

# NATIONAL TUBERCULOSIS INSTITUTE BENGALURU



**Government of India**  
**NATIONAL TUBERCULOSIS INSTITUTE**  
**Ministry of Health and Family Welfare**  
**'Avalon', No.8, Ballari Road, Bengaluru-560 003**  
**INDIA**

**ANNUAL REPORT**  
**2020-21**

**WHO Collaborating Centre  
For  
Tuberculosis Research and Training**

**ANNUAL REPORT  
2020-2021**



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NATIONAL TUBERCULOSIS INSTITUTE  
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INDIA**

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## **LIST OF ABBREVIATIONS**

ACSM	Advocacy Communication & Social Mobilization
AI	Artificial intelligence
AIIMS	All India Institute of Medical Sciences
BBMP	Bruhat Bangalore Mahanagara Palika
BSc(N)	BSc in Nursing
CBNAAT	Cartridge Based Nucleic Acid Amplification Test
CDSCO	The Central Drug Standards Control Organization
CIE	Central Internal Evaluation
CMO	Chief Medical Officer
CPWD	Central Public Works Department
CTD	Central Tuberculosis Division
DCGI	Drug Controller General of India
DOT	Directly Observed Treatment
DRTB	Drug Resistance Tuberculosis
DST	Drug Susceptibility Testing
DTC	District Tuberculosis Centre
DTO	District Tuberculosis Officer
ECHO	Extension for Community Healthcare Outcomes
ERD	Epidemiology and Research Division
EQA	External Quality Assurance
FIND	Foundation for Innovative New Diagnostics
FM	Fluorescence Microscopy
FMR	Foundation for Medical Research
GCP	Good Clinical Practices
GeM	Government e-Market
GNM	General Nursing and Midwifery
HRD	Human Resource Development
IEC	Institutional Ethics Committee
ICELT	International Centre of Excellence for Laboratory Training

ICMR	Indian Council of Medical Research
IRL	Intermediate Reference Laboratory
LC	Liquid Culture
LIMS	Laboratory Information Management System
LPA	Line Probe Assay
LT	Laboratory Technician
MO	Medical Officer
MOHFW	Ministry of Health and Family Welfare
NABL	National Accreditation Board of Laboratories
NATBPS	National TB Prevalence Survey
NIRT	National Institute for Research in Tuberculosis
NRL	National Reference Laboratory
NTEG	National Technical Expert Group
NTEP	National Tuberculosis Elimination Programme
NTI	National Tuberculosis Institute
NTM	Non Tuberculosis Mycobacterium
OR	Operational Research
OSE	On-Site Evaluation
PMDT	Programmatic Management of Drug Resistant Tuberculosis
POD	Prevention of Disease
RDC	Research Documentation Cell
STDC	State Tuberculosis Training and Demonstration Center
STLS	Senior Tuberculosis Laboratory Supervisor
STO	State Tuberculosis Officer
TB	Tuberculosis
TCC	Technical Co-ordination Committee
ToT	Training of Trainer
TU	Tuberculosis Unit
TWG	Technical Working Group
WGS	Whole genome sequencing
WHO	World Health Organization

## FOREWORD

It gives me immense pleasure to present the Annual report for the year 2020- 2021. The year 2020-2021 was challenging due to the ongoing pandemic of COVID-19. This report highlights the major activities undertaken by the Institute during the year and has a blend of both administrative and technical activities.

The Institute has been functioning as the technical arm of the Central TB Division and also designated as WHO collaborating center. NTI is in the forefront of training large number of health personnel involved in TB Control Programme .The Technical Activities carried out at NTI include *building the capacity of human resources* for effective implementation of NTEP, and to undertake Operational Research to strengthen the roll out services under NTEP. The laboratory at NTI has been designated as one of the National Reference Laboratories, which assess the quality of the sputum smear microscopy, molecular diagnostics and drug susceptibility/resistance testing services in the laboratory network under NTEP. A National Database on Tuberculosis research, an Open Access Repository for abstracts of published scientific papers from all major national institutes is functional under the TB Net project. Director NTI is the member of most National Advisory Committees and TWG on NTEP

The core activity of the Institute is to support human resource development and strengthen the capacity of programme managers through skill development activities relevant to NTEP. The Institute shoulders the responsibility of training medical and paramedical personnel from various states in several facets of Tuberculosis control. Amid COVID-19 pandemic, the number of training programmes had reduced and some trainings were organized using online mode. *NTEP training for medical Postgraduate students, Truenat Training for LTs and STLS of Truenat sites of Karnataka* and Virtual trainings like *training on LC DST, LPA, CBNAAT & FM , CBNAAT EQA sensitization program, LPA training for lab staff of AIIMS Jodhpur and Jhalawar Medical College , LC DST refresher training/ meeting to IRL Pune and Training on LC & LPA* were the trainings conducted by NTI during the year. NTI also initiated *“virtual orientation /sensitization training on TB and NTEP”* for the benefit of para-medical students and students pursuing life sciences. The ICELT at NTI imparts trainings on WHO endorsed Newer Diagnostic Techniques for TB.

Operational research is one of the prime functions of the institute. The status of ongoing and forthcoming research studies are briefly described in this report. The ongoing studies

during the period under report were *“Implementation of the New Integrated Algorithm for diagnosis of Drug Resistant Tuberculosis in Karnataka State, India: how well are we doing?”*; *“Expenditure incurred for diagnosis among new TB patients notified by RNTCP in Bangalore City”*; *“Diagnosis and treatment practices among the treating physicians for the management of Extra Pulmonary TB (EP-TB) in selected tertiary care health facilities in Bangalore city—an evaluation based on mixed method”* and *“A phase III randomized, double blind, placebo controlled trial to evaluate the efficacy and safety of VPM1002 and Immuvac (Mw) vaccines in preventing tuberculosis in healthy household contacts of newly diagnosed sputum positive pulmonary TB patients”*. NTI was involved in the National TB Prevalence Survey (NATBPS) as the Nodal Institute for Karnataka. Due to COVID pandemic, National TB Prevalence Survey (NATBPS) was suspended during April 2020 to September 2020 and 8 clusters were completed during the year. NTI was also involved in the National Serosurveillance for COVID-19 for 03 Districts of Karnataka -Kalaburgi, Chitradurga and Bengaluru (BBMP & Urban )

During the year of reporting, NTI laboratory got NABL accreditation. The NRL of NTI supervises and monitors the quality of sputum smear microscopy network across three states-Karnataka, Maharashtra and Rajasthan. NTI is also assessing the quality of all NTEP certified/approved NAAT sites all over the country. The NRL is responsible for imparting training to laboratory personnel and capacity building of IRLs for the management of Drug Resistant TB. The NRL plays an important role in accreditation of the state level Intermediate Reference Laboratories (IRLs), Medical colleges and other private laboratories for the culture and Drug Sensitivity testing to detect Drug Resistant Tuberculosis (DR-TB). Currently the NRL is mentoring the new NRL at Bhopal Memorial hospital & Research Centre, Bhopal .

Participation of faculty and Technical staff in various meetings, training programmes, seminars, internal evaluation visits, conferences, workshops and continuing medical education have been highlighted in this report.

A fleeting reference has been made on the organizational set up of the institute and the staff position of the institute. The role of Administrative division in ensuring the efficient execution of technical activities cannot be overemphasized and their contribution finds a mention in the report. The five units under this Division are - Establishment, Accounts, Hostel, Stores and Transport.

