5.1.9 **Tuberculosis**

5.1.9**.1 Background**

Tuberculosis (TB) is a communicable disease which is a major public health problem in Nepal. It is one of the top 10 causes of death worldwide and in Nepal, and the leading cause of death from a single infectious agent (ranking above HIV/AIDS). TB is caused by the bacillus Mycobacterium tuberculosis, which is spread when people who are sick with TB expel bacteria into the air; for example, by coughing. The disease typically affects the lungs (pulmonary TB) but can also affect other sites (extrapulmonary TB). About a quarter of the world's population is infected with Mycobacterium tuberculosis, which is similar for Nepal.

TB can affect anyone anywhere, but most people who develop the disease are adults, there are nearly twice as many cases among men than women, and 30 high TB burden countries account for almost 90% of those who fall sick with TB each year. TB is a disease of poverty, and economic distress, vulnerability, marginalization, stigma and discrimination are often faced by people affected by TB. TB is curable with medicine (nearly 90% cure rates) and preventable. With access still falling short of universal health coverage (UHC) for all forms of TB, many still have also missed out (nearly 58% in Nepal) on diagnosis and care. Preventive treatment is scaling up among contacts.

This report is to provide a comprehensive and up-to-date assessment of the status of the TB epidemic, and of progress in the response to the epidemic at country levels in terms of global and national end TB commitments. The report is based primarily on data gathered by NTCC through HMIS, NTPMIS, WHO country profile, National TB prevalence survey 2018-19 report and other surveillance data. The report also analyzes the post COVID 19 situation of the TB epidemic in Nepal

Global and country commitments to end TB
In 2014 and 2015, all Member States of WHO and the UN committed to ending the TB epidemic, through the adoption of WHO's End TB Strategy and the UN Sustainable Development Goals (SDGs). The END TB strategy and SDGs include milestones and targets for large reductions in TB incidence, TB deaths and costs faced by TB patients and their households. This was followed by the Moscow Declaration to End TB in 2017 and then by the UN General Assembly held its first-ever high-level meeting on TB in 2018. The outcome was a political declaration in which commitments to the SDGs and End TB Strategy were reaffirmed and new ones added1(Multisectoral accountability framework and meaningful engagement of civil society). Nepal also committed to these declarations and developed strategies in line with these commitments.

Status of TB epidemic in Global and Nepal Context
Globally, an estimated 10.6 million people (6.6 million males and 4.0 million females) fell ill with TB in 2021. There were an estimated 1.6 million TB deaths, 1.4 million among HIV negative people and 187000 among HIV positive people. The global TB notifications is 6.4 million with a partial recovery from 5.8 million in 2020. Men (aged ≥15years) accounted for 57.0% and children (aged <15 years) for 11.0%

In Nepal, an estimated 69,000 fell ill with TB in FY 2078/79. The National Tuberculosis Programme (NTP) registered 37,861 all forms of TB cases (38% female and 62% male). Out of 37,861 all forms of TB cases, 37,287 (98.5%) cases were incident TB cases, 21,628 (57%) were pulmonary bacteriologically confirmed (PBC) cases, 5677 (15%) were pulmonary clinically diagnosed (PCD) cases and 10556 (28%) were extrapulmonary TB cases. Geographically, most people who reported TB were from terai region (60%). At provincial level, Madhesh Province (23.7%), Bagmati Province (23.3%), and Lumbini province (21.4%) contributed the highest proportion of notifications. Altogether, these 3 provinces comprised 68.4% of the total TB cases notified in NTP

Drug-resistant TB continues to be a public health threat. Globally, the burden of MDR-TB or RR-TB (MDR/RR-TB) is stable. For more than 10 years, the best estimate of the proportion of people diagnosed with TB for the first time who had MDR/RR-TB has remained at about 3–4% and the best estimate for those previously treated for TB has remained at about 18–21%, 78% had multidrug-resistant TB (MDR-TB)2. In 2021, an estimated 450,000 people fell ill with MDR/RR TB around the globe, while people who started on treatment were 162, 000. In Nepal, nearly 2,800 people were estimated to develop MDR/RR TB in FY 2078/79, but only 942 were detected (i.e. 57% were missed) and out of those diagnosed, NTCC was able to put 659 on DR TB treatment. Preventive therapy was also provided to 64% of childhood TB contacts through contact tracing.

Progress towards the End TB Strategy and SDGs
Globally, a 10.0% reduction in TB incidence rate and 5.9% reduction in TB deaths in between 2015 and 2021 was observed. Though, the incidence rate and deaths are declining, but are not as expected to meet the global END TB and SDG targets also, 48.0% of people with TB faced catastrophic costs. As per the Global TB Report, 2022, Nepal showed a 14.0% reduction in TB incidence rate and 3.6% reduction in TB deaths between 2015 and 2021, however Nepal is still

- https://www.who.int/news-room/events/un-general-assembly-high-level-meeting-on-ending-tb
- As published by WHO in annual global TB reports.

far behind to track in reaching the END TB targets. Furthermore, Nepal does not have the data on TB affected people facing catastrophic costs. Based on the National TB prevalence survey report, there has been a 3.0% decline in annual incidence rates in TB in Nepal.

TB diagnosis, treatment, and prevention service coverage

TB services were mostly provided through the integration of decentralized health service delivery systems through 5971 DOTS centers and 896 microscopic centers. Specialized services were provided from 22 DR TB treatment centers, 81 DR TB treatment sub-centers, 6 DR TB hostels and 1 DR TB home. Diagnosis services were further provided through 93 Genexpert sites, 2 Culture labs with DST and LPA services. As a part of Universal health coverage, social determinants and multisectoral action DS TB services are part of UHC and provided as essential health care services throughout the country. TB treatment service coverage for DS TB is 54.0% and DR TB is 30% in FY2078/79, a slight improvement from 41.0% and 19% respectively in last fiscal year FY 2077/78. Even though improvement has been observed in the treatment service coverage, still 46.0% DS TB and 70% DR TB patients are expected to be leaving behind the accessing of TB services. TB preventive therapy was scaled up to 42 districts and provided to 3158 eligible <5year child TB contacts of PBC cases. GeneXpert (Xpert MTB/RIF) services are expanded to 62 districts with 125 machines and 23 Xpert XDR machines are introduced for early diagnosis of Pre-XDR TB cases.

5.1.9.**2 History of TB in Nepal and progress towards global and national TB targets**

Within the organizational structure of the Ministry of Health and Population, National Tuberculosis Control Centre (NTCC) is the leading entity for National TB Control Program (NTP) and responsible for formulating policies, strategy, planning, monitoring, and quality assurance of the program. The efforts of controlling TB disease in Nepal started from 1937 establishing a sanitorium at Tokha to care for TB patients. In 1951, a chest clinic was established in Kathmandu and began the formal treatment of TB patients for the first time in Nepal. Likewise in 1965 GoN established the National TB program. Later in 1989 the clinic and the pro-gram were merged and NTCC was established as an apex body to manage the TB program in the country. Nepal systematically started a TB control program adopting DOTS TB strategy in 1996 and is renowned as a pioneer program in effective control of TB in Nepal setting the example at global level. With the adoption of the DOTS TB Strategy in 2006 and the End TB Strategy in 2015. NTP is in-line with other global and stra-tegic commitments to reach END TB targets. There were various commitments made by the government at different points of time regarding global declarations to ending TB.

Figure 5.1.9.1 Global declarations and commitments for TB program

Based on the global and national commitments to reach the set END TB targets, NTCC has developed its National Strategic plan 2021/22-2025/26 for TB3 which envisions for TB Free Nepal by 2050. The milestones, and targets set by Tuberculosis NSP 2021-2026 were to reach SDG and end TB targets as mentioned below.

- https://nepalntp.gov.np/wp-content/uploads/2022/07/TB-National-Strategic-Plan-English-report-UPDAT- ED-

oct-11-2022.pdf

INDICATORS	MILESTONES		TARGETS	
	2020	2025	SDG 2030	END TB 2035
Reduction in number of TB deaths compared with 2015 (%)	35%	75%	90%	95%
Reduction in TB incidence rate compared with 2015 (%)	20% (<85/100 000)	50% (<55/100 000)	80% (<20/100 000)	90% (<10/100 000)
TB Affected Families facing catastrophic costs due to TB (%)	ZERO	ZERO	ZERO	ZERO

Goal

Nepal has set a goal to decrease incidence rate from 238 in 2020/21 to 181 per 100,000 population by 2025/26; decrease mortality rate from 58 in 2020/21 to 23 per 100,000 by 2025/26; end TB epidemic by 2035; eliminate TB by 2050; and reduce the catastrophic cost to zero

Objectives

1. To build and strengthen political commitment, sustainability, and patient-friendly health system to end TB.

1.1. **Strategy:** Strengthen the health system in delivering TB services under universal health coverage, scaling community engagement in TB care and support and program monitored through integrated and digitalized case-based surveillance system.

2. To ensure the identification of TB, diagnosis, quality treatment and prevention.

2.1. Strategy: Strengthen quality TB lab network, increasing reach and access to rapid diagnostic methods and improve case notification by strengthening facility and active case finding activities in communities, including private sectors engagement and multi-sectorial approach.

