

**Report on the review of Programmatic management of drug-resistant tuberculosis (PMDT)
component of the Revised National TB Control Programme, India. 11-22 November 2019**

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Background

India is one of the twenty countries listed by WHO with the highest estimated numbers of incident MDR-TB cases. The 1st national drug resistance surveillance (DRS) survey (2014 – 2016) has been completed. Any drug resistance among new patients was found to be 22.54%, among previously treated patients 36.82%, and among all patients 28.02%. Multidrug-resistant TB (MDR-TB) among new patients was 2.84%, among previously treated patients 11.62%, and among all patients 6.19% (Table X). This translates into an estimated 130,000 (77,000-198,000) individuals suffering with MDR-TB/rifampicin-resistant TB (RR-TB) emerging each year in the country.

Table X: Results of 1st National DRS survey, 2014-2016

	New TB patients (95% CI)	Previously treated patients (95% CI)	All patients (95% CI)
DST results	3065	1893	4958
Susceptible	2374 (77.46%) (75.93 – 78.92%)	1196 (63.18%) (60.96 – 65.36%)	3570 (72.01%) (70.73 – 73.25%)
Any drug resistance	691 (22.54%) (21.10 – 24.10%)	697 (36.82%) (34.64 – 39.04%)	1388 (28.02%) (26.77 – 29.29%)
MDR	87 (2.84%) (2.28 – 3.49%)	220 (11.62%) (10.21 – 13.15%)	307 (6.19%) (5.54 – 6.90%)
MDR + any second line injectable agent (SLI)	6 (6.90%) (2.57 – 14.41%)	5 (2.27%) (0.74 – 5.22%)	11 (3.58%) (1.80 – 6.32%)
MDR + any fluoroquinolone (FQ)	21 (24.14%) (2.57 – 14.41%)	46 (20.91%) (15.73 – 28.89%)	67 (21.82%) (17.33 – 26.87%)
Extensively drug resistant TB (XDR-TB)	2 (2.30%) (0.28 – 8.06%)	2 (0.91%) (0.11 – 3.25%)	4 (1.30%) (0.36 – 3.30%)

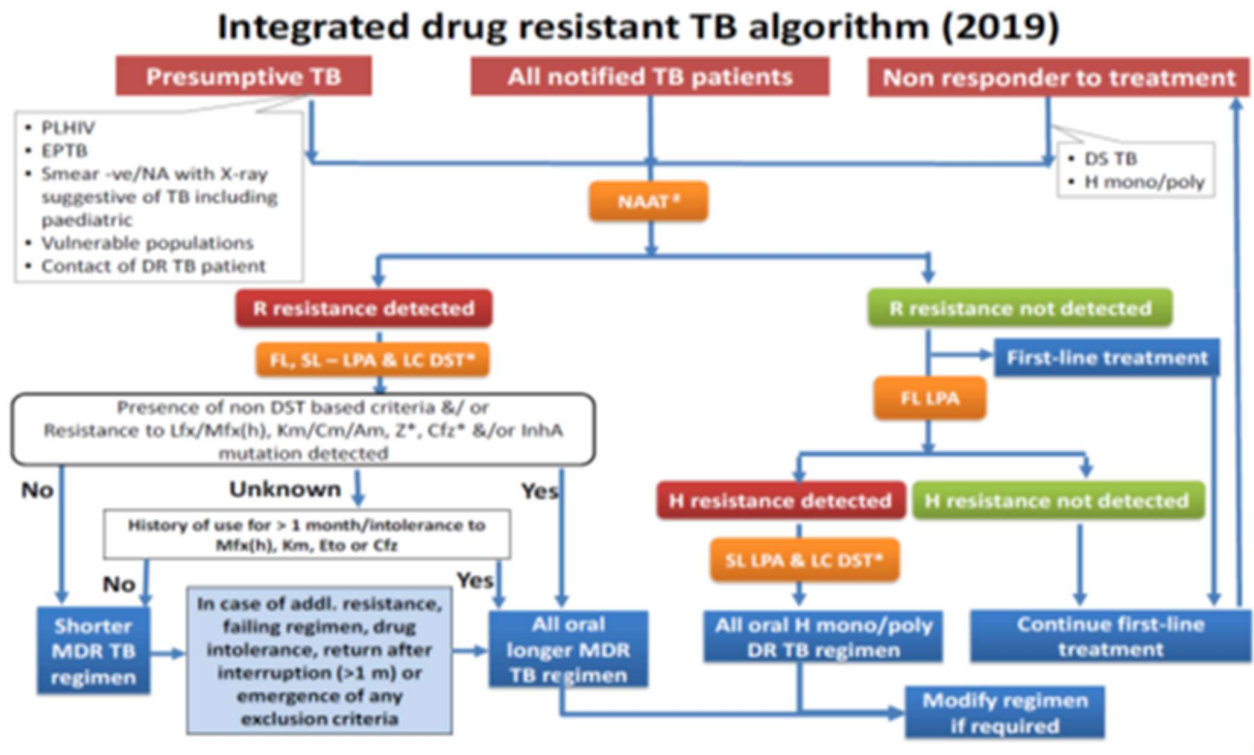
Achievements

The RNTCP initiated services for drug resistant TB (DR-TB) patients in 2007, and has in recent years made great strides since that start. Many new initiatives have been introduced to improve DR-TB care. The updated 2019 RNTCP PMDT guidelines are aligned with current global recommendations. “Universal” DST (i.e. testing of all TB patients for rifampicin [R] resistance) was initiated in September 2017 and scaled-up to the entire country from January 2018. Laboratory capacity has continued to be scaled up, with 1,530 cartridge based nucleic acid amplification molecular diagnostic (“CBNAAT” – 1,180 GeneXpert, 350 TrueNaAT) units available across the country (vis a vis NSP 2019 target of 1835), 64 laboratories conduct line probe assay (LPA) testing (vis a vis NSP 2019 target of 54), and second-line drug susceptibility testing (SL DST) is available in all States. The revised integrated DR-TB diagnostic algorithm recommends testing of all notified TB patients for rifampicin (R) and isoniazid (H) resistance, and all RR-TB patients for fluoroquinolone (FQ) and second line injectable (SLI) (Figure Y).

There is country-wide access to treatment regimens with new and repurposed drugs [FQ, linezolid [Lzd], clofazimine [Cfz]]. Namely:

- a) Bedaquiline (Bdq) containing regimen - a cumulative total of 7,965 patients have been enrolled up to September 2019;
- b) Shorter treatment regimen (STR) for DR-TB patients - a cumulative total of 46,129 patients have been enrolled up to September 2019;
- c) Regimen for isoniazid-resistant cases a cumulative total of 18,904 patients have been enrolled up to September 2019; and
- d) Delamanid (Dlm) containing regimen is available in 7 states (Chandigarh, Kerala, Karnataka, Lakshadweep, Orissa, Punjab and Rajasthan) for adults and in all states for children aged between 6 to 17 years - a cumulative total of 321 patients have been enrolled up to September 2019.