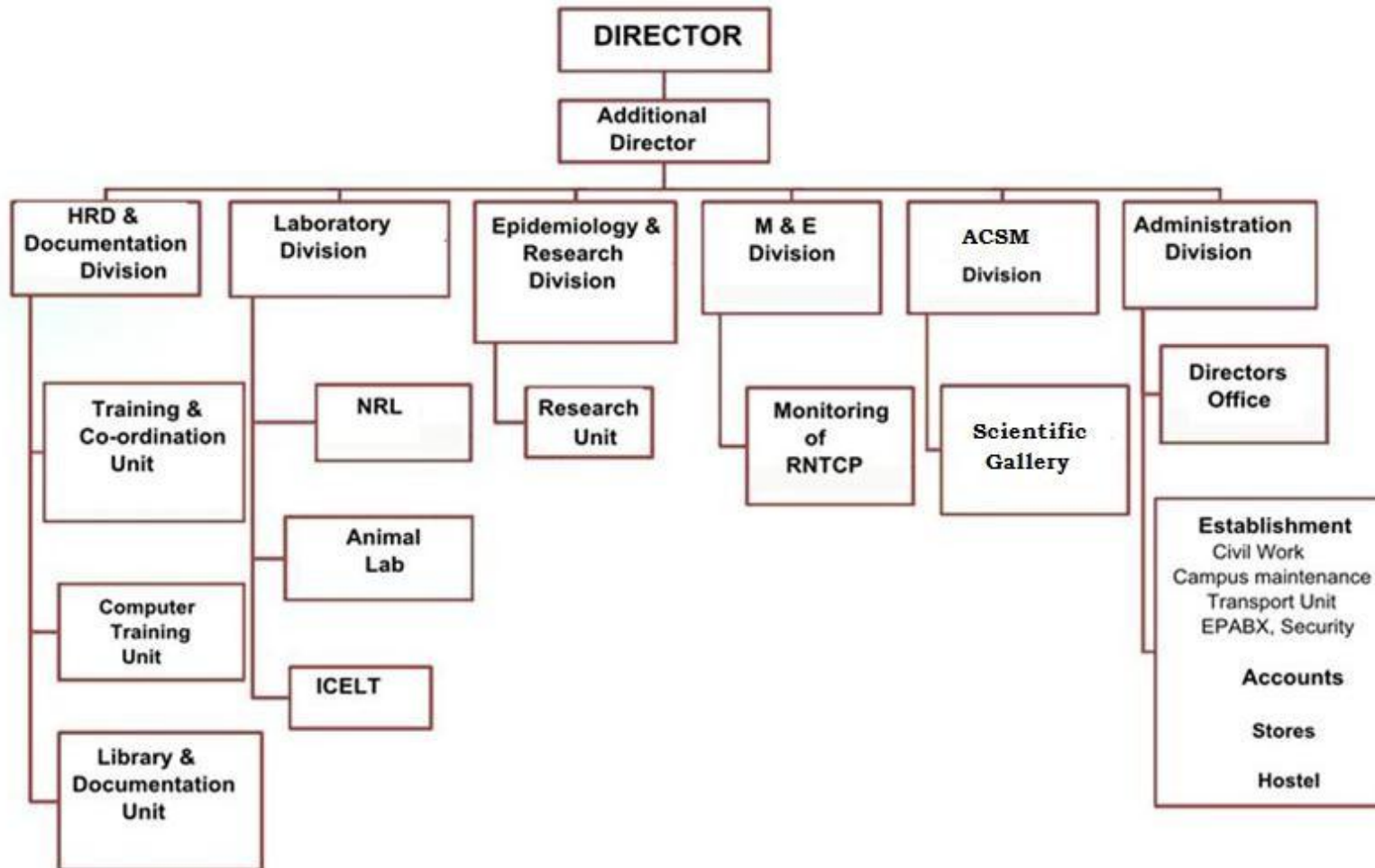


I acknowledge the co-operation, hard work and diligence of all the members of the NTI family and I solicit the same degree of motivation and dedication from all in times to come.

I also express my gratitude to the Ministry of Health and Family Welfare, Government of India and the Central TB Division for their continuous guidance, support and encouragement.

Dr. N. Somashekar,  
Director

# ORGANOGRAM



## **1. Human Resource Development & Documentation**

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One of the salient functions of the Institute is to support human resource development and strengthen the capacity of programme managers through skill development activities relevant to the National TB Elimination Programme .

The three units of the Division are:

- A. Training and Coordination Unit
- B. Computer Training Unit
- C. Library & Documentation Unit.

### **A. Training and Coordination Unit**

The objective of the NTEP training programmes is to ensure that programme managers, teachers of medical colleges, medical officers and paramedical staff are equipped with adequate knowledge and skill set required to implement TB control activities which includes quality assured diagnosis of TB, management of drug sensitive and drug resistant TB, data management and forging partnerships with all sectors involved in TB control activities.

Training activities at NTI pertaining to NTEP, are coordinated with the HRD unit at Central Tuberculosis Division (CTD). The tentative plan for training activities to be held at NTI is prepared for the ensuing year and sent to CTD, which in turn communicates the same to all State TB Officers. This ensures a staggered nomination of eligible candidates in appropriate batch sizes and allows suitable time to ensure relieving of participants from their offices for attending the training programmes.

The Training Unit works synchronously with the Computer Training Unit, Hostel, Stores and Transport Units of the institute to ensure smooth organization of training activities. Training courses and workshops with respect to many aspects of TB control are conducted to accommodate the ever-increasing requirement of trained personnel. Amid COVID 19 pandemic, majority of training programmes conducted in the Institute were virtual/online mode. The details of the training programmes conducted during the year of the reporting are appended below:

### 1. NTEP training for Post Graduate Students on Recent updates

Sl. No.	Category of personnel	Period	No. of Participants
1.	Post Graduate Students from RajaRajeswari Medical College and Hospital, Bengaluru	27.01.2021	04

### 2. Truenat Training for LT and STLS of Truenat sites of Karnataka

Sl. No.	Category of personnel	Period	No. of Participants
1.	LT and STLS of Truenat sites of Karnataka	15.02.2021 - 16.02.2021	20
2.		17.02.2021 - 18.02.2021	18
3.		19.02.2021 - 20.02.2021	23
4.		01.03.2021 - 02.03.2021	20
5.		03.03.2021 -04.03.2021	18
6.		05.03.2021 -06.03.2021	20

### 3. Virtual Trainings

Sl. No	Type of Training	Date	State	No. of Participants
1.	LC DST, LPA, CBNAAT & FM	06.07.2020 to 17.07.2020	West Bengal (3 labs)	21
2.	CBNAAT EQA sensitization program	14.08.2020	Karnataka 36 CBNAAT sites	108
3.		18.08.2020	STDC Pune 31 CBNAAT sites	93
4.		20.08.2020	STDC Nagpur 34 CBNAAT sites	102
5.		21.08.2020	STDC Mumbai 39 CBNAAT sites	117
6.		14.09.2020	Rajasthan	145
7.		LPA training for lab staff of AIIMS Jodhpur and Jhalawar Medical College	24.08.2020 to 28.08.2020	Rajasthan
8.	Laboratory safety training for NTI staff	28.08.2020	NRL - Institute	22
9.	LC DST refresher training/ meeting to IRL Pune	24.09.2020	Maharashtra	6
10.	Training on LC & LPA	08.03.2021 to 12.03.2021	IRL Pune and IRL Goa	17

#### 4. International Center of Excellence for Laboratory Training (ICELT)

The activities held in ICELT during the period of April 2020 to March 2021 are:

1. Phase 4- CBNAAT EQA panel revalidation and re preparation
2. CBNAAT EQA sensitization workshop.
3. Phase 4 – CBNAAT EQA round

List of activities / Training activities held or participated by ICELT during the period of 1st April 2020 – 31 March 2021 are given below:

Sl. No	Activity Details	Dates	No of Participants
I	Remanufacturing of Panel for GeneXpert EQA panel and 10% verification	1 <sup>st</sup> -30 <sup>th</sup> June, 2021	NA
II	Virtual CBNAAT sensitization workshops for STDCs/IRLs		
1.	Bhopal – Madhya Pradesh	23 <sup>rd</sup> -27 <sup>th</sup> July, 2020	129
2.	Uttar Pradesh	27 <sup>th</sup> -29 <sup>th</sup> July, 2020	245
3.	Chandigarh	27 <sup>th</sup> July, 2020	05
4.	Ladakh	26 <sup>th</sup> July, 2020	06
5.	Tripura	29 <sup>th</sup> July, 2020	16
6.	Puducherry	3 <sup>rd</sup> August, 2020	15
7.	Kolkata- West Bengal	3 <sup>rd</sup> -6 <sup>th</sup> August, 2020	245
8.	Mizoram	4 <sup>th</sup> August, 2020	17
9.	Daman & Diu		09
10.	Thiruvananthapuram - Kerala	7 <sup>th</sup> August, 2020	91
11.	Meghalaya		15
12.	NDTB- Delhi	10 <sup>th</sup> August, 2020	51
13.	Dehradun – Uttarakhand	11 <sup>th</sup> August, 2020	25
14.	Guwahati – Assam	12 <sup>th</sup> August, 2020	43
15.	Bengaluru- Karnataka	14 <sup>th</sup> August, 2020	121
16.	Patiala- Punjab		60
17.	Hyderabad - Telangana	17 <sup>th</sup> August, 2020	95
18.	Goa		15
19.	Nagaland & Manipur		22
20.	Himachal Pradesh		40
21.	Gujarat	17 <sup>th</sup> -21 <sup>st</sup> August, 2020	81

