program, M&E section continuously report for Global Indicators and Global Report. Whereas based on these indicators progress update was prepared and submitted to Global fund.

Global TB Indicators:

Coverage Indicator
TCP-1(M): Number of notified cases of all forms of TB-(i.e. bacteriologically confirmed + clinically diagnosed), includes new and relapse cases
TCP-2(M): Treatment success rate- all forms: Percentage of TB cases, all forms, bacteriologically confirmed plus clinically diagnosed, successfully treated (cured plus treatment completed) among all TB cases registered for treatment during a specified period, new and relapse cases
TCP-5: Number of children <5 in contact with TB patients who began isonizide preventive therapy
TCP-7a: Number of notified TB cases (all forms) contributed by non-national TB program providers – private/non-governmental facilities
MDR TB-2(M): Number of TB cases with RR-TB and/or MDR-TB notified
MDR TB-3(M): Number of cases with RR-TB and/or MDR-TB that began second-line treatment
TB/HIV-5: Percentage of registered new and relapse TB patients with documented HIV status
TB/HIV-6(M): Percentage of HIV-positive new and relapse TB patients on ART during TB treatment

Impact/Outcome Indicator
TB I-4(M): RR-TB and/or MDR-TB prevalence among new TB patients: Proportion of new TB cases with RR-TB and/or MDR-TB
TB I-3(M): TB mortality rate per 100,000 population
TB I-2: TB incidence rate per 100,000 population

7.1.5 Key Issues & way forward

Following are the key issues faced by the NTP and way forward

Key NTP issues

- Inadequate CB-DOTS implementing areas

- Lack of focal person for TB program at Local- and Provincial-level
- Insufficient income generation program for the patient and their family members.
- Inadequate TB management training to medical doctors
- Minimum interventions for strengthening PPM component
- Lack of operational research regarding increasing retreatment cases
- Lack of sputum transportation services at all districts
- Availability of TB IEC materials at health facilities
- Difficult to coordinate with regional and provincial hospitals

Action to be taken:

- Expansion of CB-DOTS programme throughout the country
- Endorsement of PPM guideline to strengthen Public-Private Mix approach
- Strengthen the community support system programme
- Explore operational research areas on TB prevention, treatment, and care
- Develop and distribute patient-centered on TB IEC materials

CHAPTER 8: TB FINANCING

Box8.1 Absorption capacity of NTP

In FY 2075/76 the budget consumption/absorption capacity of the NTP has been significantly increased and reached to 73%. This spells out that the National Tuberculosis program is fully dedicated to the betterment of TB patients making the optimum utilization of financial resources available. However due to unclarity reporting mechanism in the changing federal context expenses record of Provincial- and Local Government could not be tracked.

8.1 Financial Status of NTP

The responsibility for the NTP resides with NTCC, Ministry of Health & Population (MoHP), which sets its annual budget each fiscal year. The total budget of Nepal for FY 2075/76, comprising the figure of NPR 1315.16 billion, out of which NPR 56.42 billion was allocated to the health sector under MOHP. The percentage of the health budget against the total government budget for the FY 2075/76 comprises of 4.29% as compared to the 4.42% in FY 2074/75 including the health budget allocated to the Provincial as well as Local government, a decline of the budget by 0.13%. In FY 2075/76, NPR 4.18 billion & NPR 18.15 billion budget has been allocated to the Provincial government and Local Government respectively in the form of conditional grants for the health sector. The share of the conditional health budget for Local Government accounts for 32.17% of the total allocated budget to the Health Sector.