Figure Y



The 2019 guidelines recommend that the number of standard regimens for the various DR-TB patients be reduced from the current 11 to 3 (6-9 months regimen for H mono-/poly-resistant patients; 9 to 11 months STR regimen; a 18 to 20 months fully oral longer regimen containing new drugs for those RR-/MDR-TB patients ineligible for the STR – currently available in 7 states [Delhi, Gujarat, Kerala, Karnataka, Puducherry, Tamil Nadu and West Bengal]) (Table Z). Once all the necessary capacity building have been completed, the regimen will be rolled out to the remaining states. The choice and design of treatment regimens for children is as for adults.

Table Z: Standard regimen for initiating treatment of RR-/MDR-TB or H mono- or poly DR-TB (2019 RNTCP PMDT Guidelines)

H mono/poly DR TB (R resistance not detected and H resistance)		
All oral H mono-poly DR-TB Regimen	6 Lfx R E Z	
RR-/MDR-TB		
Shorter RR-/MDR-TB regimen	4-6 Mfx _{hd} Km/Am Eto Cfz Z H _h E	5 Mfx _{hd} Cfz Z E
All oral longer RR-/MDR-TB regimen	18-20 Bdq(6) Lfx Lzd Cfz Cs	

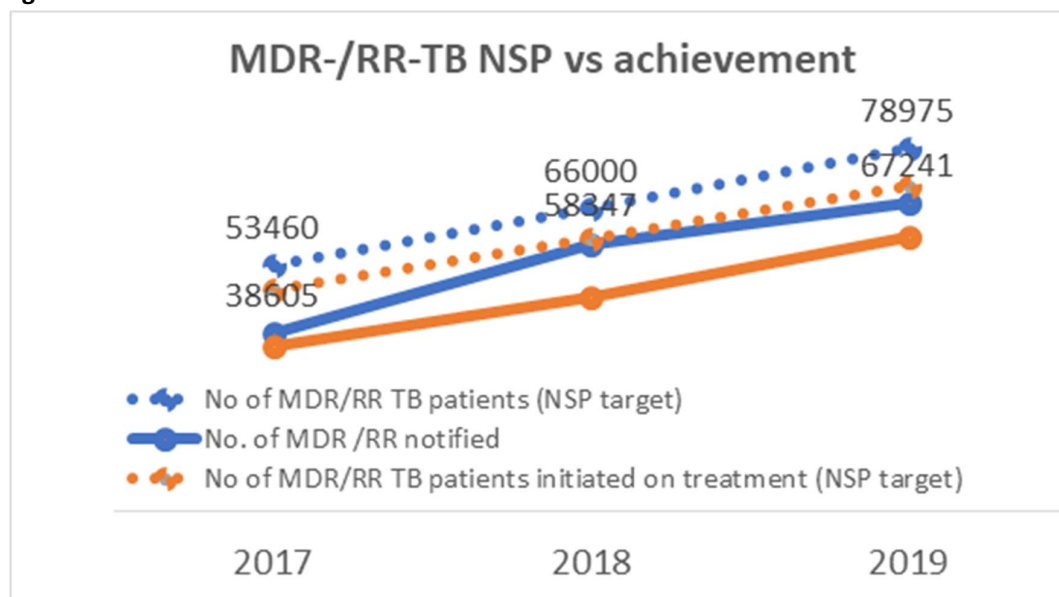
In 2019, an estimated 67,241 RR-/MDR-TB patients will be notified (85% of NSP target) . However, this equates to just 46% of the estimated overall MDR-/RR-TB burden as per WHO. Eighty-nine percent

(59,945) of the notified patients were placed on treatment (Figure Z). In 2019, 15,721 Hr-TB patients were notified (just 16% of NSP 2019 target, Figure W)¹.

Treatment is largely ambulatory, with the management and care of DR-TB having been decentralized to the district level predominantly. To date, there are 151 Nodal DR-TB Centres (NDRTBC) and 526 District DR-TB Centres. The NDRTBC are primarily responsible for the initiation of DR-TB who are ineligible for the STR, and managing patients who either have complicated disease and/or serious adverse events during their treatment.

Support structures for patients have been put in place. There is counseling provided to the patient and family via professional counseling services through NDRTBC, for cough etiquette and other aspects of airborne infection control, information on the disease and treatment, and linkages to social protection schemes, along with travel support for travel for sample collection, pre-treatment evaluation and adverse event management. Financial support via NYP of Rs. 500 per month is provided until completion of treatment.

Figure Z



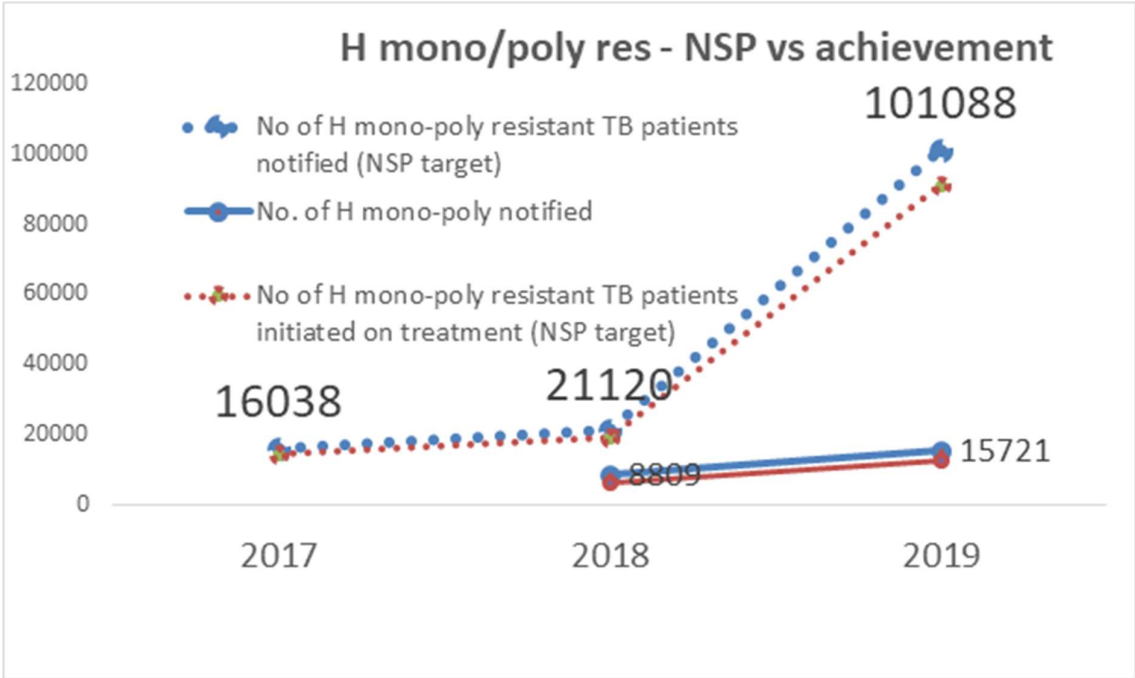
The private sector has been engaged in various aspects of the diagnosis and treatment of DR-TB patients, ranging from the provision of UDST to patients notified from the private sector, free diagnostics and drugs, availability of patient support mechanisms, and access to new drugs in coordination with the N/DDRTBCs.