<b>Sl. No</b>	<b>Activity Details</b>	<b>Dates</b>	<b>No of Participants</b>
22.	Pune	18 <sup>th</sup> August, 2020	97
23.	Mumbai	20 <sup>th</sup> August, 2020	99
24.	Arunachal Pradesh	21 <sup>st</sup> August, 2020	20
25.	Nagpur – Maharashtra		70
26.	Karnal – Haryana	24 <sup>th</sup> August, 2020	15
27.	Cuttack/ Odisha		80
28.	Jammu, Kashmir & Haryana		40
29.	Chhattisgarh	24 <sup>th</sup> - 27 <sup>th</sup> August, 2020	79
30.	Sikkim	26 <sup>th</sup> August, 2020	15
31.	Dadra and Nagar Haveli	27 <sup>th</sup> August, 2020	05
32.	Chennai – Tamil Nadu	28 <sup>th</sup> August, 2020	108
33.	Patna- Bihar	31 <sup>st</sup> Aug -1 <sup>st</sup> Sept, 2020	90
34.	Vizag- Andhra Pradesh	3 <sup>rd</sup> Sept, 2020	70
35.	Ranchi – Jharkhand	4 <sup>th</sup> Sept, 2020	41
36.	Andaman and Nicobar Island	9 <sup>th</sup> Sept, 2020	08
37.	Ajmer – Rajasthan	14 <sup>th</sup> Sept, 2020	95
III	GeneXpert EQA Panel Dispatch to pan country (1200 sites)	Sep 2020	NA
IV	Truenat Equipment received, installed, and completed training	Sep 2020	NA
V	GeneXpert EQA Data monitoring and analysis	Oct 2020	NA
VI	GeneXpert EQA- State wise analysis and report submission	Nov 2020	NA
VII	Post EQA visits proposed to all unsatisfactory performed sites – Virtual visits	Dec 2020	NA
VIII	Virtual post EQA visits conducted	Jan 2021	NA
IX	Truenat validation and verification	Jan 2021	NA
X	Truenat EQA sample validation and Verification	Feb 2021	NA
XI	Final Report Preparation of GeneXpert EQA	Feb 2021	NA

## **B. Computer Training Unit**

The Computer Training Unit of the HRD Division supported the following major activities

- Facilitated in organizing need based training with relevance to programme and customized application related trainings
- Information and Communication Technology (ICT) Initiatives in the context of the Programme.
- Data Management and Statistical Analysis of research studies and other MIS.
- Catered to the maintenance of website / upkeep / up-gradation of IT infrastructure of the Institute.
- The unit provided assistance for 153 Video Conferencing related activities (both hosting & joining the VC).

### **NTI website support services:**

- Application server configuration and maintenance for the following websites: [www.ntiindia.org.in](http://www.ntiindia.org.in), [www.tbresearch.ntiindia.org.in](http://www.tbresearch.ntiindia.org.in).
- Renewal of Secured Socket Layer (SSL) Certificate for the NTI website.
- Domain renewal of NTI Websites.
- Maintaining e-mail services at NTI.
- Periodic uploading of content to NTI Website as per requirements.
- Maintaining and updating Department-wise Telephone directory on the NTI Website.
- Uploading Notifications for recruitments happening at NTI and calling of tenders on the NTI Website.

### **Other IT Support Services:**

- Configuration of Broadband internet with the help of Internet service providers.
- Periodic licensing server configuration such as Email Server, Proxy Server, Firewall, Anti-Virus protection etc.& maintenance of softwares.
- Maintenance of access to subscribed Journals.
- Periodic maintenance of IT Equipment of the institute.

- Renewal of Rainmail Server services. The service reports and log details are collected every day and modifications are done to the network as and when required.
- Periodic maintenance of Aadhaar Enabled Biometric Attendance System (AEBAS).
- Coordinated with MTNL Cloud Attack intelligence network to blacklist and block suspicious IP addresses.
- Handling matters pertaining to AMC of computers / UPS and issues pertaining to server configuration / Internet services / mailing services.

**Other Support Services:**

- Internal shifting, configuration and stock updating of computers.
- Coordinated with FIND and KPMG to facilitate maintenance of LIMS.
- Interaction with developer team to update the features of LIMS.
- Upkeep and configuration of Video Conference Unit to support all VC interactions.

**C. Library and Documentation Unit**

**Activities undertaken by the library are:**

- Collection and Maintenance of Core periodicals on TB & respiratory diseases, documents on TB research, reports, proceedings, souvenirs, WHO unpublished documents, selected papers.
- Coordinating with CTU in digitization of important research studies and hosting the same on the internet/intranet.
- Library provided the information needs of the faculty, staff of the Institute besides Medical and Para-medical trainees and delegates/visitors from medical fraternity.
- Co-ordinated in periodical updating of the NTI website, both internet and intranet.
- Co-ordinated the publication activities of the Institute.

**Additional Activities:**

- The copies of the following documents were archived and database updated:
  - a) Research Protocols including work instructions endorsed by the Director.
  - b) Final cleansed data base in the format recommended by the



documentation division.

- c) Final analysis undertaken in terms of tables, figures etc.
- d) Published article with Bibliography.

**Renewal for supply of the following journals and periodicals was done online & print for the year 2020-21**

- a) Swamy's News & Swamy's Handbook 2020-2021
- b) International Journal of TB & Lung Diseases
- c) Indian Journal of Tuberculosis
- d) Medical Clinics of North America
- e) Clinics in Chest Medicine

The printing section took up printing of various research forms/schedules and forms required for HRD, Establishment, laboratory division, Hostel and Accounts, Transport.

## 2. LABORATORY DIVISION

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The laboratory at NTI has been designated as one of the National Reference Laboratories, which assess the quality of the sputum smear microscopy, culture and drug susceptibility testing services in the laboratory network under NTEP. As an NRL, NTI supervises and monitors the quality of sputum smear Microscopy in the network of laboratories in the three states allocated viz, Karnataka, Maharashtra and Rajasthan. NTI is responsible for assessing the quality of all NTEP certified/approved NAAT sites all over the country . Besides these activities NTI is also mentoring the new NRL at Bhopal Memorial hospital & Research Centre, Bhopal

The National Reference Laboratory is quality tested by WHO Supra National Reference Laboratory (SNRL) Prince Leopold Institute of Tropical Medicine Antwerp, Belgium. The NRL trains laboratory personnel and is responsible for accrediting state Level laboratories i.e., the IRLs, Medical Colleges and other private laboratories for Culture and Drug Susceptibility Testing for detection of Drug Resistant Tuberculosis (DR-TB). In addition, NTI Laboratory also provides TB diagnostic services to three districts of Karnataka.

During the year of reporting, NTI laboratory got NABL accreditation.

### **a. Specimens processed at NRL NTI during the period April 2020 to March 2021**

<b>Registration</b>	
Specimens registered (Sputum + XDR Culture +Universal DST+NTM and OP)	4751
Number of Universal DST Samples registered for LPA	4674
Number of NTM samples registered	08
Number of Universal Samples rejected due to leakage	33
Number of culture isolates registered	46
Number of Specimens registered for OP	32

Number of DNA extraction samples registered	35
<b>Tests Carried out</b>	
Number of specimens subjected for decontamination	4809
Number of specimens subjected to CBNAAT	688
Number of Line Probe Assay performed for First Line DST	4605
Number of Line Probe Assay performed for second Line DST	707
Number of specimens put up for primary inoculation in MGIT	2420
Number of Specimens subjected for identification test (Immuno- Chromatographic Test)	703
Number of samples put up for DST by Liquid Culture	182

**b. Second line LPA Proficiency Testing completion status**

<b>Sl. No .</b>	<b>State</b>	<b>Laboratory</b>	<b>Proficiency Testing Status</b>
1	Madhya Pradesh	BMHRC, Bhopal	Completed
		MRTB, Indore	Completed
		NIRTH, Jabalpur	Completed
2	Chhattisgarh	IRL, Raipur	Completed
3	Jharkhand	IRL, Ranchi	Completed
4	Odisha	RMRC, Bhubaneswar	Completed
		IRL, Cuttack	Completed
5	West Bengal	IRL, Kolkata	Completed
		NBMC, Siliguri	Completed
6	Assam	IRL, Guwahati	Completed
7	Tamil Nadu	NIRT, Chennai	Completed

**c. The details of the accreditation visits made are as under:**

<b>Sl. No</b>	<b>State</b>	<b>Laboratory</b>
1	Rajasthan	1. IRL, Ajmer
		2. SMS, Jaipur
		3. SNMC, Jodhpur
2	Karnataka	1. IRL, Bangalore
		2. KIMS, Hubballi
		3. RIMS, Raichur
3	Maharashtra	1. IRL ,Pune
		2. IRL, Nagpur
		3. GMC, Aurangabad
		4. GTB, Sewri

**Training Activities**

Due to COVID 19 pandemic, majority of the laboratory trainings were conducted virtually. The details of these trainings are given in HRD Division report.