Out of NPR 56.42 billion budget allocated to the health sector, MOHP has provided NPR 0.97 billion budget to the NTP for FY 2075/76 through Red book inclusive of GoN & Global Fund source. This is also inclusive of the budget allocated to the LB of NPR 0.13 billion which was NPR 0.12 billion as compared to the FY 2074/75. The status of funding through government sources as provided in below table 8.1

Table 8.1: Funding Trend

FY	Budget in NPR	Budget in USD	Trend
2072/73	694,179,000	7,083,459.18	
2073/74	856,611,000	8,014,098.87	13%
2074/75	1,045,672,000	9,782,875.53	22%
2075/76	820,526,000	7,251,025.10	-26%

Next, to the government contribution, the NTP has a longstanding history of external financial support from international sources. The grant relating to the Global Fund from F/Y 2072/73 was operated through the costed extension plan of NSA phase with the Save the Children International as PR & NTCC as a main implementing partner followed by successfully implementing the 20 months costed extension (16th July 2016 to 15th March 2018) of TB program in Nepal with the approved budget of USD 11.16 million. The completion of 18 months project was further followed by the next grant for the period from 16 March 2018 to 15 March 2021 with the approved budget

of USD 16.13 Million. Along with the Global Fund, WHO has also provided the technical as well as financial support especially on the International TA services and some of the capacity development training & workshops.

The funding for TB control program is implemented through the Red book & Non-red book activities where budget reflected at Red book is operated through the central treasury system and for Non-red book-related activities, financial management is made by the EDPs in close collaboration with NTCC and NTCC acting as the main implementer of both Red book as well as Non-red book activities.

The table below provides the details of the financial contribution made on the various period for the National TB Program including both Red book as well as Non-red book activities.

8.2 Statement of Contribution

Table 8.2: Source – Budget

Period	Source-Budget (USD)				
	GON	Global Fund	LHL	WHO	Total
FY 2071/72	4,386,044	11,619,608	191,022	25,883	16,222,557
FY 2072/73	7,083,459	8,612,289	113,020	-	15,808,768
FY 2073/74	8,014,099	3,139,632	166,576	-	11,320,307
FY 2074/75	9,782,876	7,996,909	51,902	-	17,831,687
FY 2075/76	7,251,025	6,667,422	-	223,934	14,142,381

Below table 8.3 reflects the financial performance made on the FY 2075/76 under various intervention.

Table 8.3: Financial Performance on the FY 2075/76

Intervention	GoN		Global Fund		WHO		Total		Utilisation
	Budget	Exp	Budget	Exp	Budget	Exp	Budget	Exp	
Improving Case detection & diagnosis	2,061,532	1,068,302	438,399	438,399	-	-	2,499,932	1,506,701	10.65%
Treatment, care & Patient Support	645,767	44,441	594,419	594,419	-	-	1,240,186	638,861	4.52%
Collaborative TB/HIV activities	17,674	5,726	1,799	1,799	-	-	19,473	7,525	0.05%
First-line drugs procurement and management	1,325,557	1,217,683	883,107	883,107	-	-	2,208,664	2,100,790	14.85%
MDR-TB drugs and management	-	-	126,498	126,498	-	-	126,498	126,498	0.89%
Other Drugs, Consumables and Management	645,926	262,946	365,320	365,320	-	-	1,011,246	628,267	4.44%
Involving all care providers: PPM/ISTC	21,023	-	8,852	8,852	-	-	29,876	8,852	0.06%
Community involvement	224,973	5,072	-	-	5,283	5,283	230,256	10,355	0.07%

HRD: Staff	361,064	338,291	1,327,301	1,327,301	24,128	24,128	1,712,493	1,689,720	11.95%
HRD: International technical assistance	-	-	258,759	258,759	162,289	162,289	421,048	421,048	2.98%
HRD: Training, Workshops & capacity development program	553,446	46,774	248,105	248,105	28,360	28,360	829,912	323,240	2.29%
Infection control	33,581	6,928	7,230	7,230	-	-	40,811	14,159	0.10%
M&E & Supervision	488,043	35,719	334,291	334,291	-	-	822,335	370,011	2.62%
Survey	425,946	211,833	1,314,062	1,314,062	-	-	1,740,008	1,525,895	10.79%
Programme management	446,492	173,180	759,277	759,277	3,874	3,874	1,209,643	936,331	6.62%
Total	7,251,025	3,416,896	6,667,422	6,667,422	223,934	223,934	14,142,381	10,308,253	72.89%