States and districts have been provided with the for local purchase of second-line drugs (SLD) in the event of any drug supply chain issue in order to ensure uninterrupted availability of SLDs for the DR-TB patients. Active drug safety monitoring and management (aDSM) mechanisms have been introduced in partnership with the Pharmacovigilance Programme of India (PVPI). Initially a cohort event mechanism was implemented at the BCAP sites for the first 600 patients treated with

¹ Note that the presented totals for 2019 are annualized estimates based on data available up to September 2019.

bdeaquiline containing regimens. Subsequently, the intermediate package for active TB drug safety monitoring and management (defined by WHO as reporting of all serious adverse events and adverse events of special interest) was endorsed by RNTCP for roll-out to all sites treating DR-TB patients.

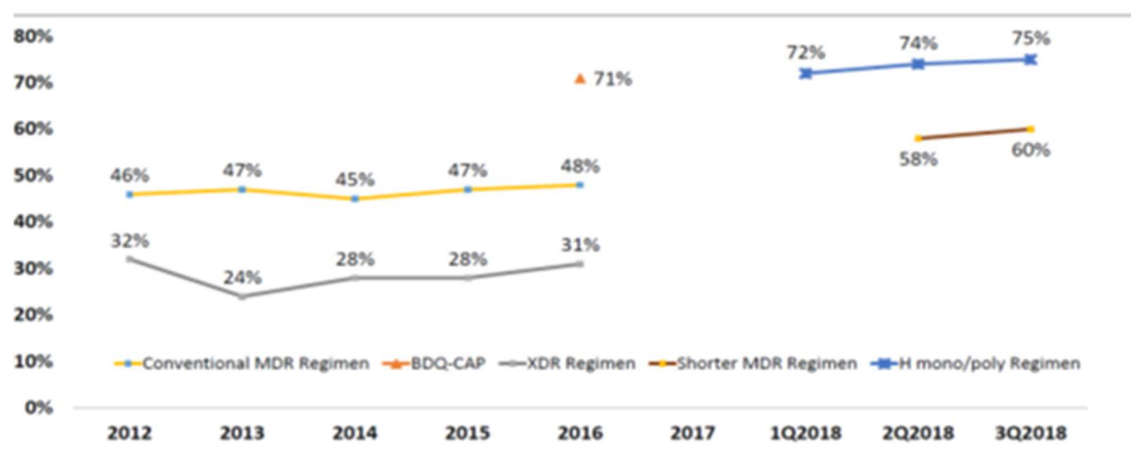
Figure W



Despite the many achievements of RNTCP in regard to the provision of PMDT, the reported treatment outcomes overall to date remain poor. The reported treatment success rates in the 2016 patient cohort were 48% for MDR-/RR-TB patients enrolled on the conventional MDR-TB regimen, and 31% for the treated XDR-TB patients (Figure V). However, patients treated under the BDQ-CAP initiative, who had more extensive resistant patterns, reported 71% success. Patients enrolled in later years on the STR and on the Hr-TB regimens had better-reported success rates, although 58-60% for the STR is lower than expected and program intends to analyze reasons for the same. .

Figure V

Success rate of DR-TB Regimen (%), (2012-3Q18)



Of the PMDT related recommendations from the JMM 2015, 2 have been completely achieved, 12 have been partially achieved and/or are ongoing². Those recommendations related to proposed research topics were “partially achieved” overall and are addressed in more detail in the respective chapter on research.

² Completely achieved (2): Consider revisiting treatment duration as per the WHO 2011 PMDT guidelines; The RNTCP should continue to procure SLDs at the Central level for the entire country. Partially achieved (12): The JMM recommends that the RNTCP carry out a study to understand the drivers of the DR-TB epidemic; The RNTCP should strengthen the e-health management information system between diagnostic facilities, programmatic units and treatment centres; The RNTCP should address the factors associated with unfavourable treatment outcomes and should - i. continue building capacity to offer DST at diagnosis in all TB patients, with prompt initiation of appropriate treatment, ii. promote and monitor STCI in the private sector, iii. modify treatment according to DST results, iv. ensure timely payments of enablers and incentives as per existing policy and offer nutritional interventions to patients and their families where appropriate, v. strengthen adherence monitoring and support via counselling, pharmacovigilance and community engagement, vi. explore and implement alternative patient adherence support systems, vii. implement scale up linked to local capacity for earlier detection and move towards universal DST as per the NSP 2012-2017; viii. introduce new drugs as per WHO recommendations (bedaquiline and delamanid); The MoHFW should strengthen the mechanisms for engagement of all uninformed medical colleges in RNTCP's PMDT activities, and enable private providers to have access to RNTCP's network of rapid diagnostic laboratories; The MoHFW should support better linkages for MDR-TB patients and families to social support schemes such as the RSBY, etc.

Challenges

Whilst the recent national DRS survey quantified the level of DR-TB burden in the country, the drivers of the DR-TB epidemic remain little understood. The targets laid out in the ambitious NSP are challenging in themselves. However, they need to be even more ambitious if the actual DR-TB epidemic in India is to be tackled.

Many of the challenges faced by RNTCP in implementing PMDT are cross-cutting, being impacted by many different areas of the health systems and partnerships. Human resources and their development remains a major cross-cutting issue for both the public and private sectors. This relates not just to adequate numbers of staff, but also their job responsibilities, and capacity. With the adoption of the updated 2019 PMDT guidelines, there will be a huge challenge related to their dissemination, training and implementation.

The terminology and implementation of “Universal DST” as practised today is somewhat misleading, being conducted on notified cases and a select group of presumptive cases rather than on all the presumptives (see Figure Y). Also although at a national level, it was reported that over 50% of notified TB cases had been tested for resistance to at least rifampicin, this varied across locations and sectors. For example, in Gorakhpur district, the overall figure was given as 45% (Q1-3 2019). However, the levels amongst those patients notified from the public and private sector were significantly different with that of private sector patients much lower (64% versus 17%) – this finding was seen more widely than just in the Gorakhpur district. Although improving, only 70% (29,217 / 41,611) of the notified RR-/MDR-TB patients during the Q1 – Q3 2019 had a SL LPA test conducted. Challenges were observed in sample collection, transportation, and turnaround time (TAT) of results versus implementation of the current (2017) diagnostic algorithm. TAT were reported in weeks or even months for rapid molecular based tests (with test times of 90 minutes [CBNAAT] and 36 hours [LPA]). The implementation of the 2019 diagnostic algorithm will require a significant increase in laboratory capacity, especially of the rapid molecular tests (CBNAAT and LPA), and DST for the new and repurposed drugs. It will also need to be revisited based on the recommendations of the NTEG - Diagnostics group, the new guidelines of CDC/ATS/IDSA and the upcoming WHO recommendations / guidelines.