**Other activities:**

- Meeting with AIIMS Jodhpur for discussion about LPA certification Process held on 14.08.2020, eight participants from Rajasthan participated.
- Truenat virtual training was conducted for STDC/IRL staff of Karnataka, Rajasthan and Maharashtra on 19.01.2021.
- During the 3 rounds of COVID-19 Sero-surveillance survey (April 2020, June 2020 and August 2020),NTI Laboratory was involved in aliquoting of serum samples and transport to NIRT Chennai
- Closed Non Conformity of NABL Assessment

### **3. EPIDEMIOLOGY AND RESEARCH DIVISION**

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At the inception of National Tuberculosis Institute way back in 1959, the primary goal of the Institute was to formulate and evolve practicable, economically feasible and widely acceptable National TB Control Programme. The extensive Epidemiological and Operational Research Studies conducted at NTI, majority of which were conducted by the Epidemiology and Research Division had been successful in formulating the first National Tuberculosis Control Programme (NTP) in 1962 by incorporating the clinical, epidemiological and sociological aspects of the disease. India's first national level TB Control Programme had been adopted by several other countries. Subsequently, the research conducted by the division played a pivotal role in improving the TB control activities across the country and identifying gaps in NTP. The shortcomings of NTP were identified through the research conducted by the division, this enabled major policy modifications leading to formulation of Revised National TB Control Programme (RNTCP) in 1997 by Central TB Division. Further, a few operational research related to disease burden and various aspects of programme implementation helped the CTD to scale up of the TB programme activities towards TB elimination (NTEP) from the earlier policy of TB control (RNTCP).

#### **Major functions of Epidemiology & Research Division are as under: -**

- A. To conduct community as well as facility based epidemiological, operational and implementation research in TB including preparing generic protocols, planning, organizing, implementing, monitoring & supervising, data collection, data management, analysis and report writing.
- B. Provide Technical and Operational support to other Organizations /Institutions in the country in conducting TB Epidemiology and Operational Research studies.
- C. Provide mentorship and training in Operational Research, epidemiology and different aspects of TB control/elimination. This is either CTD sponsored, Union sponsored or the State sponsored activity.
- D. Mathematical modeling for assessing the burden of TB over the years based on implementation of the existing activities under the prevailing TB control

programme and to provide inputs for course correction and implementation of newer activities targeted to end TB as per the goal set for India.

- E. Engage in other NTEP related activities including development of training modules & guidelines; provide technical inputs towards policy development, actively participate in monitoring & supervision and providing support for the modular trainings and sensitization held by HRD division of NTI.
- F. Since 2019, the ERD has shouldered the responsibility of being a part of a pioneering multi-centric national level vaccine trial for prevention TB disease conducted by ICMR headquarters, New Delhi for the first time. For enabling the conduct of such high quality regulatory clinical trial, NTI collaborated with two prominent state-run hospitals for establishing two clinical sub-sites to fulfill the regulatory requirements laid down by DCGI.
- G. Research dissemination workshops are conducted periodically to improve programme performance based on the findings and to facilitate and advocate policy modifications whenever required.

The activities carried out by ERD during 2020-21 are as under:

#### **A. Research Studies - completed**

##### **1. Implementation of the New Integrated Algorithm for diagnosis of Drug Resistant Tuberculosis in Karnataka State, India: how well are we doing?**

###### **Objectives:**

1. Among all TB patients diagnosed using Xpert® MTB/RIF assay in Karnataka state between July and September 2018, to determine the:
  - Number and proportion of eligible patients completing FL- LPA and its results
  - Number and proportion of eligible patients completing SL- LPA and its results
  - Number and proportion of eligible patients completing liquid culture and DST and its results
  - Number and proportion of patients completing the integrated DR-TB diagnostic algorithm

2. Among the above, to determine the median time duration between
  - Date of specimen collection and date of specimen receipt at the laboratory
  - Date of specimen receipt and date of reporting of results
3. To assess the health system resources (human resource, equipment, consumables, sample collection site and specimen transport mechanisms) against the prescribed norms at Xpert® laboratories and the reference laboratories performing LPA and culture-based DST.
4. To understand the facilitators and barriers in the implementation of DR-TB diagnostic algorithm and possible solutions from the perspective of healthcare providers.

### **Methodology:**

#### **For Quantitative Phase:**

For objective 1 and 2, all the TB patients diagnosed using Xpert® MTB/RIF assay in Karnataka state between July and September 2018 constituted the study population. Approximately 10,000 patients were estimated to be diagnosed with TB in this period and all were included in the study. For objective 3, all the laboratories where Xpert® MTB/RIF assays were performed and the reference laboratories were included.

The data collection was done between Jan 2019 and Feb 2019

#### **For Qualitative Phase:**

Healthcare providers involved in implementation and supervision of the DR-TB diagnostic algorithm constitutes the study population. A purposive sampling method was used so that all the cadres of staff (laboratory technicians of the Xpert® and the reference laboratories, microbiologists at the reference laboratories, district and state programme managers and RNTCP consultants) are represented. The state programme manager and the consultant microbiologist of National TB Institute were also be key informants as we believe they are likely to provide key insights into the implementation challenges.

The key informants at district level were selected from one good performing and one poor performing district (identified after analysis of quantitative data based on the proportion of the TB patients completing the diagnostic algorithm) covered by each of the four reference laboratories. The qualitative component

were implemented after analysis of the quantitative component. The data collection was done between Mar 2019 and Apr 2019.

**Current Status:**

- The research paper of the study titled “Implementation of the new integrated algorithm for diagnosis of Drug resistant TB in Karnataka state, India – how well are we doing?” – Published in Plos One Open Access on 6<sup>th</sup> Jan 2021.

**2. Expenditure incurred for diagnosis among new TB patient notified by NTEP in Bangalore City.**

**Objectives:**

- To compare mean delay from onset of symptoms till initiation of anti-TB treatment among TB patients notified by public sector in 2017 with the mean delay among TB patients notified by public sector in 2005.
- To estimate expenditure incurred by TB patients towards diagnosis of TB.

**Methodology:**

Study was carried out among new adult TB patients initiated on ATT by public providers in BBMP, NTEP reporting Unit, Bangalore. An estimated 228 new adult TB patients initiated on ATT by public sector was recruited into the study, using systematic sampling. TU wise, list of PHIs was obtained from STO’s Office. The data collection was carried out from September 2017 – February 2018.

PHIs to be visited for enrolment of study participants were purposively selected each month while ensuring

1. Total number of patients enrolled during the course of the study from hospitals and PHIs are in the ratio of total number notified by these two groups of PHIs.
2. Enrolled patients were uniformly spread all over the BBMP limits, depending on the number initiated on ATT in the month in a given selected PHIs, either all patients were enrolled or a systematic sampling was performed.

Data was collected by personally interviewing each patient at a place and time convenient to them using a semi-structured pre-tested interview schedule.



**Expected outcome:** The study will provide information on:

- Change in diagnostic delay and treatment initiation among patients in public sector from the previous study conducted in 2005.
- Difference in total diagnostic delay and treatment initiation among patients in public sector.
- The findings will be useful to identify the extent of avoidable out of pocket expenditures towards diagnosis and design appropriate interventions for the same.
- In addition, experience gained during the study will be useful for field investigators in exploring a state level study on expenditure incurred by TB patients during the course of TB treatment, at a later point of time.

**Current status:**

Data analysis & scientific paper writing is under progress

### **3. Diagnosis and treatment practices among the treating physicians for the management of Extra Pulmonary TB(EP-TB) in selected tertiary care health facilities in Bengaluru city—an evaluation based on mixed method.**

**Objectives:**

1. To find out proportions of EPTB patients diagnosed and / or treated in selected tertiary health facilities in Bangalore City as per current RNTCP guidelines during 2017.
2. To find out provider constraints in adherence to these guidelines.