8.3 Statement of Financial Performances for the period FY 2075/76

As we can observe that in FY 2075/76 the budget consumption/absorption capacity of the National Tuberculous Program has been significantly increased from 70.50 % which was of last year to 72.89%. This spells out that the National Tuberculosis program is fully dedicated to the betterment of TB patients making the optimum utilization of financial resources available. But only financial allocation to the Provincial government & LBs through domestic sources have been taken into consideration whereas its expenses record could not be tracked due to the unclarity reporting mechanism in the changing federal context. Regarding the Global Fund grant, the figure presented in the annual report for FY 2075/76 comprises from 15th March 2018 to 30th June 2019 in line with the fiscal period of the country. Further, the reprogramming opportunity from Global fund enabled to make the optimum consumption of budget during the period and actual expenses during the reporting period considered as a revised budget and any saving during the reprogramming is allocated to the priority areas of next reporting period.

CHAPTER 9: RESEARCH AND DEVELOPMENT

9.1 Background

Research and innovation of Tuberculosis are essential to achieve the global TB targets set in the Sustainable Development Goals (SDGs) and End TB strategy. It is the third pillar of the End TB strategy. The political declaration at the UN high-level meeting included the first global financing target for TB research and development to be agreed by all UN Member States. Building on the SDGs and End TB Strategy, the high-level political commitment had been expressed by Health and Population Minister in 2019. The research activities of Tuberculosis are spearheaded by the Monitoring, Evaluation, Surveillance and Research Section at the National TB Control Center (NTCC). NTCC and other collaborative partners have carried out various research-related activities in the fiscal year 2075/76.

9.1.1 National TB Prevalence Survey

Nepal is conducting the first national TB prevalence survey with technical support by RIT/JATA WHO, Save the Children Nepal in coordination with the WHO Global Task Force on TB Impact Measurement. Government of Nepal, Save The Children (through GFATM grant) was the main funding source and supported by LHLLI, WHO and Damien Foundation. The field data collection was carried out by Intrepid Nepal in collaboration with JANTRA in 99 survey clusters, across the country was carried out as planned without any replacement and cancellation starting from April 2018 and completed by June 2019. The main objective of the survey was to determine the prevalence of TB among ≥ 15 years population in Nepal in 2018-2019 and specific objectives to also determine the health service utilization of TB patients and health-seeking behavior for chest symptoms.

Multistage cluster sampling (using PPS model) was designed along the WHO handbook with primary sample size of 57 589 in 99 clusters (500-600 per cluster). Four primary strata were hill, mountain, terai, and kathmandu valley, each of which were further divided into rural and urban clusters, and further into small, medium or large clusters (based on population size).