Delays in pre-treatment evaluation and initiation of treatment were observed during the field visits. There was variable availability of the SLDs across the states, with uniform unavailability of pediatric friendly SLD formulations. The percentage of patients enrolled on Bdq-containing treatment regimens out of those who were eligible, was low and the reason for this was overall unclear although resistance by clinicians to initiate patients on the new drugs was observed by some field teams. Quality assurance (QA) systems under the local drug procurement mechanisms were unclear, and the agent tasked with such activities is not appointed. Drug stock management and storage at state and district level were observed to be sub-optimal.

It was observed in certain sites that the management and care of the DR-TB patients had not been completely decentralized. The respective teams were however unable to explore this issue further to gain a better understanding of the reasons for this. But at other sites, issues were observed with infrastructure at the district hospitals, training and linkages for pre-treatment evaluation. However

there were consistent concerns from the observations of the JMM from the field visits, related to supervision activities and the monitoring of the quality of patient care. The supervisory staff were observed to be heavily engaged in more administrative processes (e.g. DBT distribution) to the detriment of field supervisory activities. The quality of patient care, taking in various aspects such as counselling, laboratory investigations, treatment adherence, adverse events monitoring and management, follow-up examinations and patient support, was observed to be of concern. As yet, the integrated DR-TB module is not available in Nikshay. Also the NDRTBC do not have access to the patient related information and district level data, which creates challenges to monitoring the progress of patients.

A final challenge is linked to the reality of the rapidly evolving global landscape in regards to DR-TB diagnosis and treatment. The country needs to keep pace with such global developments and the changes rapidly fed into the country's national policy, medical education and health systems, with timely dissemination to all relevant providers.

Recommendations

- The RNTCP conducts a study to better understand the drivers of the DR-TB epidemic in India. Whole genome sequencing should be applied appropriately to support said study and surveillance activities.
 - A better understanding of the burden of DR-TB in the private sector is also required and RNTCP needs to explore how this can be assessed.
 - Institutional strengthening of DR-TB spaces: National, State and District level with capacity building, ensured staffing, mentoring, monitoring and reporting linkages. Specialized tertiary level institutions to be introduced at the top of the proposed tiered network of DR-TB care institutions.
 - Use of modern technologies and methods (e.g. use of e-platforms, blended learning, etc) for capacity building (both via pre- and in-service training), mentoring and monitoring of said activities.
 - Align and streamline health information systems between diagnostic facilities, programmatic units and treatment centres to ensure timely transmission of all relevant information/data, with complete linkage and integration to Nikshay and Nikshay aushadhi.
 - Fast-track UDST for all notified TB patients, while ensuring availability of diagnostics and scale-up of laboratory capacity, including the required LPA capacity, for implementation of the 2019 integrated algorithm in line with the envisaged scale-up of DR-TB diagnosis and treatment.
 - To fill access gaps, engage with the private sector network of laboratories for end to end operations (turn-key model) including specimen collection, transportation, reflex sequential testing as per national algorithm, testing for pre-treatment evaluation and providing reports with timely TAT for patient management, in line with the STCI. RNTCP can learn from the experience of the National AIDS Control Organization on the outsourcing of viral load testing to private sector laboratories.
 - Ensure uninterrupted availability of quality assured SLD, including pediatric formulations, “new” drugs and regimens, and repurposed drugs, in public and private sector, using domestic funding. Perform frequent forecasting and quantification exercises at least for six monthly procurement planning which needs to be supported by frequent assessment (once in two months) of drug consumption trend and SLD stocks in pipe-line.
 - Ensure quality of local drug procurement mechanisms, including urgent hiring of in-country agent.
 - Initiate in-country discussions regarding licensing under the Patents Act of the “new” drugs (e.g. Bedaquiline and Delamanid) i.e. allowing for generic manufacture and supply, for reducing price and improving access
 - Ensure strict adherence and monitoring of Schedule H1. Consider prescription audits from private sector.
 - Introduce quality improvement tools to monitor and ensure quality of care, to include:
 - o Conduct urgent situational assessment of the decentralization of DR-TB care, and take appropriate actions as identified to complete this process and subsequently monitor activities. To clearly outline the work functions of each level of DR TB care management ranging from peripheral most centres to Nodal DR-TB Centres.
 - o Track, monitor and support patients, both in the public and private sectors, from timely diagnosis (including provision of required DST), prompt initiation of the optimal treatment regimen, to completion of treatment with appropriate follow-up during and after treatment
 - o Introduce quality improvement tools to monitor and ensure quality of care for patients. This should include an assessment of the quality of supervision by the RNTCP supervisory staff.
 - o Consider additional nutritional support through the public distribution system
 - o Assess implementation of aDSM activities and revise guidance on aDSM as required.
- Use of modern technology to strengthen peer-led learning and decision making mechanisms of the management of adverse events in DR-TB patients during treatment

- o Strengthen the linkages between the routine service facilities and the network of specialized referral centres for surgical intervention, management of DR-TB in extra-pulmonary TB, DR-TB with co-morbidities, Pediatric TB, etc.
- o Widen coverage under Ayushman Bharat to include TB patients requiring hospitalization for longer than 24 hours
- o Two-year post-treatment follow up of successfully treated DR-TB patients to detect relapse at an early stage
- o Expedite DR-TB module integration into Nikshay, grant access to Nikshay to NDRTBCs, ensure optimum use of Nikshay for monitoring of patient management.
- Prioritize introduction of new drugs and/or regimens for DR-TB treatment via feasibility and/or implementation assessment under programmatic conditions i.e. “Deploy, Evaluate, Adopt and Scale-up”, with the priority on building the evidence base for an all oral shorter treatment regimen for DR-TB patients
- Pilot/conduct operational research for LTBI treatment among contacts of confirmed DR-TB patients
- Use the in-country opportunities to learn from the best practices from the different states and districts:
 - o Provision of free diagnostic services via the NHM “Free Diagnostics Initiative” – it should be expanded to cover the tests required for pre-treatment evaluation and follow up of DR-TB patients
 - o First Referral Units through NHM – could support pre-treatment evaluation
 - o Community engagement
 - o Best practices from BDQ-CAP project
 - § Engagement of PVPI for aDSM
 - § Monitoring and follow-up
 - § Dissemination of drug safety finding among physicians
 - o Availability of e-platforms like the ECHO platform and peer-led learning and decision making mechanisms
- Convene regular national level deliberations on evidence-based recommendations by WHO and other international bodies for inclusion in the national PMDT guidelines – create it as a “living document” which can be timely fed into country’s health and education systems, disseminated widely, implemented and monitored.
- Document and disseminate the RNTCP’s PMDT related experiences onto the global stage.
- Consider establishment of an additional monitoring cell at National level to monitor the implementation of new regulations, legislations, gazette notifications and policy recommendations being released from time to time by the programme.