**Methodology:**

Record review of all EPTB patients diagnosed / treated in selected hospitals during Jan - Dec 2017 were undertaken to find out adherence to RNTCP guidelines. The following records as per availability were examined and data collated and compiled for each patient into a pre-designed data extraction form:

- Out patient records (If available in the health facility)
- In-patient records (paper-based/MRD/HMIS records)
- Hospital based/external Lab records & reports

- Referral for treatment register
- DOTS register
- TB Notification registers
- RNTCP treatment cards
- DMC/CBNAAT lab or C & DST registers
- Record of Anti-TB drug sales based on Schedule H1 registers
- NIKSHAY Database of Notified TB patients

**Expected Outcome:**

Based on study results, appropriate recommendations wherever needed will be given to the Health care providers of the tertiary health facilities towards effective implementation of EPTB Guidelines and the findings will help in strengthening Linkages and appropriate utilization of RNTCP services for early and accurate diagnosis of EPTB.

**Current Status:**

Study is completed, paper under publication.

**4. Factors associated with unsuccessful treatment outcomes of Hr-TB (isoniazid-resistant, Rifampicin-sensitive TB) patients treated with 6 to 9 months of 4 drug all oral H mono/poly regimen under NTEP in southern Karnataka: A 2-year post-treatment follow-up study.**

**Objectives:**

- To determine the patient and health system factors associated with unsuccessful treatment outcome (treatment failure, loss to follow-up, regimen change after one month of treatment initiation, not evaluated, death during treatment) among adult Hr-TB patients initiated on all oral H mono/poly treatment regimen under NTEP.

**Methodology:**

A case-control study design will be adopted considering the operational feasibility in the COVID pandemic era and the time required for enrollment. In the study, a Case is referred to as patient declared to have unsuccessful treatment outcome

(failure, lost to follow up or death during ATT, not evaluated, regimen change after one month of treatment initiation) at the end of treatment. Control is defined as patients with successful treatment outcome (cured and treatment completed). Cases and controls will be matched by district and declaration of treatment outcome within the same quarter of the year.

The data on selected variables will be obtained primarily from NIKSHAY database. For missing data and perceived possible errors in NIKSHAY data, data will be taken from PMDT register and Intermediate Reference Laboratory registers.

**Expected outcome:**

This will be probably the first study in our country to explore the factors associated with unsuccessful treatment outcomes of patients initiated on H-mono/poly regimen. Results of this study will be useful to understand the health system-related and patient-related factors associated with unsuccessful treatment outcomes, thereby providing insights for better patient management.

**Current status:**

Concept development and protocol writing completed following a series of Presentations, VCs and technical inputs from experts of National OR Committee (NORC) and CTD. The study proposal with tentative budget requirement incorporating the suggestions given by the experts submitted to NORC on 31<sup>st</sup> Dec 2020. SOPs, work instructions and participant information sheet are being developed. Administrative and financial approval of Central TB Division and NORC is awaited.

**B. Study undertaken by NTI under India TB Research Consortium:**

- i. A phase III randomized, double blind, placebo controlled trial to evaluate the efficacy and safety of VPM1002 and Immuvac (Mw) vaccines in preventing tuberculosis in healthy household contacts of newly diagnosed sputum positive pulmonary TB patients.**

**Objectives:****a. Primary:**

1. To evaluate the efficacy of VPM1002 and Immuvac by comparing the reduction in incidence of TB over 3-year period among Indian healthy household contacts of newly diagnosed sputum positive PTB patients vaccinated with VPM1002 and Immuvac in comparison to placebo

**b. Secondary**

1. To evaluate the efficacy of VPM1002 and Immuvac in prevention of LTBI in healthy household contacts of newly diagnosed sputum positive PTB patients in comparison to placebo [in a sub- set of population at Sites – Delhi (NCR), Hyderabad and Chennai].
2. To evaluate the safety of VPM1002 and Immuvac in Indian healthy household contacts.
3. To evaluate the Immunogenicity of VPM1002 and Immuvac in healthy household contacts as compared to placebo against tuberculosis. (in a sub-set of population at Sites – Delhi (NCR), Pune and Chennai).

**Methodology:**

NTI is one of the trial sites for the multi-centric vaccine trial. The study was approved by DCGI vide their letter File No: BIO/Form44/FF/2018/9536 dated 20-Dec-2018. The trial was cleared by the Institutional Ethics Committee for the respective trial sub – sites, namely General Hospital, Jayanagar (JGH) and K.C. General Hospital (KCGH), Malleswaram.

For recruitment of study participants, the details of the sputum positive PTB cases presenting to the DOTS centre/clinic/OPD of the implementing institute in the last 4 weeks were obtained. The index cases were contacted and visited to explain about the study. All relevant details of the index case such as name, age, gender, address (corresponding and permanent), contact number, date of diagnosis and initiation of anti-tuberculosis treatment (ATT), sputum smear grade and drug sensitivity pattern were recorded in site records. A list of

household contacts will be obtained from the index case by the health staff. Household contacts who are eligible and willing to be screened were registered for the study. The study procedures included three phases: screening phase, enrollment phase and follow-up phase. All eligibles on screening were vaccinated with the two doses of Investigational Product administered one month apart.

**Current Status:**

- Vaccination/ enrollment under the vaccine trial was done at two sub-sites of NTI, Bengaluru namely, Jayanagar General Hospital and KC General Hospital. The site was initiated on 29<sup>th</sup> November, 2019.
- Vaccination was suspended at both Jayanagar General Hospital (JGH) and KC General hospital (KCGH) from 21<sup>st</sup> March 2020 due to lock down, following COVID 19 pandemic. Trial was restarted only at KCG hospital on 8<sup>th</sup> April 2020, as permission for re-starting trial at Jayanagar hospital was not provided by state health authorities, as JGH was converted into an exclusive COVID-19 hospital and restarting enrollment was a challenge as the whole hospital functioned from a single block. We approached St. John's Medical college and hospital for relocation of JGH sub-site. However, the sponsors instructed to suspend enrollment at JGH permanently *w.e.f.* 10<sup>th</sup> June 2020 and St. John's Medical college and hospital was started as an independent site.
- The enrolment of new participants for vaccination was stopped on 31<sup>st</sup> Dec 2020 as per the directions given by the sponsors, ICMR. We enrolled a total of 803 participants under the sub-sites of NTI. The follow-up of the participants enrolled at both JGH and KCGH was done at KCGH
- A Participant Retention Plan specifically for NTI was prepared for the purpose of timely follow-up and all efforts were made to complete all the follow-ups within the scheduled period. Accordingly, the job allocation has been made to all the vaccine trial project staff and the NTI staff involved in the trial.

<b>Progress of the study at KCGH from 1st Apr 2020 to 31<sup>st</sup> March 2021</b>				
<b>Months</b>	<b>Screened</b>	<b>V2 (First dose vaccine completed)</b>	<b>V4 (Second dose vaccine completed)</b>	<b>Total Follow up visits</b>
Apr 2020	-	37	66	-
May 2020	12	07	-	75
June 2020	71	56	07	61
July 2020	49	50	43	95
Aug 2020	44	35	36	76
Sept 2020	121	111	40	196
Oct 2020	26	25	97	206
Nov 2020	50	44	38	187
Dec 2020	-	-	44	221
Jan 2021	-	-	-	221
Feb 2021	-	-	-	80
Mar 2021	-	-	-	54
<b>Total</b>	<b>373</b>	<b>365</b>	<b>371</b>	<b>1472</b>

<b>Progress of the study at JGH from 1st Apr 2020 to 31<sup>st</sup> March 2021</b>				
<b>Months</b>	<b>Screened</b>	<b>V2 (First dose vaccine completed)</b>	<b>V4 (Second dose vaccine completed)</b>	<b>Total Follow up visits</b>
Apr 2020	-	-	46	63
May 2020	-	-	-	106
June 2020	-	-	-	28
July 2020	-	-	-	24
Aug 2020	-	-	-	23
Sept 2020	-	-	-	74
Oct 2020*	49	38	-	23
Nov 2020*	45	34	-	46
Dec 2020*	129	129	-	189
Jan 2021	-	-	-	417
Feb 2021	-	-	-	155
Mar 2021	-	-	-	126
<b>Total</b>	<b>223</b>	<b>201</b>	<b>46</b>	<b>1274</b>

\* A few participants were enrolled at KCGH using the JGH randomization numbers during the month of Oct, Nov and Dec 20, and the same are depicted here as JGH enrollments.

**Total target:**

Initial target for NTI and its sub-sites was fixed as 2000 participants. NTI was supposed to have 4 sub-sites as per the Protocol Number - ICMR/ITRC/VAC/001/2018, Version 1.5 to achieve the target of 2000 enrolments, however following the inspection by CDSA (Sponsor authorized monitors) it was communicated that only 2 out of the 4 state government-run hospitals were eligible to undertake clinical trials as per the CDSCO/DCGI norms and hence the target was reduced to 1000.