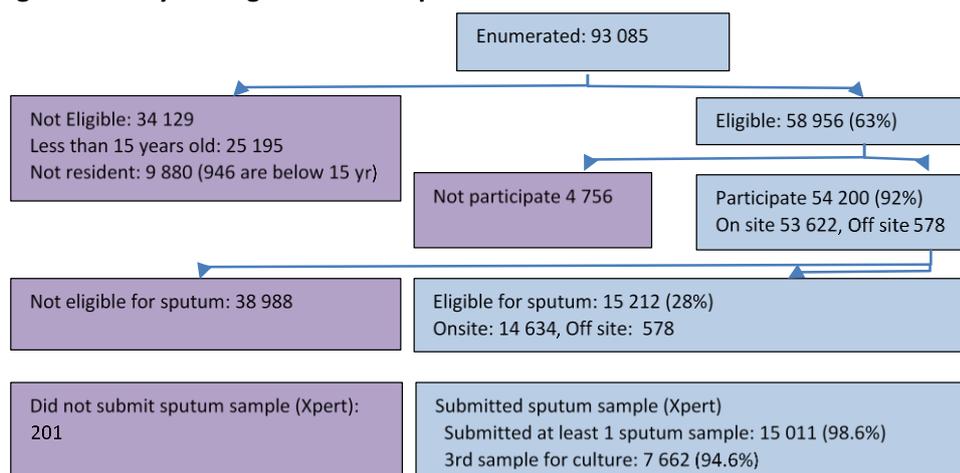
Every eligible participant was invited to participate in the screening camp for individual interviews and Chest X-rays. If symptom positive (cough ≥ 2 weeks or cough < 2 weeks with additional symptom like wt. loss, chest pain, loss of appetite, hemoptysis, breathing difficulty, night sweating, and tiredness) OR Chest X-ray suggestive OR X-ray not available (onsite- refused, exempted, not available and all offsite participants) were eligible to submit sputum (spot and morning for Xpert and smear). 50% among them along with those with history of TB submitted additional morning sample for culture. Three laboratories were used for the survey; National TB

reference lab at NTCC, GENETUP/NATA lab in Kathmandu and IOM lab in the Eastern Region of Nepal.

Key findings of field operation and progress status.

Now, as the field work is completed, the central laboratory work is planned to be completed by Aug 2019, data cleaning and validation by Dec 2019 and data analysis, report write up and dissemination by Feb 2020.

Figure: Survey finding of the field operation



9.1.2 Epidemiological Review of Tuberculosis Surveillance

National Tuberculosis Control Center conducted the epidemiological review of Tuberculosis surveillance in January 2019 to assess the completeness and accuracy of routine tuberculosis (TB) surveillance and vital registration (VR) systems and to investigate the plausible drivers of the TB epidemic in the country by national and international team members. In this mission, different methods (desk review of policies, interviews, and discussions, Review of TB records and electronic database) were used by the team members. This review mission had shown that declined in clinically diagnosed cases notifications and need to the intensification of case-finding efforts and laboratory systems throughout the country.

9.1.3 Joint Monitoring Mission (JMM)

Nation and International Tuberculosis experts conducted the Joint Monitoring Mission in May 2019 to review the progress, challenges, and plans for Nepal’s tuberculosis (TB) control efforts. This mission had stated that the need to implement bold, radical policies to reach UN high-level commitments and access to high-quality TB care and prevention. There is a huge shortage of technical staff of NTCC to carry out the NTP activities in the federal context. Furthermore, there is a massive

economic burden of Tuberculosis and highlighted to conduct a catastrophic cost analysis survey.

9.1.4 Occupational risk (prevalence and risk factors) of Latent Tuberculosis Infection among Health Care Workers, Nepal (Done)

Under the leading of STAC and close coordination with National Tuberculosis Center field level activities for the research (Occupational risk (prevalence and risk factors) of Latent Tuberculosis Infection among Health Care Workers, Nepal) was completed. The finding of the research will have disseminated by 2020.

19.2 Research activities planned for the coming year from NTCC

- Drug Resistance Tuberculosis (DR TB) Survey
- Inventory survey in private health facilities
- Community Based-Directly Observed Treatment Short-course (CB-DOTS) assessment.
- Catastrophic Cost analysis of Tuberculosis patients

9.3 Some Tuberculosis Research accomplished by different sectors through Nepal Health Research Council (Ethical Approval given By NHRC)