Annexure 1: Progress against last JMM recommendations

Recommendations of JMM 2015	Status of action taken	Action Taken
RNTCP to carry out a study to understand the drivers of the DR-TB epidemic, including whole genome sequencing where appropriate. In addition, they should explore how the burden of DR-TB in the private sector can be assessed (by end of 2015).	Partially implemented	Programme has develop the protocol to do sentinel surveillance at selected sites which includes high burden settings, to assess the pattern of strains prevalent in country. Estimated burden of MDR RR TB and H Mono/poly patients is carried out under NSP 2017-25, however, segregated estimates for public and private sector is not carried out.
The RNTCP should strengthen the e-health management information system (e-HMIS) between diagnostic facilities, programmatic units and treatment centres to ensure timely transmission of DST results, initiation of treatment, adherence monitoring and follow up, and link these systems to NIKSHAY by the end of 2015	Partially implemented	Nikshay version two is integrated with majority of DR-TB requirements. Data entry and access to the patient wise information is available through health facility user. Feature to add test results for any TB patients from any lab for specific Nikshay ID is already created to ensure the data entry at the source. Additional system on aDSM is being incorporated. Access to the DR-TB patients belonging to other districts for the DR TBC is under development.
The RNTCP should continue building capacity to offer DST at diagnosis in all TB patients, with prompt initiation of appropriate treatment	Partially implemented	The policy of "Universal" DST has been initiated since January 2018 for all diagnosed patients, including those who are notified from the private sector. Second line DST for all Rifampicin Resistant and Isoniazid resistance is also recommended by policy at base line and during the course of treatment at specific time. There are various implementation challenges.
RNTCP should promote and monitor Standards of TB Care in India (STCI) in the private sector	Partially implemented	Dissemination of information on STCI and other programme services to private sector via CMEs and other sensitization programme is being carried out. Professional agency like India Association of Paediatric and India Medical Association is involved through formal MOUs to carry sensitization activity for private practitioners. DR-TB is one of the important component of the content being disseminated.
RNTCP should modify treatment according to DST results, keeping in mind the variable reliability of the DST against some drugs, notably the bacteriostatic agents;	Partially implemented	DST for Rifampicin for all notified TB patients is already implemented. Additionally, provision of SL LPA for all Rifampicin resistant and Isoniazid Resistant is already introduced. LC DST to Mfx, Km, Cm for all Rif resistant cases is made available under programme. In revised guidelines for PMDT -2019, FL LPA to evaluate the InhA mutation (for Ethionamide) is proposed to be carried out for all MDR RR TB patients in addition to DST for Pyrazinamide, Clofazimine and Linezolid. Regimen is modified as per the DST results.
RNTCP should ensure timely payments of enablers and incentives as per	Partially implemented	All notified patients including DR-TB patients are eligible for nutritional incentive (Nikshay Poshan Yojana) of Rs.

existing policy, and offer nutritional interventions to patients and their families where appropriate;		500 per month till the completion of treatment. Travel reimbursement for DR-TB patients is already the policy which is implemented partially in the country.
RNTCP should strengthen adherence monitoring and support via counselling, pharmacovigilance and community engagement	Partially implemented	Project on counselling support is implemented in 5 states for DR TB patients and treatment interrupters of DSTB, active drug safety monitoring (aDSM) is implemented for all DR TB patients under PMDT guidelines - 2017. To engage and empower the community, National, State and District level forum are established.
RNTCP should explore and implement alternative patient adherence support systems, such as those that make use of ICT to monitor adherence for those who cannot be under direct observation;	Partially implemented	99 DOTS, MERM, Video DOT and other e-compliance technology are already implemented under the programme. More than 400 DR TB patients are initiated on MERM at various pilot sites.
RNTCP should implement scale up linked to local capacity for earlier detection, and move towards universal DST as per the NSP 2012-2017 to cover the following: o priority groups (PLHIV, paediatric age group, EP-TB and smear negative PTB) to be tested with rapid molecular diagnostic methods (CBNAAT) as part of the diagnostic algorithm, with strengthened supervision and monitoring of PMDT services across the whole of the country by the end of 2016; o baseline DST plus initial second-line DST for all detected MDR/RR-TB cases (by the end of 2016); o DST for isoniazid (H) and rifampicin (R) in all registered TB patients using rapid molecular tests (CBNAAT/LPA) by the end of 2017; and o any detected H/RR-/MDR-TB cases to have DST guided treatment using rapid molecular tests and liquid culture (to be guided by results of the five district pilot).	Partially implemented	DST for Rifampicin for all notified TB patients is policy and has been initiated. Additionally, provision of SL LPA for all Rifampicin resistant and Isoniazid resistant is policy and being introduced country wide. LC DST to Mfx, Km, Cm for all Rif resistant cases is made available under programme. In revised guidelines for PMDT -2019, FL LPA to evaluate the InhA mutation (for Ethionamide) is proposed in addition to DST for Pyrazinamide, Clofazimine and Linezolid for all Rif resistant cases. Regimen for MDR RR TB patients and H mono/poly patients is modified based on the DST results.
RNTCP should consider revisiting treatment duration as per the WHO 2011 PMDT guidelines	Completely implemented (but now redundant with RNTCP 2019 PMDT guidelines being approved)	PMDT guideline 2019 has reduced the duration of longer regimen for MDR RR TB patients to 18 months to align it with global recommendations. Regimen for XDR TB patients is of 20 months. Programme has already initiated more than 46000 MDR RR TB patients on shorter MDR TB regimen (9 to 11 months regimen) since its implementation in April'2018.

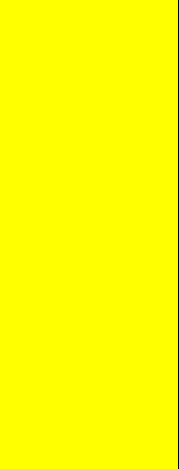
RNTCP should introduce new drugs as per WHO recommendations (Bedaquiline and Delamanid)	Partially implemented	Bedaquiline is introduced in entire country for >18 yrs age group while Delamanid in 7 States for same age group. Delamanid for 6 to 17 yrs of age group is introduced in entire country. More than 8000 patients are initiated on Bedaquiline containing regimen while on Delamanid, 320 patients are initiated.
The RNTCP should continue to procure SLDs at the Central level for the entire country to achieve economies of scale and ensure an uninterrupted supply of quality assured SLDs.	Completely implemented	All SLDs are being procured at central level, however, to avoid interruption of supply, provision of procurement of 25% of annual drugs and lab consumable requirement is made under National Health Mission - disease flexy pool at state level.
The MoHFW should strengthen the mechanisms for engagement of all uninvolved medical colleges in RNTCP's PMDT activities, and enable private providers to have access to RNTCP's network of rapid diagnostic laboratories. Similarly, laboratory services may be outsourced to RNTCP certified private laboratories as per the partnership guidelines wherever necessary.	Partially implemented	A governing body of Medical College has issued a Gazette notification regarding the requirement to establish MDR TB treatment facility in each Medical college to get the student admission approval from the authority when the college is applying for 5th year renewal. Reagent rental model is implemented in few states to outsource the laboratory services for TB detection. Few states have collaborated with private laboratories for service delivery in recent past.
The MoHFW should support better linkages for MDR-TB patients and families to social support schemes such as the RSBY, additional nutrition through public distribution systems, etc.	Partially implemented	In addition to Nikshay Poshan Yojana of Rs. 500 per month till the completion of treatment, all TB patients are being linked to the various social welfare schemes at state level. Certain conditions where in the TB patients are in need of admission are already covered in Ayushman Bharat yojana (Health insurance scheme), Additional provisions are being incorporated under Ayushman Bharat yojana.
<p>The RNTCP and the TB research network should consider the following research topics:</p> <ul style="list-style-type: none"> • A rapid validation of SLD LPA susceptibility tests • Implementation research on shorter DR-TB regimens • Assembling the evidence for the treatment of H mono-, and poly, non-MDR resistance • Pre- and post-treatment DST for cases receiving daily FDC treatment to study if the daily regimen reduces the risk of failure, relapse and amplification of DR 	Partially Implemented	<p>SL LPA validation complete and 46 SL LPA testing facilities certified to perform the test. More than 100,000 SL LPA tests performed since April 2018</p> <p>STR implemented since April 2018, and >35,000 patients initiated on treatment till date</p> <p>H mono/poly regimen in 2016. Regimen revised to an all oral regimen of 6 months duration since Dec 2018. More than 15,000 patients initiated on H mono/poly regimen</p>