The enrollment of the new participants was drastically reduced since 11<sup>th</sup> March 2020, the date on which the Government of Karnataka invoked the provisions of the Karnataka Epidemic Diseases, COVID-19 regulations 2020 and imposed stringent restrictions for public at large and restricted unnecessary entry of healthy participants into any hospitals. No new enrollments were possible from 20<sup>th</sup> March to 26<sup>th</sup> May 2020, as both the sub-sites were designated as COVID-19 isolation and management centers. The majority of NTI-IEC members also advised NTI to suspend the vaccine trial. Though new enrolments were suspended, follow-up of those participants who were vaccinated was continued in KCGH.

**ii. National TB Prevalence Survey (NATBPS)**

National survey for State-wise Prevalence of Microbiologically Confirmed Pulmonary Tuberculosis in India – The ambitious national survey has been initiated with National Tuberculosis Institute being the Nodal Institute for Karnataka in conjunction with Indian Council of Medical Research - New Delhi, ICMR-National Institute for Research in Tuberculosis - Chennai, Central TB Division- Ministry of Health and Family Welfare Division - Government of India, World Health Organization - India Office - New Delhi and State Tuberculosis Cell, Karnataka with funding from Ministry of Health and Family Welfare Division, Government of India, New Delhi, Department of Health Research and Indian Council of Medical Research, Global Fund and USAID India through WHO India.



The Primary objectives of the survey are to:

- i. To estimate the point prevalence of microbiologically confirmed pulmonary TB among persons aged  $\geq 15$  years in India at National level
- ii. To estimate the point prevalence of microbiologically confirmed pulmonary TB among persons aged  $\geq 15$  years individually for 20 states / state groups.

The Secondary objectives of the survey were to:

- i. To explore health seeking behavior of survey participants who are:
  - Symptomatic
  - Currently on TB treatment
- ii. To estimate the prevalence of TB infection among the surveyed.
- iii. To find out the source of treatment, [whether NTEP or non-NTEP] among persons having history of ATT (previous / current) in last one year and the proportion not notified under routine surveillance system.
- iv. To determine the proportion of those currently on TB treatment who were notified to the RNTCP surveillance system.
- v. To estimate the expenditure incurred by survey participants who are currently on TB treatment.
- vi. To profile socio-demographic & associated risk factors of survey participants including nutrition, anemia, diabetes and smoking.

The survey was suspended due to COVID pandemic during April 2020 to September 2020. 8 clusters were completed by the NATPBS Team in Karnataka.

### **iii. COVID-19 Serosurveillance**

NTI was involved in the National Serosurveillance for COVID-19 for 03 Districts (viz. Kalaburgi district, BBMP and Bengaluru Urban districts and Chitradurga district) of Karnataka as per the directives from DG-ICMR.

The major activities undertaken by the institute are as under:

1. Periodic trainings/sensitizations through Video Conferencing as conducted by the ICMR, WHO, Govt of India National Experts Team
2. Conduction of the trainings to the NATBPS team members who have been redeployed for COVID-19 Serosurveillance activities

3. Interaction and appraising the state health authorities and the district health authorities regarding the COVID-19 Serosurveillance activities
4. Cascading trainings to the District TB Officers, the Medical Officers and the field staff (Laboratory Technicians, STS,STLS, TBHV, Jr Health Assistants) regarding the operational activities for COVID-19 Serosurveillance
5. Preparation of the micro-plans for the Serosurveillance in conjunction with the District TB Officers, the WHO Consultants, the Medical Officers and the NATBPS team.
6. Coordination with the Additional Chief Secretary, MD-NHM, Director Health, JD (TB), State Nodal Officer, the DTOs and the WHO Consultants regarding the field implementation of the survey activities
7. Facilitation in ensuring the consumables for the serosurveillance activities – partly from the State Drug and Logistics Warehouse, most of the consumables from NIRT-ICMR and partly from purchase from Institute.
8. The preparatory activities for Round 01 Serosurveillance were conducted in April 2020 and the cluster activities were conducted in May 2020.
9. Participation in the field activities for all the districts (Bengaluru, Kalaburagi and Chitradurga) of the clusters and facilitation in the transportation of the collected and centrifuged samples to NTI for further processing.
10. Processing of the collected samples at NTI.
11. Facilitation in the transportation of the processed samples from NTI to NIE, ICMR for further processing and testing for COVID-19 antibodies.
12. Facilitation in the sharing of the results with the respective State health authorities and district health authorities, with the participants over phone.
13. The preparatory activities for Round 02 Serosurveillance were undertaken in the month of July 2020 and the Round 02 Cluster activities were conducted in the month of August 2020.
14. The preparatory activities for Round 03 Serosurveillance were undertaken in the month of December 2020 and the Round 03 Serosurveillance activities were conducted in the month of December 2020 and January 2021. In the third round of Serosurveillance, the Sub district Hospitals from all the 3 districts were involved in the Serosurveillance activities.

### **C. List of publications (NTI faculty as author/co-author):**

1. Shankar S. U, Kumar AMV, Venkateshmurthy NS, Nair D, Kingsbury R, et al. (2021) Implementation of the new integrated algorithm for diagnosis of drug-resistant tuberculosis in Karnataka State, India: How well are we doing? PLoS ONE 16(1): e0244785. <https://doi.org/10.1371/journal.pone.0244785>.
2. Somashekar N, Ravichandra C, Chadha VK. Training strategies practiced for TB elimination. Indian J Tuberc. 2020 Dec; 67(4S): S79-S85. doi: 10.1016/j.ijtb.2020.11.007. Epub 2020 Nov 17. PMID: 33308676.
3. Murhekar, M. V. and Bhatnagar, T. and Selvaraju, S. and et all, (2020) Prevalence of SARS-CoV-2 infection in India: Findings from the national serosurvey, May-June 2020. Indian J Med Res, 152 (7&8). pp. 48-60.
4. Murhekar, M. V. and Bhatnagar, T. and Selvaraju, S. and et all, (2021) SARS-CoV-2 antibody seroprevalence in India, August–September, 2020: findings from the second nationwide household serosurvey The Lancet Global Health, 9 (3).e257-e266.
5. Ravichandra C, Burugina Nagaraja S. Chasing END TB 2025: Arithmetic needed for logistics! Indian J Tuberc. 2021 Jan; 68(1):163-167. doi: 10.1016/j.ijtb.2020.07.025.
6. Murhekar MV, Bhatnagar T, Thangaraj JWV, Saravanakumar V, etall, SARS-CoV-2 seroprevalence among the general population and healthcare workers in India, December 2020-January 2021. Int J Infect Dis. 2021;108:145-155. doi: 10.1016/j.ijid.2021.05.040. Epub 2021 May 19. PMID: 34022338; PMCID: PMC8132496.
7. Rathi P, Shringarpure K, Unnikrishnan B, Chadha VK, Acharya V, Nair A, Sagili KD, et al. Pretreatment Out-of-Pocket Expenses for Presumptive Multidrug-Resistant Tuberculosis Patients, India, 2016-2017. Emerg Infect Dis. 2020 May;26(5):989-992. doi: 10.3201/eid2605.181992. PMID: 32310069; PMCID: PMC7181943.
8. J Venugopal , C.K. Vidya Raj, M Muthaiah, V K Chadha, U Brammacharry, S Selvaraj. In-vitro anti-Mycobacterium tuberculosis effect of essential oil of Ocimum sanctum L. (Tulsi/Basil) leaves, Indian Journal of Tuberculosis, 2021, <https://doi.org/10.1016/j.ijtb.2021.02.009>.

#### **D. Scientific Papers Submitted for publication**

1. Pre-treatment delay and out of pocket expenses by notified new tuberculosis patients in an Indian mega city.
2. Implementation status of contact screening and isoniazid preventive therapy among household child contacts of sputum smear positive tuberculosis patients in a south Indian district.