- The utility of Gene Xpert MTB/RIF Assay as an alternative tool for AFB smear in diagnosing Tuberculosis
- Evaluation of Genexpert Mtb/Rif assay over Fluorescence Microscopy from Tuberculosis suspected patients of Central region, Nepal
- Health-Related Quality of Life and Associated Factors with Medication Adherence among Tuberculosis Patients in Selected Districts of Gandaki Province of Nepal
- Assessment of Private Sector for Engagement in Tuberculosis in selected cities of Nepal Knowledge regarding Multi-drug Resistant Tuberculosis among Nursing Students in the Selected Colleges of Bhaktapur
- Bacterial Etiology of sputum from tuberculosis suspected patients visiting DPHO Chitwan and antibiogram of the isolates
- Prevalence and risk factors of latent tuberculosis infection among healthcare workers of directly observed tuberculosis treatment centers of Kathmandu, Nepal.
- Study One the Treatment Outcome Of Tuberculosis Patients In Suddhodhan Rural Municipality Rupandehi Implementation fidelity of tuberculosis preventive therapy for under 5 years children exposed to sputum smear-positive pulmonary tuberculosis in Kaski district of Nepal

- Implementation fidelity of tuberculosis preventive therapy for under 5 years children exposed to sputum smear-positive pulmonary tuberculosis in Kaski district of Nepal
- An International Multicentre Controlled Clinical Trial To Evaluate 1200mg And 1800mg Rifampicin Daily In The Reduction Of Treatment Duration For Pulmonary Tuberculosis From 6 Months To 4 Months
- Facilitators and barriers in implementing active tuberculosis case-finding policies in six districts of Nepal
- Prevalence and risk factors of latent tuberculosis infection among healthcare workers of directly observed tuberculosis treatment centers of Kathmandu, Nepal.
- Prevalence of Tuberculosis in Health Office Dhanusha by staining and genexpert assay

9.4 Research Activities planned for the year 2020 from Partners

9.4.1 STAC

1. Estimating tuberculosis cases and their additional economic costs Incurred by TB Patients and their Families for TB Diagnosis and Treatment – A multicentric study (Bhutan, Nepal and Sri-Lanka)
2. Operational Research on Evaluation and Effectiveness of oral/newer drugs of shorter Regime of MDR-TB Treatment in Bangladesh

9.4.2 International Organization of Migration (IOM) in 2020

1. Impact of artificial intelligence augmented CXR reading over human reading for TB case detection.
2. Implementation effectiveness study to find how the TB related trainings and activities impacted to improve the understanding among staff of health assessment center towards TB case detection and referral

9.5 Possible areas for research in Nepal NTP for future

1. Surveillance of HIV MDR-TB & TB Burden
2. Gene Xpert utilization and Challenges
3. Situation analysis of microscopic centers on Nepal.
4. Study on the effectiveness of IPT among risk population
5. Study on Contact Tracing (Early Diagnosis for treatment Adherence)
6. Regular surveillance of XDR TB among MDR TB patients
7. Study on the relationship between Acute Respiratory Infection (ARI) and Tuberculosis on case detection.
8. Impact measurement of the programme through the prevalence survey in the representative sample of the population.
9. Analysis of the issues regarding cross border migration to develop strategies for their diagnosis and treatment.

10. Review of access, acceptability and utilization of NTP services by vulnerable population including women, poor, HIV positive population, slum dwellers, etc.
11. Prospective long-term cohort studies among patients registered in the Programme to identify risk factors for failure, death, and default during treatment.
12. Health seeking behavior of the community including delay in TB diagnosis and treatment
13. Diagnostic delay in women and its impact on children
14. Review and analysis of treatment supervision and patient support approaches and mechanism for policy development.
15. The study on the incidence of relapse among cured patients of CAT I using six and eight-month treatment regimens
16. Review of treatment compliance in general population ecological region and ethnic groups.
17. Effects of nutritional status of patients on TB treatment outcomes
18. The burden of TB based on DALYs can be analyzed to see the economic burden on the nation due to TB.
19. Correlation of alcohol and tobacco use with TB relapse cases
20. Evaluation of the first generation isothermal nucleic acid amplification.
21. Evaluation of fast based Drug Susceptibility Test (DST)
22. Assess the impact of training (TB Modular and Refresher) conducting for health worker

CHAPTER 10: CAPACITY BUILDING AND DEVELOPMENT

Capacity building and development is one of the essential components and core functions of the National Tuberculosis Programme(NTP). NTP has defined roles, responsibilities and functions, of the health workforce at all levels of the GoN health system for the National Tuberculosis Programme. NTP follows a standardized approach and tools for human resource development including the use of standard training schedules and material. Basic TB Modular, Lab Modular, Gene Xpert, and Basic TB Management Training for newly recruited staff and Medical Officer, refresher training and on-the-job training during the supervision; monitoring and review meetings are key ongoing functions of NTP.