Major outcomes expected from NSP 2021/22-2025/26 are as follows:

- TB-affected families facing catastrophic costs due to TB (%) = 0%
- Increase domestic funding up to 70% by 2026
- 50% of TB cases managed and supported by community by 2026
- 100% health facilities using digitalized case-based surveillance system by 2026
- 100% Drug-susceptibility testing (DST) coverage for TB patients by 2026
- ≥ 90% coverage of Latent TB infection (LTBI) treatment coverage among eligible children < 5 yrs, among PLHIV and vulnerable groups by 2026
- 85% and 90% decrease case notification gap for DS TB and DR TB respectively by 2026.
- 30% TB notification contributed by private sectors by 2026.
- 100% Documentation of HIV status among TB patients by 2026
- ≥ 90% Treatment Success Rate for DS TB and throughout 2021-26
- ≥ 85% Treatment Success Rate for DR TB by 2026
- TB in emergency / pandemic plan available and funded

5.1.9.3 Progress towards service coverage, epidemiology and disease burden of TB

Institutional coverage

Nepal adopted the DOTS strategy in 1996 and achieved nationwide coverage in 2001. All DOTS centers are integrated into public health services or run through NTP partner organizations in the public and private sectors. In FY 2078/79, 5971 institutions were offering TB diagnosis and treatment DOTS-based TB control services. Below Table summarizes the Tuberculosis service outlets throughout Nepal. To increase access to treatment services, NTP has developed partnerships with different organizations including private nursing homes, polyclinics, I/NGO health clinics, prisons, refugee camps, police hospitals, medical colleges, and municipalities.

Table 5.1.9.1: TB service delivery outlets

Program Indicators	National Level					FY 2078/79 by Province						
	2074/75	2075/76	2076/77	2077/78	2078/79	P-1	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpaschim
Number of Service Sites												
DOTS Center	4323	4382	4955	5503	5971	980	1073	1187	792	841	458	640
MDR Treatment Centers	21	21	22	22	22	4	3	2	3	3	2	5
MDR Treatment Sub-Centers	86	81	81	81	81	12	18	24	10	13	2	2
DR Homes	1	1	1	1	1	-	-	-	1	-	-	-
DR Hostel	6	6	6	6	6	1	1	1	-	2	-	1
Microscopy Centers	624	604	765	896	896	83	94	260	61	171	47	180
GeneXpert Facility	55	56	72	84	93	13	18	20	8	18	7	9
Culture Labs and DST	2	2	2	2	2	-	-	2	-	-	-	-
Line Probe Assay (LPA)	2	2	2	2	2	-	-	2	-	-	-	-

Source: NTP service data

Estimation of TB burden following 1st National TB prevalence survey 2018-19

The burden of TB can be measured in terms of incidence (defined as the number of new and relapse cases), prevalence, and mortality. Based on the National TB prevalence survey report 2018-19, TB prevalence in Nepal is 1.8 times, Incidence is 1.6 times and TB mortality is 3.1 times higher than the previous estimates as detailed in Table 5.1.9.2.

Table 5.1.9.2: Comparison between the previous and revised burden of TB

Year	Incidence (all forms)	Prevalence (all forms)	Mortality (HIV -ve& +ve)
2018 New estimates	69,000 (245 per 100k)	1,17,000 (416 per 100k)	17,003 (9,000-26,000)
2018 Prior estimates	42,000 (151 per 100k)	60,000 (215 per 100k)	5,500 (3,900 - 7,400)
Revised burden, higher by:	1.6	1.8	3.1

Though the incidence is higher than the previous estimates, the incidence rate is declining by 3% annually. An assumption of a 3% rate of decline in incidence over the period 2000-2018 was used, supported by a steep gradient in prevalence rates over groups of increasing age, suggesting a decline in transmission, and an average 8%/year growth in GNI/capita (National TB Prevalence Survey 2018/19).

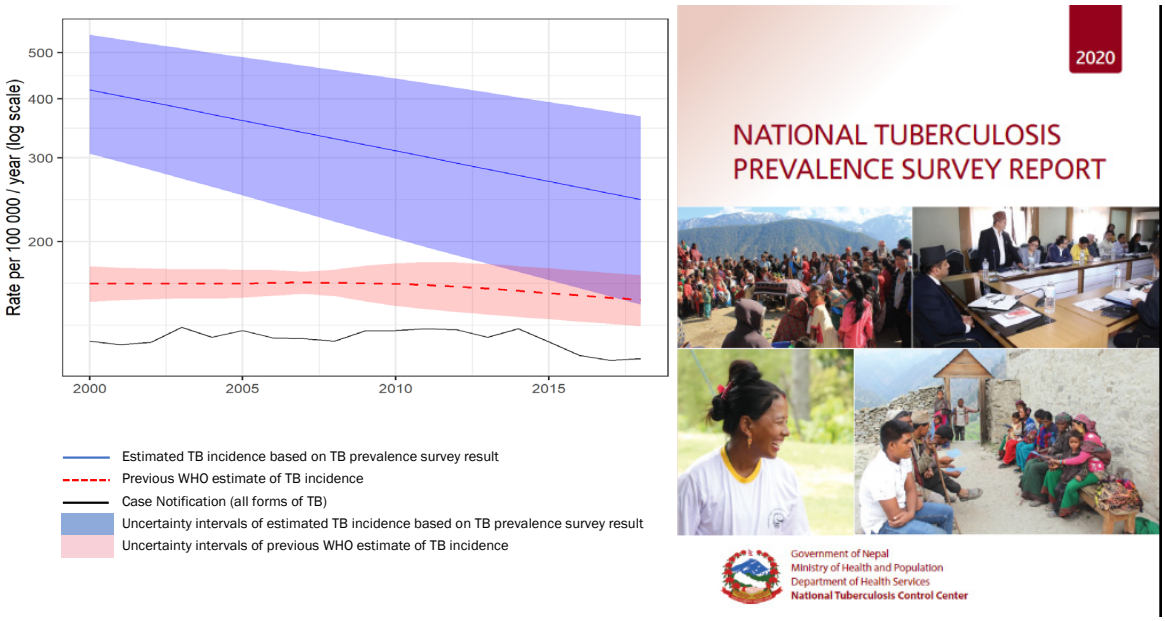

Figure 5.1.9.2: Results of prevalence survey and key summary

Summary of key results from the survey are:

- TB burden significantly higher, despite better program performance (3% annual incidence decline)
- The burden of TB higher in all-terrain and not limited to high notification areas unlike previously estimated
- Burden significantly higher among men and in elderly population
- Need to scale up the use of better screening (eg. X-ray) and diagnosis (eg. Gene Xpert and mWRDs)
- Need to improve health-seeking behavior of general community
- TB service services should be strengthened both in the private and public sectors including cross-border collaboration.

Case notification

The reported case notification rate (CNR) of all forms of TB is 129/100,000 whereas CNR for incident TB cases (new and relapse) is 127/100000 population. In Fiscal Year 2078/79, a total of 37,861 cases of TB were notified and registered at NTP. There were 98.5% incident TB cases registered (New and Relapse) among all TB cases. Among the notified TB cases, 72.1 % of all TB cases were pulmonary cases and out of notified pulmonary TB cases, 79.2% were bacteriologically confirmed. Among those bacteriologically confirmed and notified, 93.52 % (20192) were confirmed using Xpert MTB/RIF testing.

Table **5.1.9**.3: TB case notification FY 2078/79

TB Case Notifications (New and Relapse),2078/79	
Total New and Relapse	37287
- % pulmonary	72.1%
- % pulmonary bacteriologically confirmed	57.1%
- % children aged 0-14 years	8.7%
-% women	38.4%
- % men	61.6%
- Total TB cases notified	37861

Source: DHIS2/HMIS 2078/79

Majority of the TB notifications (25936, 68.4%) were from Madhesh, Bagmati and Lumbini Province. Around 23.7% of the TB cases were reported from Madhesh Province. Whereas in terms of eco-terrain distribution, the Terai belt reported more than half of the cases (22904, 60.5%). Most cases were reported in the middle age group with the highest

of 45.1% in 15-44 years of age. Childhood TB is around 8.7% while men were nearly 2 times more than women among the reported TB cases.