in patients with initial H mono- and poly non-MDR resistance

- The frequency and severity of post-treatment sequelae

- The impact of molecular TB diagnostics on patients' outcomes, in addition to access to diagnosis and treatment

- Document and disseminate the PMDT related experiences of RNTCP on the global stage.



Annexure 2: Background of the mission and ToRs

JOINT MONITORING MISSION OF THE REVISED NATIONAL TUBERCULOSIS CONTROL PROGRAMME (RNTCP) INDIA -2019

Introduction

The World Health Organization Country for India (WHO India) is the key health agency providing technical assistance to the Revised National Tuberculosis Control Programme (RNTCP) India.

As part of a third party independent monitoring and evaluation exercise globally WHO has a formal mechanism for review of the National Tuberculosis Programmes. The aim of such a review is to assess the programme's contribution to TB prevention and control and to identify the gaps in the implementation of the present programme and to make recommendations for needed improvements in the programme's implementation as well as for future strategic planning of TB prevention and control activities.

In India these reviews have been conducted every three years since early 2000 and the last review was conducted in the year 2015.

The current JMM is being planned this year with the objective review the achievements and gaps against the targets proposed National Strategic Plan 2017-2025 for TB in India.

Background

India, the second most populous country in the world with a population of 1.35 billion, has a disproportionate burden of an estimated 2.8 million incident TB cases of the 10.4 million cases contributing to 27% of the global burden. In addition, it is estimated that 135,000 MDR cases emerge every year of which the RNTCP would be able to identify around 65,000 from among the notified cases. India's TB control programme is on track as far as reduction in disease burden is concerned. There is 42% reduction in TB mortality rate by 2018 as compared to 1990 level. Similarly, there is 51% reduction in TB prevalence rate by 2018 as compared to 1990 level. Tuberculosis incidence per lakh population has reduced from 300 in year 1990 to 204 in 2017.

Revised National TB Control Programme of India (RNTCP) the flagship public health programme, based on the internationally recommended Directly Observed Treatment Short-course (DOTS) strategy was launched in 1997. It was expanded across the country in a phased manner with support from World Bank and other development partners. Complete nation-wide coverage was achieved covering a population of over a billion (1114 million) in March 2006. Programmatic Management of Drug Resistant Tuberculosis (PMDT), as an integral component of RNTCP to diagnose and treat drug resistant TB cases was launched in 2007 and achieved countrywide coverage by March 2013, thus catering to a population of 1249 million. In terms of treatment of patients, RNTCP has been recognized as the largest and the fastest expanding TB control programme in the world.

In 2018, RNTCP was able to achieve a notification of 2.15 million. This is a 16% increase as compared to 2017 and the highest so far. Of the total notification, 25% (0.54 million) cases was from the private sector; a 40% increase from last year. Among the notified, treatment was initiated for about 1.91 million cases (~90%), across both public and private sectors. This indicates increased engagement with private sector providers and patients seeking care from them. The characteristics of the affected 2

population largely remain similar with majority of the affected individuals being in the age group of 15-69 years and 2/3rd being males. HIV co-infection among TB was nearly fifty thousand cases accounting for about 3 % of all notifications.

The improved notification has been achieved through increased access to TB diagnostic services. The laboratory network of RNTCP includes 6 National reference laboratories, 31 Intermediate reference laboratories. 48 Certified laboratories provide Liquid Culture and DST services; 62 certified laboratories provide LPA services. 1180 CBNAAT facilities developed at district and sub district levels offer decentralized testing for TB and Rifampicin resistance. In 2018, the TrueNat test, an indigenously developed technology under the “Make in India” initiative, was deployed in about 350 PHCs. This marked the further decentralization and increased access to highly sensitive molecular tests with augmented capacity for resistance testing at the peripheral level.

Building on this large laboratory network, Universal Drug Susceptibility Testing (UDST) has been implemented, whereby Drug Resistance and Drug Susceptibility tests are made available throughout the country free of cost to the patient. In 2018, 2.4 million CBNAAT tests were performed. UDST was offered to approximately 60% of those eligible. With this intervention, approximately 66,000 Rifampicin Resistant cases were detected early. With second line LPA, 23,000 patients with additional resistance to second line drugs were detected which included 3794 XDR TB patients. Further, with First Line LPA, about 13,000 patients were detected with resistance to Isoniazid.

In 2017, India also took a bold decision to actively search for TB among vulnerable and marginalized groups. Under active case finding activities nearly 150 million population have been screened, yielding an additional notification of 50,000. To facilitate improved access to diagnostic facilities during the active search in remote areas, 80 Mobile TB Diagnostic Vans have been made available under the programme.

In order to manage drug resistant TB, treatment centres have been expanded with decentralization to district level, newer drugs introduced, duration of treatment shortened and drug safety monitoring strengthened. From the 148 nodal DRTB centres at the state level, care has been decentralized to 509 district level DRTB centres. Additionally, treatment initiation is made more patient friendly as it is possible to initiate treatment on an Out-Patient basis. Shorter regimen for MDRTB, where treatment duration has been shortened by half, has been introduced across all states in the country, benefitting nearly 16000. Regimens, with Bedaquiline and Delamanid, have been made available across the country, with nearly 3000 patients enrolled. Delamanid use in children from 6 to 17 years has also been introduced.