#### **E. ADVISOR NTI was involved in the following collaborative protocol developments:**

- Multi-centric cohort study of recurrence of tuberculosis among microbiologically confirmed new pulmonary tuberculosis patients treated under NTEP with the 6-month daily regimen: Technical inputs to NIRT Chennai.
- Intersection of Mental Health and Tuberculosis Services in Sikkim: Technical inputs.
- Assessment of levels and dimensions of Tuberculosis Stigma among people diagnosed with TB, their family members, community and health care providers in Himachal Pradesh: Technical inputs.
- Telemedicine approach in comparison to incentivized engagement of private practitioners for reduction in smoking among newly diagnosed tuberculosis patients – a non-inferiority cluster randomized trial with additional before/after change potential: Technical inputs to Center for Public Health Kinetics, New Delhi.
- Implementation of INDEX-TB guidelines for improving the detection, care and treatment outcomes among EPTB patients-Pilot study in settings of private tertiary care, Medical College Hospital and District hospital: Technical inputs to Center for Public Health Kinetics, New Delhi.
- Evaluation of Nikshay Poshan Yojana: A mixed methods study. Technical inputs to Indian institute of public Health Gurugram.
- Under-reporting of leprosy cases to National Leprosy Eradication Program (NLEP) and estimating the New Case Detection Rate: An Inventory study in Chennai Corporation, Technical inputs.

#### **4. MONITORING AND EVALUATION DIVISION**

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Monitoring is the process of observing whether an activity or service is occurring as planned. It implies systematic and purposeful observation, with an aim to identify any diversion from the planned course of action. It is a routine ongoing process of tracking of program activities using input, process, output and outcome data collected on a regular basis. Internal Evaluation forms an integral component of NTEP supervision and monitoring strategy. It acts as a tool to evaluate if good program practices are adopted and quality services are provided to the community. The evaluations also offer an opportunity for program managers to investigate all aspects of program critically and swiftly. These activities help program managers in understanding determinants of good as well as poor performance for replication of good practices in their states /districts and act appropriately for improvement.

The Monitoring and Evaluation division of the Institute plays an essential role of supporting the Central TB Division in conducting Central Internal Evaluation of NTEP throughout the country. Due to the covid-19 pandemic last year there was interstate travel restriction, and hence NTI officials could not support CTD for Evaluation activities. Laboratory staffs carried out the evaluation of lab network of Karnataka wherever it was feasible. The officials of the division presented protocol and supported ERD division in preparing protocol related to the effect of covid-19 pandemic on National TB Elimination Programme. Experienced field officials of the division worked proactively towards completion of three rounds of sero-surveillance being carried out by ICMR in Karnataka to know the prevalence of covid-19 pandemic so that appropriate control activity can be taken. As assigned by the administration of NTI the officials of the division also participated in the “National TB Prevalence survey” to know the bacteriologically positive TB burden in India, survey being carried out by ICMR in Karnataka state.

## **5. ADVOCACY, COMMUNICATION AND SOCIAL MOBILIZATION DIVISION**

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The Advocacy, Communication and Social Mobilization Division, in short, the ACSM Division was set up to enable and enhance the TB Control Program at different fronts. The Division plays a key role in sensitizing the younger generations from nursing, paramedical, life sciences and medical students on TB and NTEP. The Scientific Gallery has been established to disseminate the general information on TB, the evolution of the programme, research conducted by NTI and achievements of the Institute since its inception. Considering the needs of the diverse categories of visitors, regular in-house sensitization/training programme have been conducted by the division.

### **Sensitization Programme**

Due to COVID 19 Pandemic, the students could not visit NTI for in-house sensitization programme. Hence, NTI initiated virtual orientation/sensitization training on TB & NTEP for paramedical and basic life science students. During the year of reporting , *a total of 956 students (Paramedical and Life Science) were sensitized on TB and NTEP virtually in 06 batches.*

### **World TB Day 2021 Commemoration at NTI**

Preliminary meeting for commemoration of World TB Day was conducted on 18th march 2021, in lieu of covid 19 pandemic, virtual commemoration of world TB day was planned to sensitize faculty, students of paramedical and life sciences.

On 24th March 2021, World TB Day, a webinar on tuberculosis was hosted by NTI. Around 60 faculty from paramedical and life sciences including 30 students were sensitized and 30 NTI technical staffs attended the webinar. Arrangements were made for NTI technical staff to attend the webinar in another hall. The topics covered were: Importance of World TB Day, Natural History and Epidemiology of TB, Overview of NTEP, TB Diagnosis, Chest X-ray, Treatment of TB & COVID-19.

The details of the virtual sensitization/ training conducted during the year are appended below

<b>Sl. No</b>	<b>Date</b>	<b>Category of Students</b>	<b>Organization</b>	<b>No. of Students</b>
1.	09-03-2021	B.Sc (N) + GNM	NIMHANS College of Nursing, Bengaluru	116
2.	12-03-2021	B.Sc(N) +GNM	St. Johns College of Nursing, Bengaluru	150
			Krupanidhi College of Nursing, Bengaluru	
3.	16-03-2021	B.Sc(N) +GNM	St. Johns College of Nursing, Bengaluru	150
			T. John College of Nursing, Bengaluru	
			Laxmi Memorial College of Nursing , Bengaluru	
			St Marthas Hospital, Bengaluru	
4.	19-03-2021	B.Sc (N) & Bio-Technology	Kalaingar Karunanidhi Institute of Technology, Coimbatore	60
			Indian Academy degree college – (Autonomous) Bengaluru	
			St Johns College of Nursing, Bengaluru	
5.	26-03-2021	B.Sc (N)	St Johns College of Nursing, Bengaluru	230
			NIMHANS College of Nursing, Bengaluru	
			Laxmi Memorial College of Nursing ,Bengaluru	
			M J Adarsha Nursing School, Bengaluru	
			Sri Kalabyraveswara Swamy College of Nursing Bengaluru,	
6.	30-03-2021	B.Sc (N) & Life Sciences	R V College of Nursing, Bengaluru	250
			Mount Carmel College, Bengaluru	
			Sri Devaraj Urs College of Nursing, Kolar	
			Sri Satya Sai Institute of Higher Medical Sciences, Bengaluru	
			Acharya College of Nursing, Bengaluru	

## 6. ADMINISTRATION DIVISION

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The Administration Division of NTI caters to all the administrative requirements of the Institute. The major activities of the units for the financial year 1<sup>st</sup> April 2020 to 31<sup>st</sup> March 2021 are briefly furnished below.

### **Establishment**

The unit caters to the administrative matters, general upkeep of campus through CPWD, provision of contractual manpower to various divisions and service matters pertaining to the staff viz., holding of DPC for considering cases of promotion, confirmation, grant of MACP, processing of legal issues pertaining to service matters coming under the purview of Central Administrative Tribunals and Honorable High Court of Karnataka & SLP in the Supreme Court.

The details of staff position are as under:

<b>Sl.No.</b>	<b>Category</b>	<b>Sanctioned</b>	<b>In Position</b>	<b>Vacant</b>
<b>1</b>	Group 'A'	12	12	--
<b>2</b>	Group 'B'	01	01	--
	Gazetted Non-Gazetted	36	31	05
<b>3</b>	Group 'C'	66	59	08
Total		114	103	11

### **Promotions**

<b>Sl. No.</b>	<b>Name</b>	<b>Designation</b>	<b>Date</b>
	NIL	NIL	

### **MACP**

<b>Sl. No</b>	<b>Total no. of MACP Cases Processed</b>
1.	28



**Retirements on attaining the age of superannuation**

<b>Sl. No.</b>	<b>Name</b>	<b>Designation</b>	<b>Date</b>
1	Dr. Prahlad Kumar	Consultant (TB)	31/05/2020
2	Smt. R. Bhagirathi	MLT	31/05/2020
3	Sri. S. Shantha Raju	Animal Attendant	31/05/2020
4	Sri. S. Ravindra	X-Ray Technician	31/07/2020
5	Sri. C. Munikrishna	Driver Gr.I	31/07/2020
6	Sri. P. Manickam	DDG(ISS)	31/01/2021
7	Sri. Kempaiah	Animal Attendant	28/02/2021
8	Smt. Ranikutty	Safaiwala	28/02/2021

**Retirements other than superannuation:**

<b>Sl. No.</b>	<b>Name</b>	<b>Designation</b>	<b>Date</b>
1	Smt. Tajunissa	MLT	16/10/2020
2	Sri. C. Nagaraj	JMLT	07/11/2020
3	Sri. M. Gopal	MTS	08/08/2020

**Transfers from NTI**

<b>Sl. No.</b>	<b>Name</b>	<b>Designation</b>	<b>Date</b>
1	Sri. Soumik Ghosh	JSO	02/12/2020
2	Sri. Krishan Murari Singh	JSO	02/12/2020

**Transferred to NTI**

<b>Sl. No</b>	<b>Name</b>	<b>Designation</b>	<b>Date</b>
1	Smt. Minakshi Panwar	JSO	29/06/2020
2	Sri. Shyam Krishnan	JSO	01/12/2020
3	Sri. S. Mohan Krishna	JSO	07/12/2020
4	Smt. S. Leena	DDG (STAT)	04/03/2021