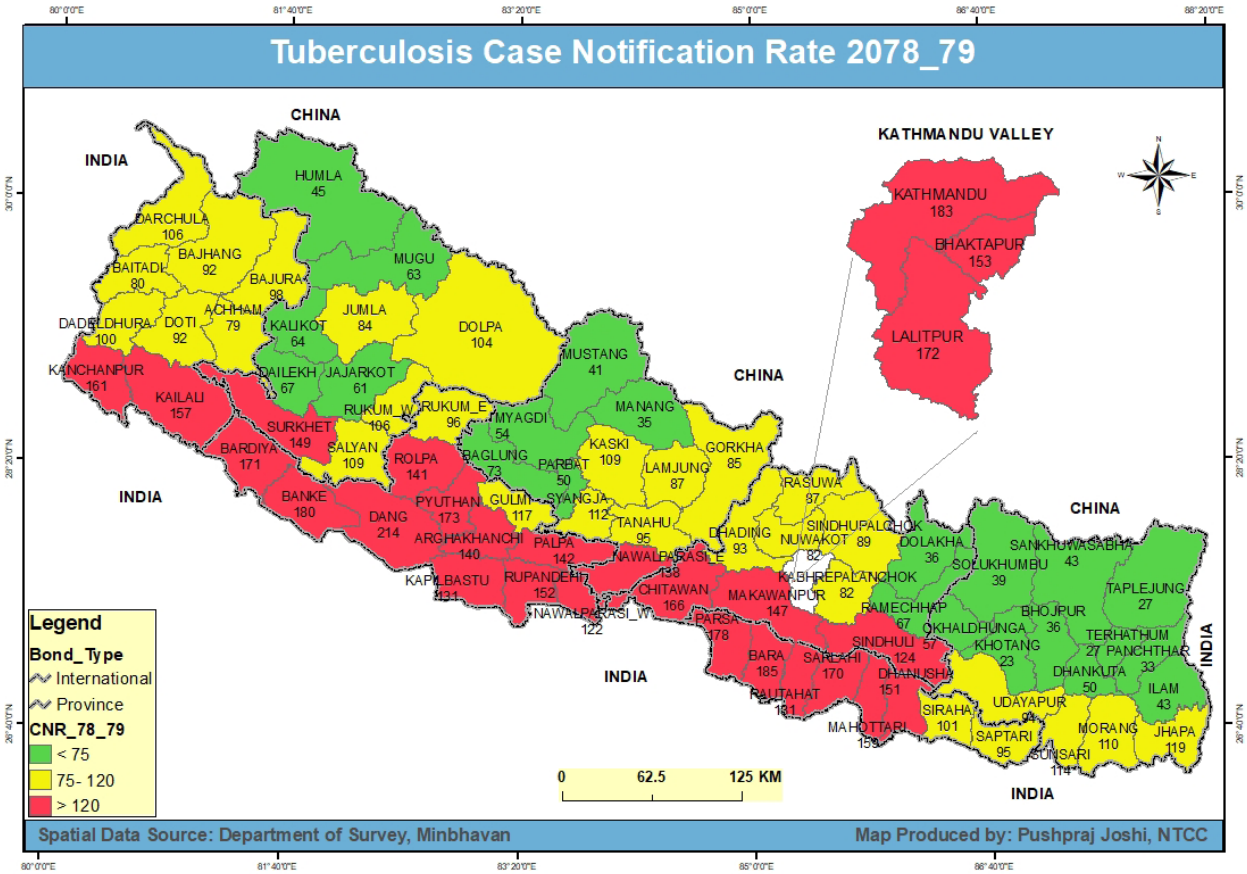

Figure 5.1.9.3: Tuberculosis case notification rate, 2078/79

The National Case Notification Rate (All forms) is 129/100,000 population. Based on the CNR, there are 26 districts with CNR of more than 120, while 29 districts had CNR between 75-120 and the remaining 22 districts had below 75 CNR. Among 26 districts with high TB case notifications, 16 districts are from the Terai belt and the remaining 10 are from the Hilly region (Figure 5.1.9.3).

Figure 5.1.9.4 shows the province-wise case notification rate. Lumbini province had the highest CNR (157 per 100,000 population), followed by Madhesh (146 per 100,000 population), Bagmati (144 per 100,000 population), Sudurpaschim (126 per 100,000 population), Gandaki (98 per 100,000 population and Karnali (97 per 100,000 population) province. CNR was lowest in Koshi (Koshi) (89 per 100,000 population).

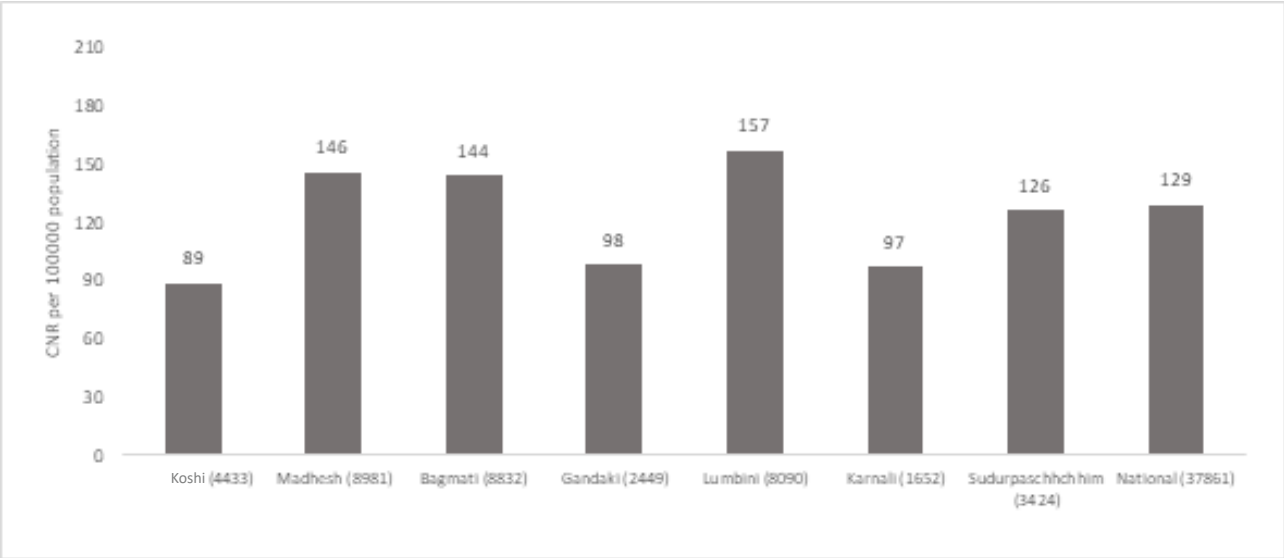

Figure 5.1.9.4: Notified TB cases (All forms) by provinces for FY 2078/79
Source: DHIS2/HMIS and NTPMIS2078/79

Distribution by age and sex

In FY 2078/79, around 8.7% of cases were registered as child TB cases while the remaining 91.3% were registered as adult TB. In Nepal, the gap in estimated vs notifications is higher, with missing cases projected to be around 45.1% and especially higher among the elderly population where access to health services is still a big challenge. There has been a slight improvement in the notifications of child TB cases with 8.7% in FY 2078/79 from 6.6% in FY 2077/78, however it is not satisfactory with regard to the estimate of around 10-15% of TB cases are children. NTP requires focusing on further improvement in the notification of child TB cases. As of earlier years, men were nearly twice as more reported to have TB than women in FY 2078/79 which is similar to the region and global context.

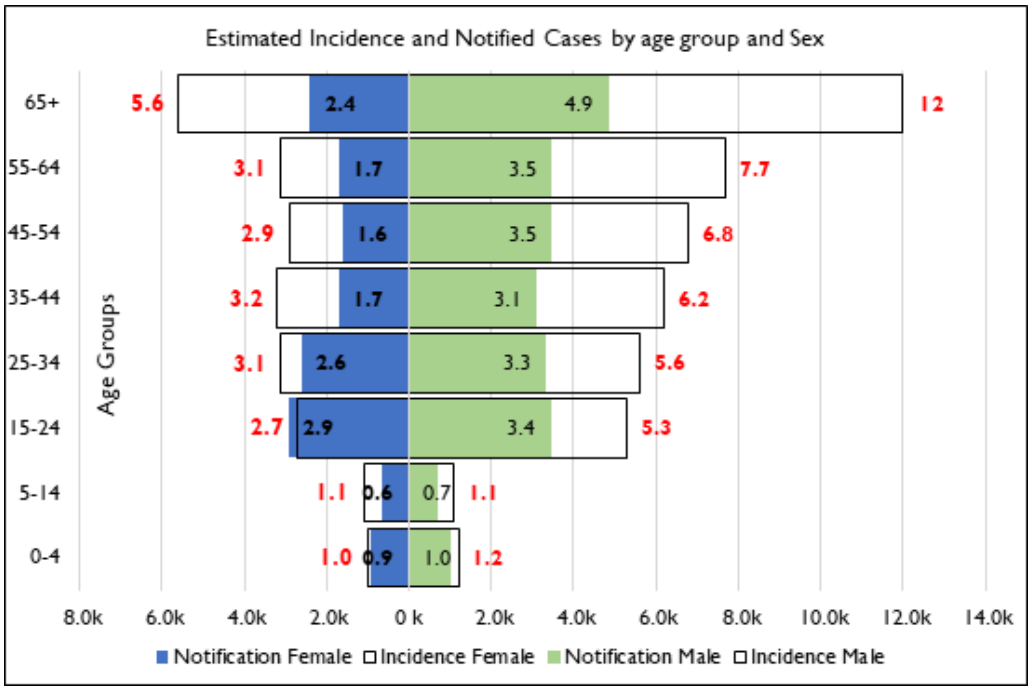

Figure 5.1.9.5: Notified TB cases by age-group compared to the estimated incidence
Source: DHIS2/HMIS and NTPMIS, FY 2078/79

Annual trends

Figure below shows the trend of TB cases notification from FY 2074/75 to FY 2078/79. The notification rate has been stagnant in FY 2074/75 and FY 2075/76 with a drop in FY 2076/77 and some increase is observed in FY 2078/79.