TB co-morbidities, especially HIV, Diabetes and tobacco have been prioritized. The single window delivery of TB and HIV services for all People Living with HIV (PLHIV) receiving care in the ART centres have been streamlined with improved coverage. Over 90% of PLHIV are being screened in ART centres for TB symptoms, and nearly 0.6 million PLHIV have been given access to rapid molecular testing via CBNAAT for TB diagnosis. Nearly 0.1 million TB/HIV patients were initiated on daily drug regimen and 0.5 million PLHIV were initiated on TB preventive therapy till December 2018. These interventions along with the joint collaborative activities helped in reducing TB related fatalities by 82% (from baseline 2010). RNTCP has expanded its collaboration with Diabetes and Tobacco control programmes and is being 3

further strengthened with cross linkage of services. Nearly 36% and 27% of the TB patients in public sector have been screened for Diabetes & Tobacco usage respectively and linked to appropriate services through the Non-Communicable Disease Program and the Tobacco Control Program.

Direct Benefit Transfer (DBT), which entailed targeted and transparent delivery of benefits to citizens through effective use of technology has been implemented through four schemes of RNTCP namely Nikshay Poshan Yojana (NPY), Honorarium to Treatment Supporters, support to TB patients from Tribal areas and Incentives for Notification and treatment outcomes to Private Providers and Informants. During the period from April 2018 to March 2019, more than 1.5 million beneficiaries have received benefits of 2.4 billion in total under Nikshay Poshan Yojana, through 2 million transactions. The treatment supporters were paid a total of Rs. 170 million as honorarium. Patients from tribal areas received a total of Rs. 18 million as treatment support. Approximately Rs. 10 million were paid to private providers as incentives for notification.

RNTCP is supported by many development partners such as USAID, BMGF, FIND, CHAI, CHRI, The UNION, REACH, GHS, Abt. Associate, WHP, KHPT, PSI and SAATHII. They work in tandem with the program for generating evidence, strengthening existing services and in testing, implementation and scale up of newer interventions.

To End TB by 2025, expansion of TB services and addressing determinants of TB that are beyond health through a multi-sectoral approach is necessary. RNTCP has established a national level committee including membership from 17 Ministries. The Department of Post and the Department of Financial Services have been supporting expansion of TB services and formal engagement processes have been underway with the Department of Ex-Servicemen Welfare and Ministry of Labour & Employment. Effective program implementation is also dependent on local accountability and ownership, by the close involvement of the civil society, community and Panchayati Raj Institutions. For such a community-led response to address the challenge of TB, National, State and District TB Forums have been formed. In addition to the National level TB Forum, 22 States and 351 District have formed till date. TB champions/ Kshay veers are being recognized and engaged for effective engagement of civil society and affected communities.

The last two years have seen a number of bold policies and interventions aligned with the ambitious National Strategic Plan for ending TB in India. The next two years will be focused towards streamlining, strengthening and intensifying these to bring about the most optimum and impact.

In 2018, about 12.1 million were screened using microscopy and CBNAAT and 1.6 million were notified which includes clinically diagnosed in the public sector. An additional 0.5 million cases were notified from the private sector. Among those diagnosed 1.9 million (89%) were initiated on treatment. Quality-assurance for all technologies have been established across the laboratory network including engagement of private, corporate and non-governmental sectors. The country is striving to achieve excellence in maintaining quality by offering technical support to the diagnostics laboratories of the public sector for accreditation by ISO 15189 standard (National Accreditation Board for Laboratories – NABL) and currently 16 public sector laboratories have achieved this benchmark. Almost all private/corporate sector laboratories engaged with RNTCP possess NABL accreditation. 4

Based on mutual agreement with the Government of India (GoI), the World Health Organization Country Office for India (WCO-India) has every three years organized a Joint Monitoring Mission (JMM) along with technical, developmental, and implementing partners of the RNTCP. The JMM recommendations are used by RNTCP and partners to coordinate and guide policies and planning for more effective TB control efforts. The last JMM was held in March 2015 and reviewed at length the national strategic plan and provided recommendations for implementation strategies. This year, the JMM is planned from 11th to 22nd November 2019 with the objectives to review the country's progress towards Universal access to TB care, challenges and plans for TB control efforts, and to advise GoI and partners on the pathway towards strategies in line with End TB Strategy. The mission is expected to provide inputs on strategic approaches and innovative mechanisms for achieving the key targets of National Strategic Plan 2017-25. The recent crucial decisions of GoI to accelerate TB control efforts for achieving the targets for TB control as per Ending TB by 2025 would require guidance on innovative strategies and resources.

General objectives

To review the progress, challenges and plans for India's TB control efforts, and to advise GoI and partners on the pathway towards achieving Universal Access to TB care.

The Key objectives and Terms of Reference of the Mission are:

1. Mid-term assessment of the National Strategic Plan 2017-25 and recommendations for course corrections.
2. Assessment of the current performance and sustainability of the Programme and development of recommendations for future activities
3. Assessment of the TB surveillance system, monitoring & evaluation strategy and analysis of the epidemiological data including digital initiatives
4. Assessment of diagnostics of TB and MDR TB in the country and the operation of the laboratory network
5. Assessment of the implementation of basic TB services and programmatic Management of Drug Resistant TB.
6. Assessment of Partnership strategies and progress within and outside health sector for ending TB in India.
7. Assessment of Research priorities and its progress.
8. To assess the collaborative framework for TB comorbidities, its implementation, gaps analysis and recommendations thereof.
9. Assessment of Child TB including DR TB diagnosis and management.
10. Assessment of the diagnostics and anti-TB drug procurement and supply chain management
11. Assessment of current engagement with civil society organizations (CSOs) and patient groups, and of the extent to which their potential contribution to the detection, treatment and care of individuals with TB is maximized
12. Progress on implementation of Multisectoral accountability framework and addressing determinants of health.
13. Social Protection and nutritional support.
14. Assessment of strategies and progress for Management of latent TB infection among PLHIV and Children in India.

15. Assessment of Human resources and development, health system strengthening and programme financing.
16. Assessment of Technical assistance requirement for the programme to facilitate ending TB in India.
17. Present specific recommendations regarding the actions and priorities for ending TB in the country as per the set targets of 2025.

The evaluation team used qualitative and quantitative methods for collection of information, including an analysis of TB surveillance data. Before the field visit, the team members will study the documents made available to them by the national counterparts and relevant documents obtained from the public domain. During the review the team of experts will conduct field visits and have meetings with relevant authorities in the district and state. They will also have one-on-one interviews with relevant stakeholders at the national and local level.

Participants

Participants include experts from technical agencies, developmental agencies, national institutes, medical colleges, and civil society. Full review participants are expected to be available for the entire period (November 11th to 22nd 2019). In addition, some participants will join the team later to participate in the thematic discussions and report writing.

Time frame

The review will take two weeks, starting on 11th November 2019, with the summary findings and recommendations reported on 22nd November 2019 in a dissemination meeting. The final debriefing on 22nd November to a wider audience will serve for general dissemination of JMM findings, and will be followed by a press conference.

Background information

The review participants will have access to the information and documents available to the programme. The following documents will be available electronically two weeks prior to the review:

1. A briefing document covering epidemiology, monitoring and evaluation including notification, PMDT and TB/HIV updates, updates on research, ACSM including project Axshya and PPM
2. National Strategic Plan 2017-25- soft copy by e-mail and summary of NSP
3. Standards for TB Care in India
4. Revised Technical and Operational guideline (TOG) for RNTCP
5. TB India 2019- RNTCP status report
6. Revised PMDT Guidelines 2019
7. Action taken report on JMM2015

Methodology & Selection of States-Districts

States were purposively selected based on the potential to inform specific thematic area deliberations and feasible/safe travel.