10.1 Training on Programmatic Management of Drug-Resistant (PMDT)

NTP on PMDT was organized in different Districts in Nepal. Many participants participated from Different District Health Office, Health Post, PHC and different Hospitals. This training helped to enhance the capacity of participants to manage PMDT training in the health institutions effectively.

10.2 Basic Clinical Management training of DRTB

The clinical management of DRTB training was organized by NTC from different health institutions in Nepal. Medical professionals from all over the country participated in the training. This training helped to enhance the capacity of the participants for managing DRTB patients clinically effectively in their work setting.

10.3 Clinical Management TB training for Medical Officer

The clinical management basic training for Medical officers was organized in the National Tuberculosis Center by National Tuberculosis Programme. On an average twenty-four Medical Officers in each group from all over the country participated in the training. The training was conducted, 5 groups. The total participants were 118. This training helped to enhance the capacity of the TB Management for managing TB diagnosis and management clinically effectively in their work setting in the hospital and health institutions.

10.4 Childhood TB Management training for Pediatricians

Childhood TB management training for pediatricians was organized in the Province level by the National Tuberculosis Programme. This training was conducted 6 groups and on an average 25 Pediatrician participated in each group. The total participants were 132. This training helped to enhance the capacity of Childhood TB diagnosis and management clinically effectively in their work setting in the hospital and health institutions.

10.5 Participated in International Conference on TB and Lung Disease

Senior staff from NTP and DoHS participated in an international conference (Hyderabad, India) on TB and Lung's disease organized by the International Union Against Tuberculosis and Lung Disease (IUATLD). The participants got the wonderful opportunity to update and learned about recent changes policies on TB and Lung health, research findings, newer diagnostic tools, drugs, and approaches.

10.6 Revised TB training manuals and national TB guidelines

The National Tuberculosis Management Guideline, National Guideline on Drug Resistant Tuberculosis Management, Public-Private Mix Guideline to End Tuberculosis and Basic Tuberculosis Training Module were revised based on changed indicators of the World Health Organization. The participants from all over the country engaged to revise the documents, which ensured all levels of participation in the process and incorporated every level of experience in the documents.

The following are the details of the training, orientation workshop, and meetings organized by NTP at Central and Province levels during the reporting year.

Table 10.1: National/Province Level Training Activities

SN	Activity	Measurement Unit	Trained Health Workers
1	Basic TB Management training for Medical Officer	Person	118
2	Initial MDR - TB training for newly established MDR - TB centres or sub-centres, or new staff joining centre's (5 days)	Person	253
3	Basic TB Modular Training for Health Workers	Person	2534
4	LQAS Training for Lab staff	Person	270
5	Lab Modular Training for Lab staff	Person	219
6	Culture DST training for lab staffs	Person	10
7	Gene Xpert Training	Person	63
8	Childhood TB Management Training for Medical Officers	Person	132
9	MTOT on eTB Register	Person	59
10	Income Generation Training for DR TB Patients	Person	15
11	Training on aDSM and Pharmacovigilance for HW	Person	26
12	eTB Register and DHIS -2 Training for Local Level HW	Person	Note done
13	Infection control training for Lab Staff	Person	Note done

CHAPTER 11: LOGISTICS MANAGEMENT

The process of Quantification, Procurement, Distribution, and Storage of drugs

11.1 Quantification

Quantification of TB drugs is done based on:

- Estimated number of cases of different Regimen of TB
- Annual consumption of medicines and commodities
- Allocated budget
- Pipeline stock
- Stock in hand

11.2 Procurement

- All Procurement from GoN Budget is done as per provisions in Public Procurement Monitoring Office (PPMO) Act and Regulations
- Procurement is done as per the quantification method mentioned above
- Both NTCC and SCI, Nepal is involved in the procurement process as per budget allocated from GON Sources and GFATM Sources respectively
- Both NCB and ICB methods including e-bidding processes are followed in case of GoN Budget but in case of GFATM Budget, Pooled Procurement Mechanism (PPM) method is used for procurement
- All types of laboratory Chemicals, Commodities, and Equipment; First Line Drugs (FLDs); Second Line Drugs (SLDs) and other Consultancy Services are procured by following standard procurement method

11.3 Distribution

- Distribution is made based on orders generated from workshops which are held in different level of health facilities
- NTCC supplies all kinds of logistics including FLDs to Six Provincial Medical Stores to supply in turn to its respective districts but NTC supplies directly to all the districts of Province 3 and Solukhumbu
- In the case of Second Line drugs, NTCC supplies directly to the DR Treatment Centers and some Sub –Centers throughout the country
- Distribution is done based on the FEFO Principle
- In the case of FLDs, some buffer stock is given to Districts but no buffer is given in case of DR Drugs due to Short Shelf Life

11.4 Storage

- All the drugs and commodities are stored in the NTC Store based on different categories

- There is a provision of an Air Conditioner for the appropriate temperature of the storage
- There is also a provision of Cold Room to store heat sensitive products

Figure 11.1: PSM Activities

PSM Activities

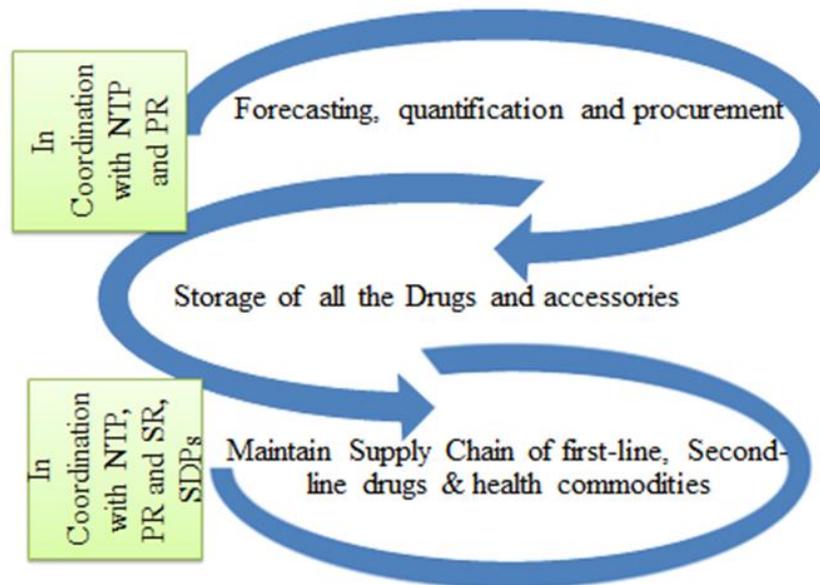
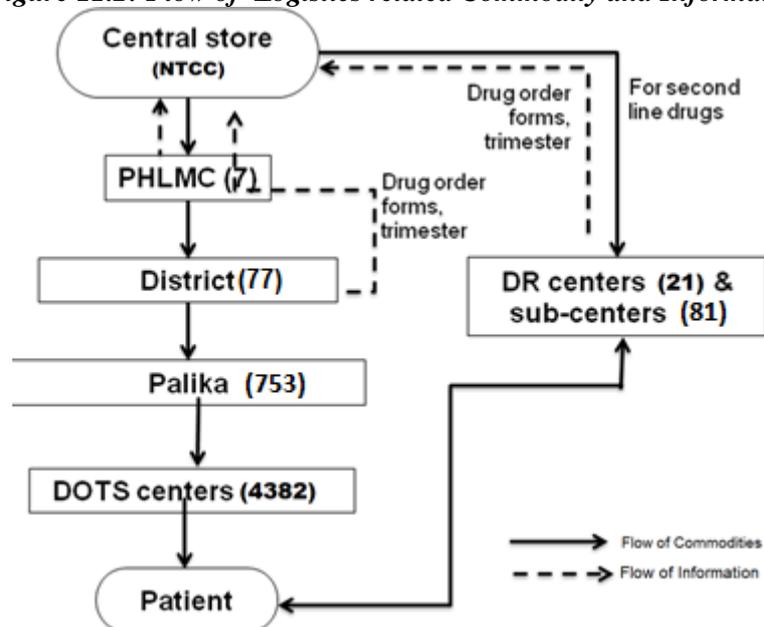