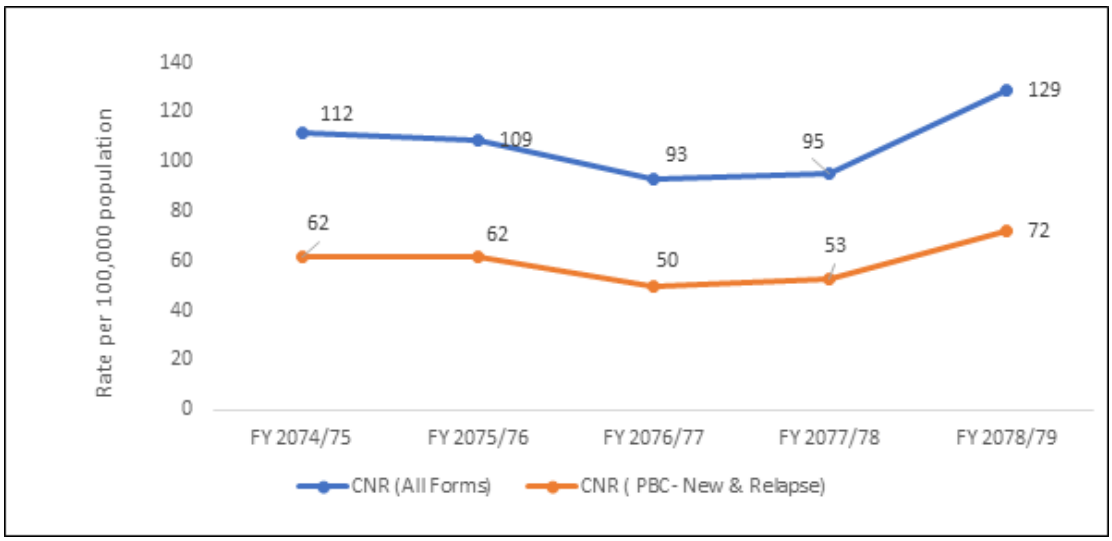

Figure 5.1.9.6: TB case notification rate (2074/75–2078/79)
Source: NTP Excel Data for the FY 2074/75 to FY 2075/76 and HMIS for FY 2076/77 onwards

Treatment outcomes

The TB treatment success rate has been consistently above 90.0% throughout the years except in FY 2076/77 in Nepal, which has been impacted with COVID 19 pandemic. In FY 2078/79, the treatment success rate (TSR) is 91.5% for all forms of TB. The TSR at the national level for newer cases (New and Relapse) is progressive (92.0%) in FY 2078/79 with respect to the previous years. However, the trend of success rates among the retreatment cases (Success, Failure, Loss to Follow-up and other previously treated) has been constantly lower (in comparison to treatment success among newer cases).

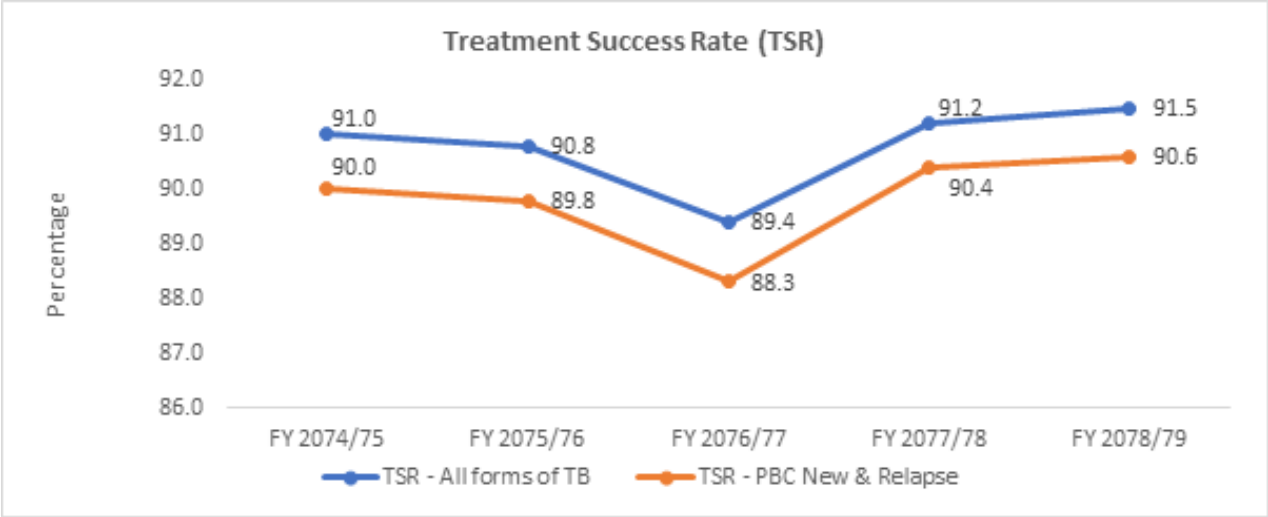

Figure 5.1.9.7: TB Treatment Success Rate (TSR) trend (FY 2074/75– FY 2078/79)
Source: NTP Excel Data for the FY 2074/75 to FY 2075/76 and HMIS for FY 2076/77 onwards

Table below shows the treatment outcomes of the TB patients across different provinces. All of the 7 provinces have achieved 90.0% and above treatment success rate. The average treatment failure rate was above 1% in Gandaki, Karnali and Sudurpaschhim Provinces. Meanwhile, around 4% of registered TB patients died during TB treatment. Similarly, Koshi (Province-1) and Madhesh Provinces experienced a high loss to follow-up (around 3%) in comparison to other provinces.

Table 5.1.9.4: Province wise TB treatment outcomes (2078/79)

Province	Treatment Success Rate	Failed Rate	Death Rate	Rate of LFU	% of Not Evaluated
Koshi Province	91.1%	0.6%	3.5%	2.9%	2.6%
Madesh Province	92.3%	0.7%	3.4%	2.9%	0.7%
Bagmati Province	92.6%	0.7%	2.6%	1.7%	2.5%
Gandaki Province	90.2%	1.2%	4.9%	2.1%	1.6%
Lumbini Province	91.0%	0.8%	4.8%	2.1%	1.0%
Karnali Province	90.9%	1.1%	3.6%	2.5%	2.0%
Sudurpashchim Province	90.1%	1.3%	3.2%	2.4%	1.0%
National	91.5%	0.8%	3.6%	2.3%	1.5%

Source: DHIS2/HMIS 2078/79

Drug resistant tuberculosis (DR TB)

Drug-resistant TB (DRTB) has become a great challenge for the NTP and a major public health concern in Nepal. Innovative approaches and more funding are urgently needed for the programmatic management of drug resistance TB nationally to detect and enroll more patients on multi-drug resistant (MDR) TB treatment, and to improve outcomes. The DR TB services are provided through different sites as shown in Figure below.

Figure 5.1.9.8: DR TB Treatment Sites

Notification of MDR-TB

A total of 659 RR/MDR-TB cases were registered for treatment in FY 2078/79. Among them, 102 cases (15%) were on treatment at DR centers of Koshi, 140 cases (21%) at Madhesh Province, 101 cases (15%) at Bagmati province, 53 cases (8%) at Gandaki province, 165 cases (25%) at Lumbini Province, 17 Cases (3%) at Karnali Province and remaining 81 cases (12%) were on DR treatment at Sudurpaschim province respectively.

The National DR TB Treatment Guideline defines three types of MDR-TB (RR TB, Pre-XDR TB, and XDR TB). Drug resistant forms of TB are detected through GeneXpert, Culture/DST, and LPA methods in Nepal. In this reporting period, 659 MDR TB cases were reported to have enrolled in the DR treatment. Where among the total MDR cases reported, 337 (51%) were registered under MDR (SSTR), 230 (35%) cases under MDR (LTR), 85 (13%) cases under Pre- XDR, and 7 (1%) cases were registered under XDR.

Figure below shows enrollment of MDR TB across the different provinces in FY 2078/79. In terms of the number of RR/MDR TB patients notified, Lumbini Province is found to have higher burden followed by Koshi (Province-1), Madesh Province, Bagmati Province, Gandaki Province, Sudurpaschim province, and Karnali Province respectively. Similarly, the burden of Pre-XDR and XDR TB patients was found more at Lumbini Province followed by Bagmati Province, Koshi (Koshi), Sudurpaschim province, Gandaki province and Madhesh respectively.