1. Assam – Kamrup Metro and Tinsukia
2. Chhattisgarh – Raipur and Bilaspur
3. Kerala – Wayanad and Thrissur
4. Rajasthan – Ajmer and Udaipur
5. Tamil Nadu - Kanyakumari
6. Uttar Pradesh – Lucknow and Gorakhpur

Field Visits for the selected 11 districts in 6 states has been planned from 12th-16th November 2019. Each of the State teams will be divided into 2 groups each visiting one of the two identified districts to review the RNTCP services. Each State team will prepare a short report on the field visit including achievements, challenges and possible solutions, feasibility and expansion of the newer strategies as envisaged in the NSP. Where feasible with travel and local availability, one group would debrief State officials on 16 April; else state-level debriefing would occur in Delhi on 22nd November.

The team will review the programme data, assess performance and visit the key institutions in the states and districts at all levels up-to the village level, interact with multi-sectoral stakeholders and grass root level health functionaries, laboratories, treatment sites in public sector and private providers, chemists, patients, civil society, community representatives, associations and key government technical and administrative officials of state and districts.

THEMATIC AREAS

The Joint Monitoring Mission will focus on a number of thematic areas, each of which will have one lead member primarily responsible for the coordination and writing the report along with 4-5 members with expertise in the concerned thematic area. Each session will start with the current situation/progress so far, move to the main issues for discussion (to be identified by the lead) and then discussion of recommendations for the implementation of activities in the area under NSP. The thematic areas of focus are as follows.

1. Case Finding

The team will discuss the implementation of 2017-25 strategy for early and complete detection of all TB cases including intensified case finding strategies and addressing high risk population. The team will review the revised technical and operational guidelines (TOG) and recommend strategies for implementation.

2. Diagnostics and laboratory services

The team will review implementation of 2017-25 strategy with particular focus on revised lab expansion plan, planning for scale-up of new diagnostics within revised TOG. Diagnostic algorithms to promote rapid and enhanced detection of TB cases of all forms, in both adults and children, and public-7

private partnerships for purchasing laboratory services, including specimen shipment need to be reviewed. This session will also be used to review the regulatory frameworks and setting of minimum expected performance standards for TB tests in India.

3. Treatment

The team will review the treatment options with first- and second-line drugs, regimens and treatment support and provide recommendations accordingly. Team will provide recommendations on options country need to adopt for better compliance from patients and providers.

4. DR-TB and PMDT

The mission will discuss the 2017-25 strategy, current implementation of the MDR-TB as per the Updated PMDT guidelines 2019 and expansion plan. Many of the other technical areas (diagnostics, pharmaceuticals) are integral to the MDR-TB strategy and will be discussed in detail in the relevant sessions. Team will review TOG including DST guided treatment. Team will review the surveillance strategies including plans for sentinel surveillance.

5. Public-Private Mix (PPM) and Urban TB control

Most TB patients seek care initially in the private sector, incurring unnecessary out-of-pocket expenditure, diagnostic delay, and they are frequently subject to unreliable testing. The program's ambitious new objectives for 2017-25 required scaled-up and effective engagement with the private sector, including extension of case reporting to the private sector. The mission will review the implementation of PPM strategies in light of experience so far in India and internationally. The group will also review the other initiatives for strengthening urban TB control including existing urban TB control models in the country.

6. TB/HIV

The mission will review the implementation of 2017-25 strategy, current implementation of the TB/HIV collaborative activities, strategies for early diagnosis of TB among HIV patients and early detection of HIV and management among TB patients. The mission will review implementation of Isoniazid Preventive therapy.

7. Pediatric TB

The mission will review implementation of pediatric TB diagnosis and management practices including TB/HIV and MDR-TB among children, review implementation of innovative pediatric TB project in urban cities and recommend for implementation of improved management of pediatric TB under the programme including strategies for better PPM.

8. Human Resource Development

The mission will examine the human resource aspects of 2017-25 strategic plan, the human resource development plan including National State and district level HRD, health system human 8

resource management and management of contractual staff in the context of alignment with general health system.

9. Epidemiology, surveillance and M&E including notification system

The mission will review the epidemiological situation in India including strategies for disease burden estimation, strategies for monitoring and evaluation. The team will review the web-based case-based notification system NIKSHAY including private notification and suggest recommendations for strategies on TB surveillance in India

10. Programme financing and Health System Strengthening

The mission will review programme financing, vis a vis the NSP and resource availability. The team will also review the integration of TB services with general health system and alignment with NRHM programme management units. Also, opportunities for TB programme to support strengthening general health system such as Practical Approach to Lung health (PAL), Laboratory capacity strengthening, collaboration with NCD programme etc will be discussed. Possible collaboration with maternal and child health care programmes and ways to do that will also be explored. The team will review the procurement and logistic systems and provide recommendations.

11. Research

The mission will review research need, capacity and capacity development for operational research and implementation science especially in the context of the NSP. The team will also identify specific research questions which need to be answered on priority. The team will review opportunity for greater collaboration in research and development in TB and explore ways in which national and international alliances can be created for this.

12. Community Engagement and Advocacy, Communication and Social Mobilization (ACSM)

Increased demand for effective diagnosis and treatment and active participation of the affected community will be essential to achieving the program's 2017-25 targets, and the mission will assess the implementation in light of evidence for effectiveness from India and internationally. Under this thematic area the mission will also assess equity in access to services including special outreach to vulnerable sections of the population. Mission will also review the Project Axshya implementation and provide recommendations.

13. Technical Assistance for TB control in India

The team will review technical assistance needs for achieving Universal Access, and the role of WHO and other technical partners, current plans. The team also discusses and recommends both WHO and GoI on sustenance of quality technical support for TB control in India and on necessary financial sources for the same. The team will also discuss the steps with time line for strengthening Central and State programme capacity to sustainably assume and incorporate into RNTCP technical assistance to lower levels. 9

Structure of the review report

Participants have been assigned thematic areas based on their expertise, to which they are expected to contribute to the development of a detailed but concise report and recommendations.

1. Executive summary and key recommendations
2. Introduction: background, objectives, previous review, RNTCP National Strategic Plan 2017-25, End TB strategy.
3. TB in India: magnitude, trends including DR-TB and TB/HIV, notification system
4. Programme financing
5. Human resource development
6. Health systems strengthening and integration
7. Early Diagnosis and case-finding for all types of TB,
8. Laboratory services
9. Treatment of TB
10. Drug-resistant TB
11. Engagement of all care providers
12. HIV and tuberculosis
13. Pediatric TB
14. Community engagement; Advocacy, communication and social mobilization
15. Research
16. Drugs and logistics
17. Surveillance, supervision, monitoring and evaluation
18. Technical assistance needs and plans