Figure 11.2: Flow of Logistics related Commodity and Information

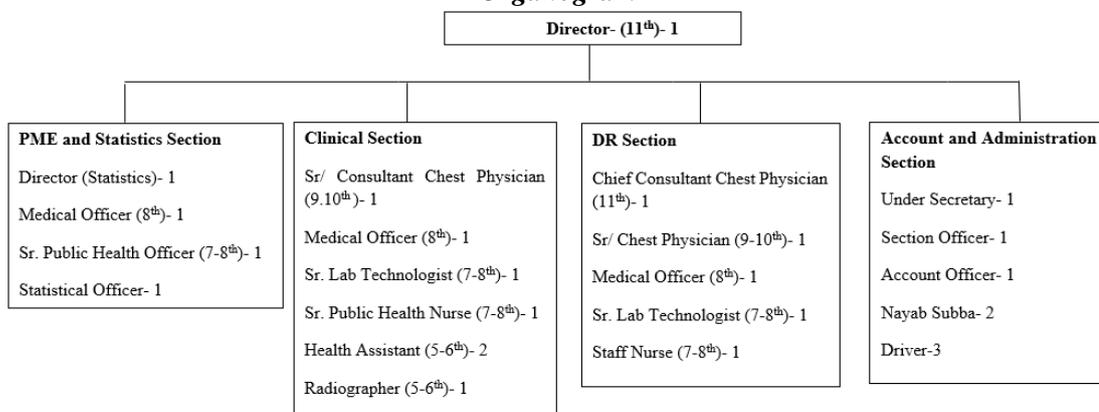


CHAPTER 12: HUMAN RESOURCES MANAGEMENT

As a focal division for Tuberculosis Program, National Tuberculosis Control Program (NTCC) is responsible for national policy formulation, supportive supervision, surveillance, epidemiology, database management and monitoring and evaluation of progress. Figure 12.1 indicates that most of the government employed staff of NTCC are working either in clinical care (Clinical and DR Section) or in administration. Only a limited government staff are working for program planning monitoring and evaluation of the NTP performance, indicating a relatively higher programmatic burden with the director and PME section.

Limited human resources allocated for NTP have been deployed at the different levels of governments. At the District and Provincial levels, the responsibility of Tuberculosis & Leprosy program-related functions is assigned to selected health staff working at that level. To support the NTP additional human resources at the NTCC and Provincial Health Directorate have been recruited from external development partners such as WHO, Save The Children (Global Fund), LHLI, KNCV and Damien Foundation. The number of staff employed through Save the Children is significant, however, their main responsibility is to administer the Global Fund grants and limited time is spent to support the NTCC in policy formulation, planning, and monitoring.

Figure 12.1: Ministry of Health and Population, National Tuberculosis Centre Organogram



<http://nepalntp.gov.np/>

National Tuberculosis Control Center

Thimi, Bhaktapur, Nepal

PHONE: +977-1-6630033

FAX: +977-1-6635986