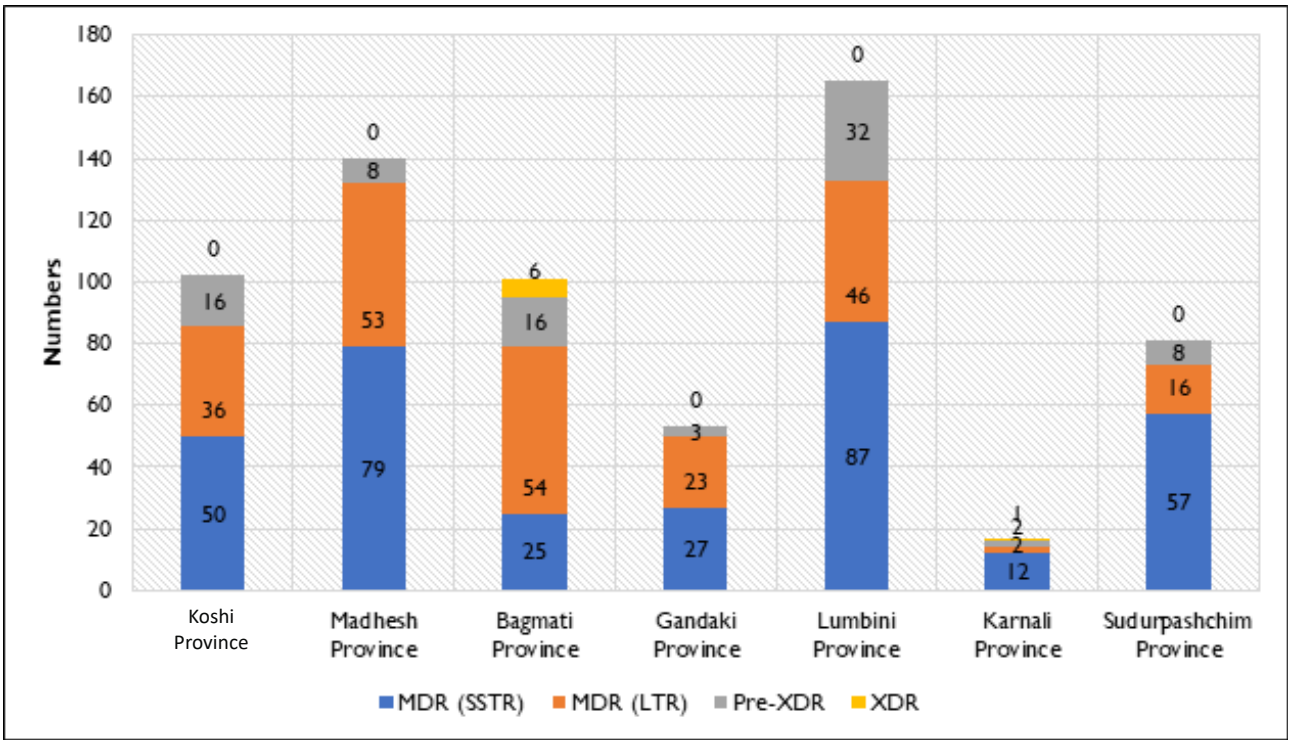

Figure 5.1.9.9: MDR-TB cases enrolled in treatment by provinces
Source: NTPMIS Treatment outcome

Figure below shows the treatment outcome of the DRTB case registered in NTP. The Treatment success rate of MDR TB is 74% in this reporting period. There was a fluctuation in the treatment success rate of MDR TB since few years. The fluctuation in treatment success rate is mainly affected by the proportion of death as well as the holding of the MDR patients at treatment.

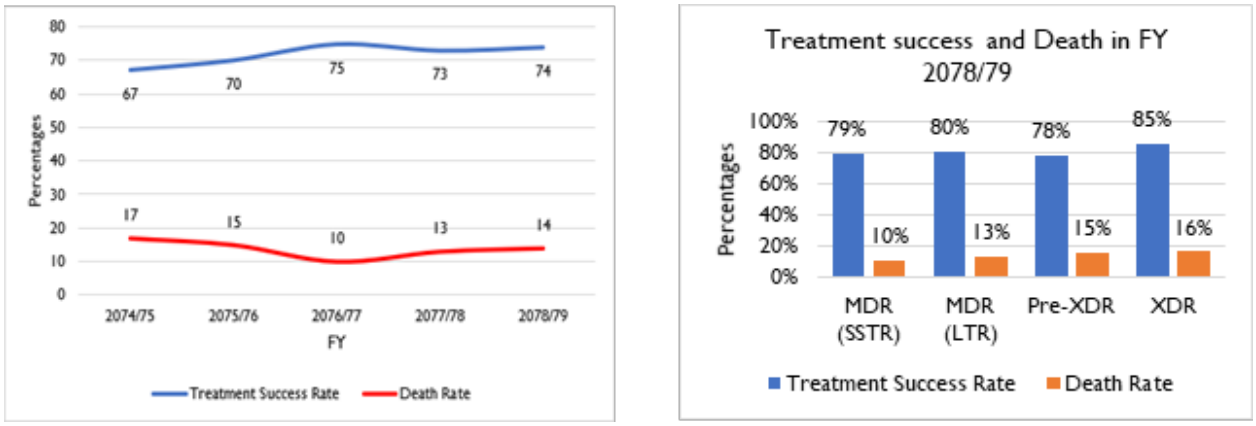

Figure 5.1.9.10. Treatment outcome of DR TB cases registered in NTP
Source: NTPMIS

Based on revised estimation of TB Burden following the National TB prevalence survey 2018-19 and other current epidemiological and other related information, the burden of RR/MDR TB was also revised by WHO and published in the Global TB report for 2020. After readjustment in the annual burden of DR TB, the annual estimated figure of DR TB increased from 1400 to 2200 DR TB cases annually. With this projection, the missing cases for RR/MDR TB are now

estimated to be around 57% in FY 2078/79. Similarly, NTP has been successful in maintaining the higher treatment success rates for RR/MDR TB above 81% .

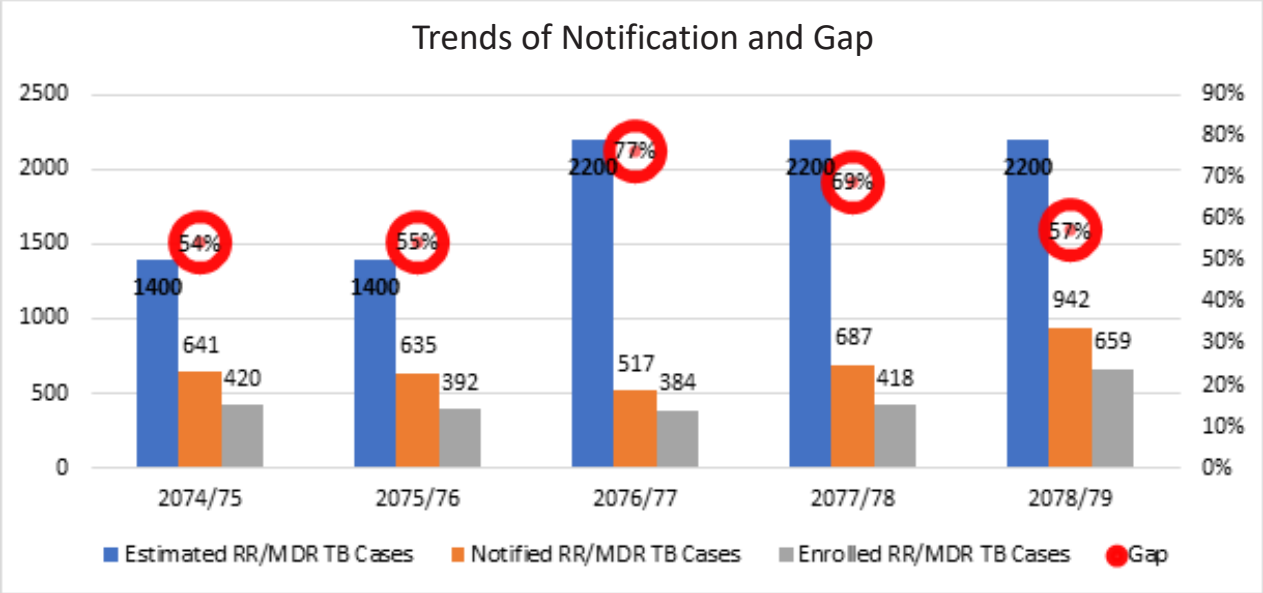

Figure 5.1.9.11: DR TB annual case finding and Gap
Source: NTPMIS

NTP's laboratory network

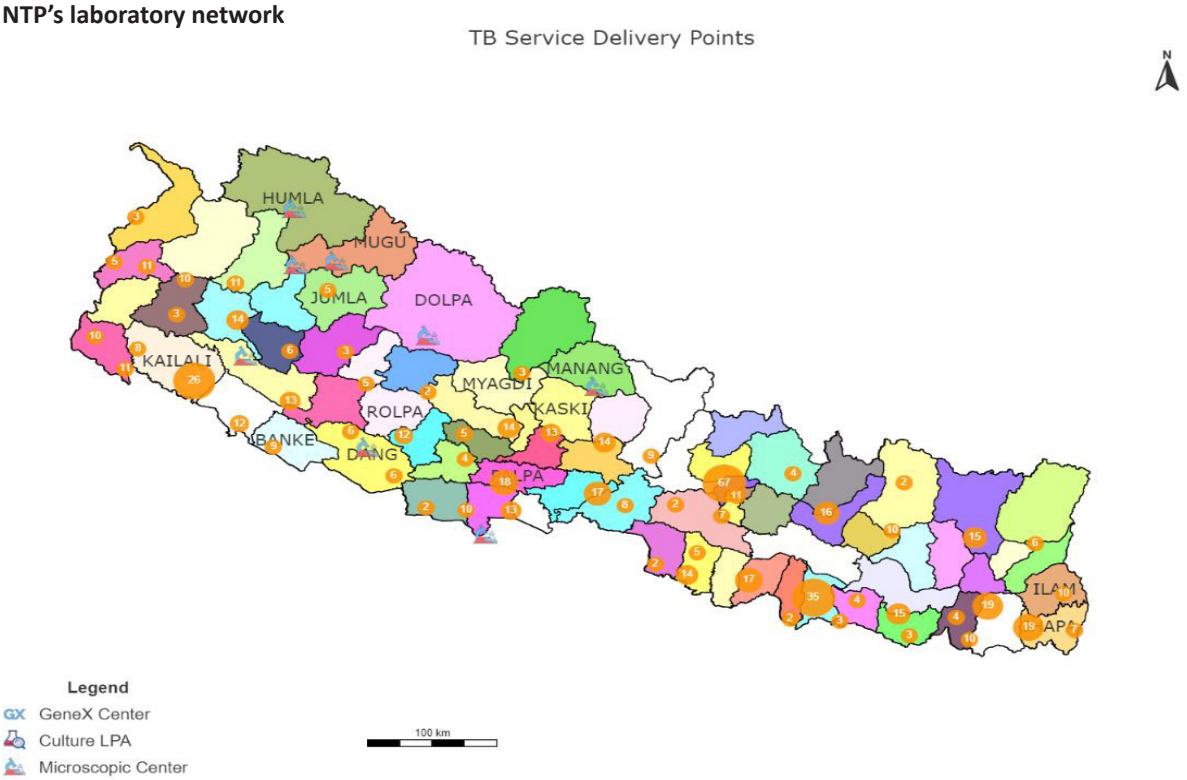

Figure 5.1.9.12: TB Service Delivery Points

The diagnosis and treatment monitoring of TB patients relies on sputum smear microscopy because of its low cost and ease of administration. It is also the worldwide diagnostic tool of choice. Nepal has 896 microscopy centers (MCs) that carry out sputum microscopy examinations. Most of the MCs are run by government health facilities while a few are operated by NGOs and private instructions. There are well-established networks be- tween the microscopy centres (MCs) at PHCCs, DHOs and DPHO, the five regional TB quality control centres (RTQCCs), and the National TB Centre

(NTC). The microscopy centres send examined slides to their RTQCCs via DHOs according to the Lot Quality Assurance Sampling/System (LQAS) method. At the federal structure, NTP has already initiated coordination and communication with respective provinces to provide technical and financial support to establish the provincial structure for the external quality assurance of smear microscopy slides. The external quality assurance (EQA) for sputum microscopy is carried out by provincial health directorates (previously regional health directorates) at seven provinces and the National TB center in Kathmandu.

Table 5.1.9.5: NTP laboratory network (no. of institutions) by province

Center	Koshi	Madhesh	Bagmati	Gandaki	Lumbini province	Karnali	Sudurpaschim	Total
MC	83	94	260	61	171	47	180	896
GX sites	13	18	20	8	18	7	9	93

Source: DHIS2/HMIS & NTPMIS, 2078/79

A lot of quality assurance sampling/system (LQAS) has been implemented throughout Nepal. At each microscopy center, examined slides for EQA are collected and selected according to the LQAS. Previously NTP used to collect all positive and 10 percent negative slides for EQA. In LQAS, slides are collected and selected using standard procedures to give a statistically significant sample size. LQAS is a systematic sampling technique that helps maintain good quality sputum results between microscopy centres and quality control centres.

TB Diagnosis

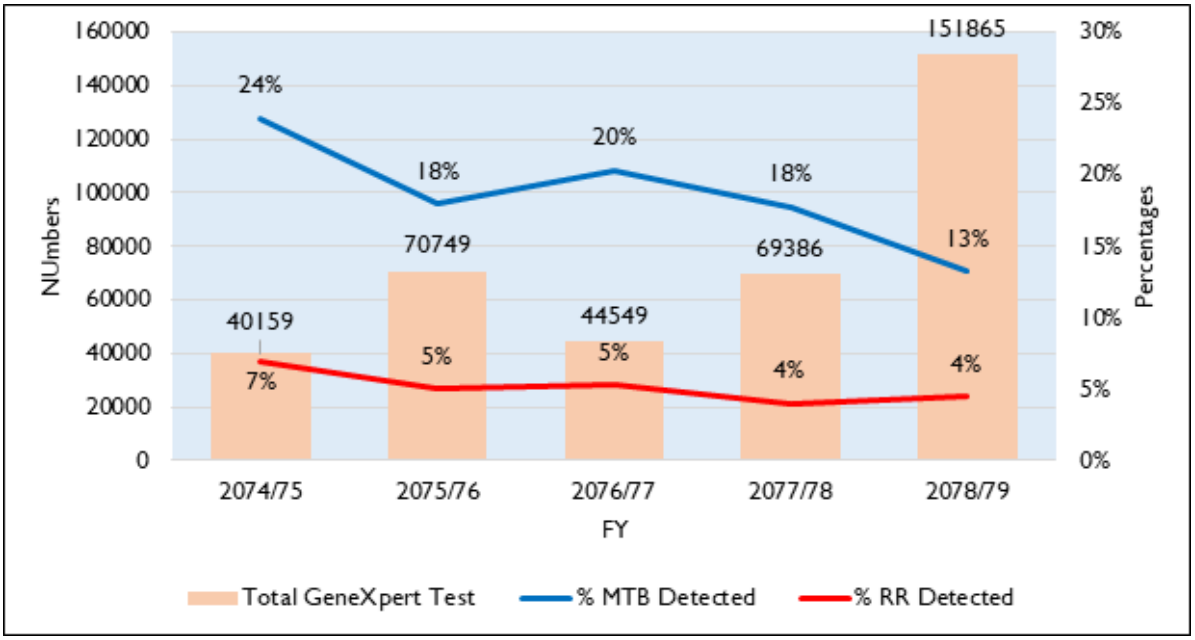

Figure 5.1.9.13 TB diagnosis performed using GeneXpert test
Source: NTPMIS

Figure above shows the GeneXpert test performed from 84 sites during FY 2078/79. The GeneXpert test has been increased by 119% in FY 2078/79 (151865) compared to the test performed during FY 2077/78 (69386). Likewise, TB detection from GX has increased by 71% (21134) in FY 2078/79 compared to the TB cases detected from GX in FY 2077/78 (12336) (Not shown). The proportion of MTB among total tests in GX was 13% in the fiscal year 2078/79. Similarly, the proportion of RR MTB among total MTB cases was almost 5% in the past couple of years which has decreased to 4% in FT 2077/78 and FY 2078/79.

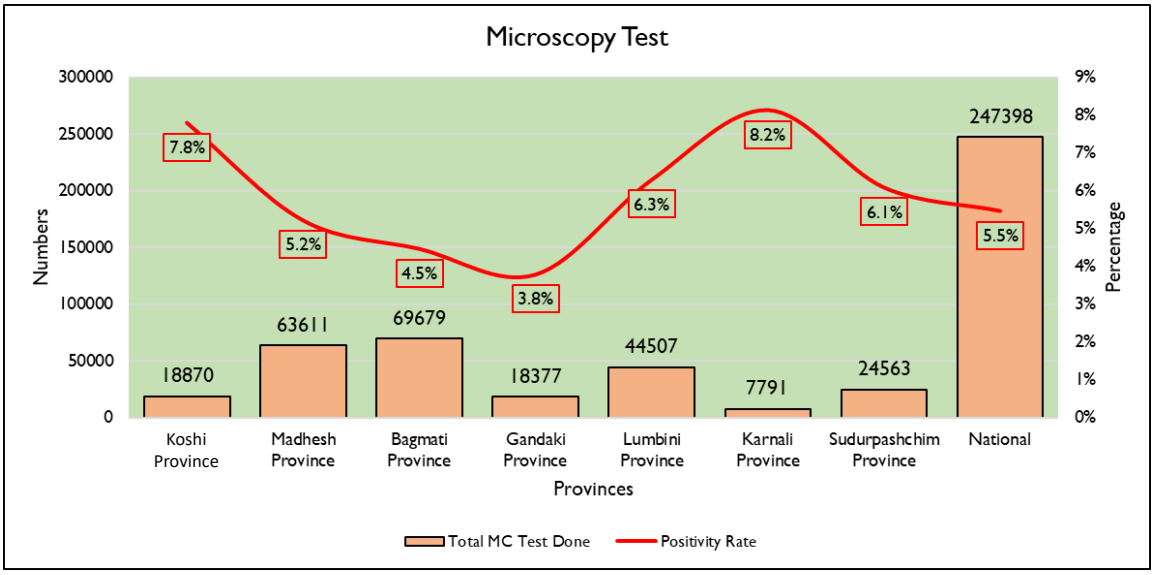

Figure 5.1.9.14 Sputum microscopy test performed in FY 2078/79
Source: DHIS2/HMIS

The Figure above shows the sputum microscopy test during the FY 2078/79. It was reported that 182830 presumptive TB were tested with 5.5% positivity rate and diagnosed 13,563 PBC TB in the FY 2078/79.

TB/HIV co-morbidity

The testing proportion for HIV among TB patients has been increasing for the last few years which showed a significant increase from 72% in FY 2077/78 to 74% in FY 2078/79. Similarly, in FY 2078/79 ART enrolled was increased to 97% from 89% of preceding year FY 2077/78.

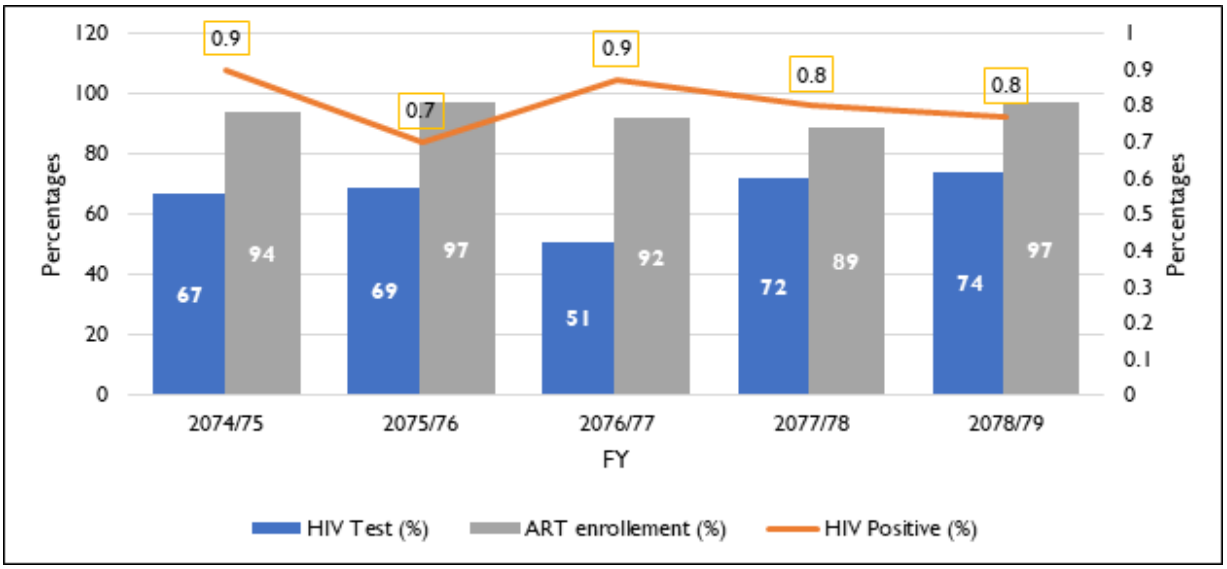

Figure 5.1.9.15 Trend of TB/HIV co-morbidity
Source: DHIS2/HMIS 2078/79

TB preventive therapy

Initiation of TBPT among children under 5 years old has been highlighted in the National Strategic Plan (NSP) of TB, 2021/22-2025/26, and NTP has planned to expand the TBPT service among children under 5 years in all 77 districts by the end of NSP period. However, currently the TBPT service has been implanted in 42 high burden districts of Nepal. A total of 3158 children aged under 5 years were reported to have been initiated in preventive treatment in this fiscal year FY 2078/79.

TB Free Nepal Initiative

TB Free Nepal Initiative is a renewed comprehensive government owned approach with an aim to strengthen the own-

ership and accountability of local level governance in TB management. It was implemented in 25 Municipalities out of 753 local levels (LLs) in FY 2078/79 as a pilot with an additional federal budget of NRs 150 million. Intensified TB case finding, expanding access to TB prevention therapy, enhancing quality treatment, increasing care and social protection schemes/support, and effective community engagement are the major interventions implemented in a comprehensive package. The initiative demands for the structural improvement including additional designated human resources at the LLs. Different levels of committees are formed to strengthen the TB support system. TB microplanning and social audit are the tools applied for the meaningful engagement of the community and for the sustainability of the initiative. The civil society organizations, youth groups, female community health volunteers and patient support groups are intensively mobilized in TB awareness, care, and support. The 25 local levels have allocated around NRs 10 million from their local level budget in 2022/23. The initiative will be continued in 25 LLs and will be expanded in 100 new LLs in FY 2079/80. The preliminary results show 60% increment in case notification following the implementation period (between FY 2077/78 and FY 2078/79) as per the Table below.

Table 5.1.9.6. Three-years case notification trend

Local Level	FY 2076/77	FY 2077/78	FY 2078/79	% change
Mechinagar Municipality	60	70	71	1
Kerabari Rural Municipality	15	9	23	156
Chaubise Rural Municipality	5	0	4	400
Itahari Sub-Metropolitan City	43	71	103	45
Hariwan Municipality	26	34	44	29
Nijagadh Municipality	21	23	36	57
Laxminiya Rural Municipality	6	8	22	175
Thaha Municipality	2	2	8	300
Changunarayan Municipality	22	11	23	109
Shankharapur Municipality	4	14	14	0
Dhulikhel Municipality	6	10	16	60
Walling Municipality	21	19	35	84
Rupa Rural Municipality	2	1	1	0
Bhanu Municipality	5	5	9	80
Butwal Sub-Metropolitan City	86	98	161	64
Banganga Municipality	35	32	67	109
Kohalpur Municipality	45	39	89	128
Gurbhakot Municipality	16	13	34	162
Kapurkot Rural Municipality	13	4	23	475
Dullu Municipality	13	15	11	-27
Ajayameru Rural Municipality	3	4	3	-25
Ganyapdhura Rural Municipality	2	4	4	0
Tikapur Municipality	28	43	68	58
Krishnapur Municipality	17	25	47	88
Jayaprithbi Municipality	6	14	12	-14
Total 25 Local Levels	**502**	**568**	**928**	**63**

Planning, Monitoring & Evaluation

National Tuberculosis Centre is responsible for formulating long and short terms strategies and plans to fight against Tuberculosis throughout the country Planning and implementation of the National Tuberculosis Programme (NTP) is guided by National Strategy Plan (NSP). Currently, NTP is implementing its activities as per the strategy, objectives, and

targets of NSP 2021/22-2025/26.

Data source for TB program management and review

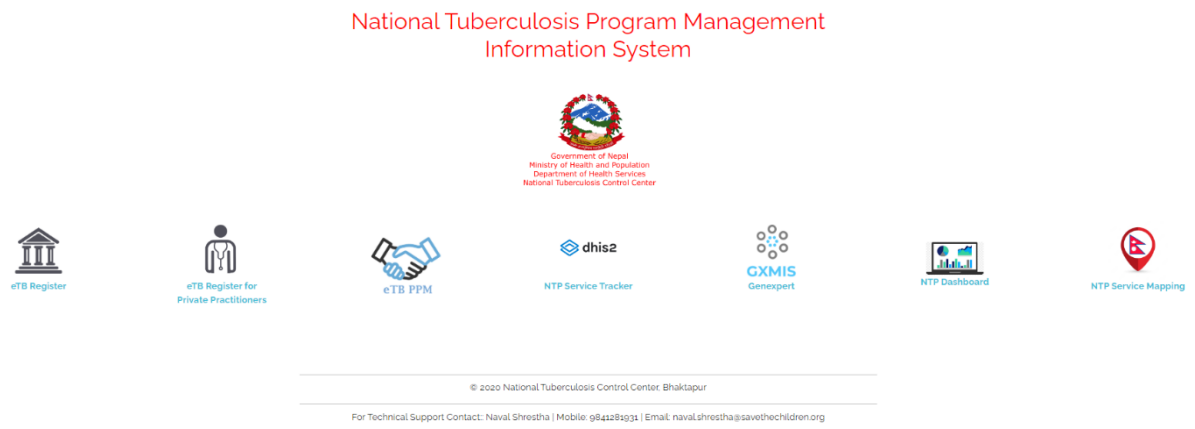

Figure 5.4.16. NTPMIS Home Page

The key data source for NTP is HMIS data. But, as a direction set in NSP to develop e-case based data, NTP has invested to develop a NTPMIS database, which records individual case based data for each patient. The page can be accessed at https://ntpmis.gov.np/

The NTPMIS system is an online platform, compatible with DHIS2 platform. The detailed components of NTPMIS and their current status are as shown in Table below.

Table 5.1.9.7: Different components of NTP MIS and updates

Component of NTPMIS	Description	Status in FY 2078/79
eTB register	Master eTB register is a web-based application being used for reporting TB patient registration, follow-up and outcome in central online database from existing paper-based tuberculosis register. This patient tracker software is developed to collect, manage and analyze transactional case-based data records. Master eTB register has advanced features for data analysis, feedback mechanism, reporting, SMS integration and dashboard, which lets user explore and bring meaningful result of raw data.	- Orientation/training packages developed, and training has been initiated at national, Provincial and Health Facility levels - Expected to use the eTB data form coming FY 2079/80 - Planned to make it interoperable with HMIS system in coming FY 2079/80
eTB Register for Private Practitioners	eTB Register Module for Private Practitioners is a separate module developed for reporting TB patients from private sector and can be used to collect, manage and analyses data from these private sectors.	Reporting initiated
eTB PPM	It is an online web-based R&R tool to record/report presumptive TB patients at pharmacies who are then referred to designated doctors and hospitals for screening for TB. This system is also able to capture the referral from communities to designated doctors/hospitals. This system not only tracks the referral and diagnosis of TB but also tracks the enrollment in TB treatment in DOTS Center. Hence, this R&R system tracks the presumptive TB referred from pharmacies and communities to diagnosis and enrollment in TB treatment.	The system is introduced in major six cities; Kathmandu, Lalitpur, Chitwan, Nepalgunj, Birantnagar, Kaski and Birgunj.

DRTB Patient Tracking and TB Laboratory System	DRTB Patient Tracking and TB Laboratory System is a Web-Based Management Information System developed using DHIS2 platform for effective management and monitoring of DR TB patients by taking their treatment stage and generate reports for MDR TB management program. This system also features the complete laboratory information system, including Microscopy, Culture/DST, GeneXpert, and LPA and provides SMS notifications to the patients/DR Focal person of their 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 a single system ID within both systems.	All DR TB sites and GeneXpert sites have been using and reporting details through this mechanism.
GX-MIS	Web-based real-time GeneXpert machine functionality monitoring system that provides information regarding the functionality of GeneXpert machine and modules, so maintenance procedures can be carried out on time.	Functional and nearly more than 60 sites out of 94 sites linked to the system by FY 2078/79

Supervision and monitoring

The supervision and monitoring of TB health care services are carried out by regular visits to all levels of the program. Also, the quarterly reporting of activities is carried out at trimester planning, monitoring, and evaluation (PME) workshops at all levels of the program.
The NTP regularly monitors case notification, smear conversion, treatment outcomes, and program man-agement reports from all levels of the program. Data is initially analyzed by TB focal persons of DOTS cen-ter and Health Coordinator of respective local level during reporting and planning workshops. Thereafter, TB focal persons from the respective health office report at province level planning, monitoring, and eval-uation workshops. Finally, TB focal persons from provincial health directorates report at national PME workshops. These workshops take place every four months at the Local level province and national level.

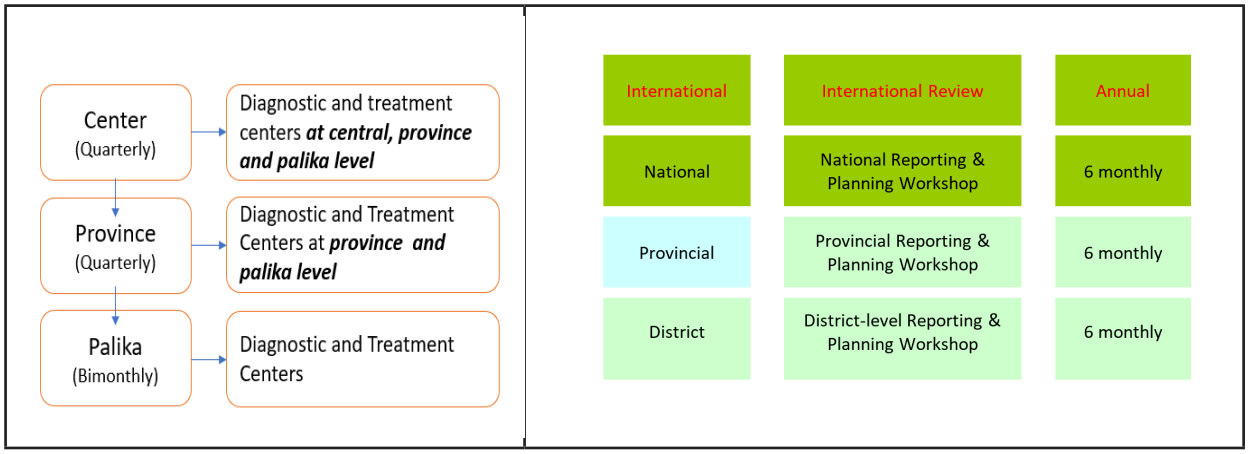

Figure 5.1.9.17 Tuberculosis Program Planning, Monitoring, and Evaluation Mechanism

Logistics supply management

The NTP's logistics management system supplies anti-TB drugs and other essentials every four months to service delivery sites based on the number of new cases notified in the previous quarter and the number of cases under treatment. Prior to the procurement of Anti TB Drugs, forecasting and quantification are done considering all available data. NTC follows rules and regulations of PPMO to procure drugs from the GoN Budget while Pooled Procurement Mechanism (PPM) is adopted to import medicines from the Global Drug Facility (GDF), Switzerland. All the drugs procurements are received in the central NTCC Store and stored by adopting proper storage methods. Drugs are supplied every 4 months to District Medical Store via Provincial Logistic Management Center (PLMC) after receiving the order as a result of workshops in each Region. In the case of First-Line Drugs a buffer of 4 months is added in the order while supplying but no such buffer quantity is given in the case of DR Drugs. Supply of DR drugs is done directly to DR Centers and to some DR Sub Centers.

Physical and Financial Progress status

National Tubrculosis Contro Centre (NTCC)

In the Fiscal year 2078/79, The budget allocated for NTCC was 841 million NPR, among which NTCC made 82% physical progress and 75.3% financial progress with a total of 633 million NPR used.

National Tuberculosis Programme (NTP)

The overall Progress of NTP including federal, provincial and Local level along with partner's support was as follows : In the Fiscal year 2078/79, The total budget allocated for NTP was Total NPR 2,218 million, comprising the budgeted figure from GoN & Global Fund. The allocation made by Gon represents the budgeted figure of Center, Province, Local Level & TB free initiatives. The major areas of investment and expenditures were on the procurement of drugs, laboratory consumables & equipment, GeneXpert cartridges, supervisions & monitoring, supply chain management and TB free Palika. Besides this financial support from Global fund is invested in the procurement of Cartridges, laboratory consumables & equipment, Drugs, Implementation of Case findings interventions, support to DR centers. NTP has had collaborations and support from many different organizations. WHO has been a key technical partner to NTP, whereas Save the Children as a principal recipient of Global Fund Grant has been the key financial partner. There are other partners like Damien Foundation, NATA who support DR TB program to NTP and there are sub-recipient partners who support Global Fund program implementation at the field level. The financial performance during the period FY 2078/79 for the National TB Program is shown in the below table.

Table 5.1.9.8: Financial performance of NTP in FY 2078/79

Source	Budget in NPR	Exp in NPR	%
GoN (Center /province /Palika/Tb Free)	972,799,000	879,093,000.00	90%
Global Fund (Redbook/PR/SR)	1,240,334,420	876,875,761	71%
WHO	4,700,000	892,680.00	19%
Total NPR	**2,217,833,420**	**1,756,861,441**	**79%**

Besides this the overall contribution for National TB Program on various financial year are shown on below table.

Table 5.1.9.9: Trend of financial contribution to NTP by different sources

Period		Fig in NPR, Million			
		GoN	Global Fund	WHO	Total
FY 2019/20	FY 2076/77	870	658		**1,527**
FY 2020/21	FY 2077/78	834	1,070	4	**1,909**
FY 2021/22	FY 2078/79	973	1,240	5	**2,218**

Source: NTCC/SCF-GF, GoN Redbook

Partner of TB program

NTP has had collaborations and support from many different organizations. WHO has been a key technical partner to NTP, whereas Save the Children as a principal recipient of Global Fund Grant has been the key financial partner. There are other partners like Damien Foundation, NATA who support the DR TB program to NTP and there are sub-recipient partners who support Global Fund program implementation at the field level. The detail is provided in below table.

Table 5.1.9.10. NTP Partners

Partners	Key Support Area
WHO	Main Technical Partner of NTP
Global Fund	Major Donor of NTP
Save the Children International (SCI)	Principal Recipient of Global Fund Grant and key Technical Partner

NATA, TB Nepal, JANTRA, BWSN, KIDS, Trisuli, IoM and Damien Foundation	NTP program implementation Partner

5.1.9**.4 challenges, and way-forwar**

The Nepal NTP has regularly been facing several challenges and constraints, which influence the inability to expand and sustain the vision of the program. Following are the key challenges and constraints faced by the NTP to reach the intended goals and targets of the program in the last fiscal year.

Challenges:

- Accountability, prioritization, engagement, and investment in TB at all levels has been a key challenge.
- Proper identification of community and private sectors and their meaningful engagement in the TB program is another challenge for the program.
- Expansion, maintenance, and utilization of rapid diagnostic have been a key diagnostic challenge.
- Nationwide scale-up of web and case-based surveillance system.
- Investment and incorporating effective infection control measures at all levels has been a challenge and so was the effective implementation of ACF.
- Effective and functional collaboration with other health and non-health program is another key challenge.
- Defaulter tracing and providing patient-friendly services including side effect management for DR TB is a key challenge.
- aDSM management and scale-up

Way Forward

Action to be taken for problems and challenges identified in FY 2078/79 are:

- Timely development/revision of key strategic guidelines (National Strategic Plan 2021/22-2025/26), securing increased domestic funding and partner's support (e.g. finalization of Global Fund grant 21-23), lab networking plan
- Data validation, report analysis, and further analysis of National TB prevalence survey
- Capacity building and engagement of new management and health focal points at different levels for TB
- For the long term, to achieve the end TB goals and targets envisioned by NTP
- Secure enough resources (Human resource and budget) for TB at all level
- Expansion of TB Free Initiatives
- All TB including Drug-resistance TB to be under UHC
- Make TB mandatorily notifiable event
- Scale-up TB preventive treatment
- Identify, strengthen and support community organizations engagement in TB care and support including advocacy for human rights
- Include all TB patients and family under the health insurance scheme
- Advocate to include TB in social protection and poverty alleviation support schemes.