**Court Cases**

<b>Sl. No</b>	<b>Name of the Court</b>	<b>Total No. of Cases</b>	<b>Dispose</b>
1	Supreme Court	1	--
2	High Court	1	--
3	CAT	--	1

**CGHS**

<b>Sl. No</b>	<b>Total no. of Permissions Granted</b>
1.	41

**Pay Fixation**

<b>Sl. No</b>	<b>Total No. of Pay Fixations</b>
1.	47

**Other activities:**

1. "Vigilance Awareness Week 2020" from 27/10/2020 to 02/11/2020, Oath administered to staffs on 27/10/2020 at 11.00 A.M. in the Institute.
2. Dr. V. K. Chadha, took charge as Advisor (Public Health) at NTI, Bengaluru on 09/11/2020 (A.N.) vide Ministry's Order No.A.11019/03/2020-CHS-III (Pt.). Dated: 05/11/2020.
3. Independence day was celebrated on 15/08/2020 in the institute and COVID warriors were facilitated by the Director.
4. "Constitution Day" was celebrated on 26/11/2020 in the Institute. Preamble was read together by all the staffs. Books on constitution were distributed to the staff.
5. Observance of "Communal Harmony Campaign Week" from 19<sup>th</sup> to 25<sup>th</sup> November 2020 and 25<sup>th</sup> November 2020 as "Flag Day".
6. Republic day was celebrated on 26<sup>th</sup> January 2021 at the office premises.

## **CPWD, CIVIL, HORTICULTURAL & ELECTRICAL WORKS AND MAINTENCE**

The civil, Horticultural and Electrical works of the Institute are being executed through the Central Public Works Department (CPWD), under the Ministry of Urban Development and Poverty Alleviation, Government of India, out of the budget sanctioned to NTI during each financial year 2020-2021.

A budget of Rs.80,00,000/- (Rupees Eight Lack only/-) Under the head of account PLAN CAPITAL – MAJOR WORKS and Rs. 5,00,000/- (Rupees Five Lack only/-) Under Machinery & Equipment was allocated to the Institute during the financial year 2020-21 for carrying out maintenance and new works. The following Civil and Electrical works were executed during the period under report, in addition to other routine repair & maintenance work:

### **CPWD, CIVIL WORKS**

1. Day to day maintenance works of Residential buildings at NTI campus.
2. Renovation of toilet works in Krishna Nivas at NTI campus.
3. Construction of Damaged Compound wall at NTI campus.
4. Providing M.S. Windows, M.S. grill door and balcony with SS fly proof mesh for 18Nos quarters at NTI campus.

### **CPWD, ELECTRICAL WORKS**

1. Running and Maintenance 2 numbers of 125 KVA DG Set and one Passenger Lift at NTI Campus.
2. Providing one Submersible pump set including HDPE pipe and service connection to starter panel at NTI Campus.
3. Replacement of OLD Conventional fittings to LED fittings & ceiling fans at Culture Lab and Molecular Lab in the Robert Koch & main Avalon building at NTI campus.

### **Additional Works**

1. Termite disinfection work completed in AVALON main building at NTI campus.

## **Transport Unit**

The Institute has fleet of seven vehicles and the unit is responsible for the upkeep of the vehicles including in-house repair of vehicles, if feasible. The unit also maintains all documents pertaining to registration, insurance and condemnation of vehicles.

1. Presently five vehicles are available in running condition.
2. Two vehicles are under the process of condemnation. Documents of both these vehicles were surrendered to Regional RTO, Bengaluru.
3. One vehicle (Mahindra Armada) has been stationed in the Workshop, as it needs major engine overhauling work.
4. The Institute has received Administrative and Financial approval for the procurement of five vehicles. Out of these five vehicles, two vehicles were procured during the year of reporting.
5. Vehicles are regularly going for fieldwork and in house activities as and when needed.
6. Maintenance and repairs are carried out periodically.

## **Stores**

Stores cater to the logistic needs of various Units / Divisions of the Institute. It is responsible for procurement and supply of stores items for the smooth functioning of the Institute. This involves extensive procedures viz., receipt of indents from individual Units and their compilation, calling for quotations / tenders, arrangements for opening the tenders, preparation of comparative statements and submission of the same to the Purchase Committee for its recommendations for further necessary action. The other functions of the Unit include:

1. Maintenance of stores /stock ledger.
2. Arrangement for Annual Maintenance of equipment's held by different Units/ Divisions.
3. Arrangement for Annual Stock verification
4. Arrangement for condemnation and disposal of unserviceable items as per Government laid down procedure.
5. All major procurements are made through GEM.

### **Details of purchases and other activities performed during 2020 – 2021**

1. Items purchased against Annual Indent 2020-21 as decided and approved by the director and issued to various Units.
2. Stationery Items and General Stores Items purchased through GeM & issued to various Units.
3. Laboratory chemicals, consumables etc., purchased and issued to Laboratory Unit.
4. Hostel items like steel utensils, teakwood cot etc., purchased and issued to Hostel Unit.
5. Stationery & General stores items purchased for Training unit and issued for their various Training activities.
6. Computer chairs and visitors chairs were repaired.
7. Trilingual boards for officers, Units and Divisions were fabricated and fixed.
8. Annual Maintenance Contract for computers, printers etc., renewed
9. Annual Maintenance Contract for online UPSs renewed.
10. Annual Maintenance Contract for laboratory Instruments / Equipment's were renewed.
11. Servicing and refilling of Fire extinguishers held by this institute initiated.
12. Repair and servicing of Air Conditioners held by Laboratory Unit.
13. Monthly statements for Binocular Microscopes & LED Fluorescence Microscopes are prepared and dispatched to DGHS.
14. Issued Wall Calendars, Diary (CCS-8 & CCS-10) 2020 to all the Units.
15. Towels & Glass Tumblers purchased and issued to all the officers and staff.
16. Vehicle Spares purchased and issued to Transport Unit.

## **Accounts**

The unit caters to the financial matters of the Institute. Details of Budget received under Non Plan and Plan and Expenditure up to end of March 2021 is as follows:

<b>April 2020 to March 2021</b>		
	<b>Budget Estimate</b>	<b>Expenditure</b>
<b>Revenue</b>	Rs. 13,85,95,000.00/-	Rs. 13,84,41,000.00/-
<b>Capital</b>	Rs.98,00,000.00/-	Rs. 83,00,000.00/-

**7. PARTICIPATION IN MEETINGS / PROGRAMMES / SEMINARS /  
CONFERENCES / WORKSHOPS / CME ETC.**

The Director, faculty and technical staff of NTI participated as facilitators, resource person / delegate in Conference / workshops / training programmes conducted in both at NTI and outside. The details are furnished below:

<b>Sl. No.</b>	<b>Particulars</b>	<b>Date</b>	<b>Resource person</b>
1	Weekly expert committee vaccine trial monitoring meeting held by ITRC/ICMR via video conference for review of vaccine trial follow-up progress	Once every week during the month aggregating to 52 days in the year	Dr. N. Somashekar Dr. S. Uma Shankar
2	Participated Vaccine trial review meeting with all Co-Is via zoom at NTI	27.05 2020	
3	Attended Monthly Vaccine trial review meeting with all Co-Is via video conference	24.06.2020	
4	One Day Online Interactive Live Training / Workshop On : "Reservation in Services for SC/ST/OBC & EWS"	03.07.2020	Dr. S. Uma Shankar Dr. Poornima A Mrs. Mangalagowri
5	Online Interactive Live Training program on "Government e-Market Place (GeM)"	27.07.2020	Dr. Poornima A Mr. Nagarajappa
6	Presented modalities for Research pertaining to the effect of COVID 19 on TB- to finalize the protocol titled "Impact of lockdown and partial lockdown following COVID-19 pandemic on TB services under NTEP in Bengaluru city, Karnataka" via VC with the Heads of Stop TB Partnership	18.08.2020	Dr. S. Uma Shankar

7	Online training programme No.T-96: One Day Online Interactive Live Training/Workshop on “Pay Fixation and National Pension System” (NPS)	26.08.2020 to 27.08.2020	Dr. S. Uma Shankar Mr. Govindnaryanswamy Mr. Amit Kumar
8	Online Training Module-A on “Administrative management”	02.09.2020 to 15.09.2020	Mr. Jameel Ahmed Mrs. Shantha Kumari Mrs. Nagarathna
9	Online Training Module-B on “Accounts, Budget and Financial management”	16.09.2020 to 29.09.2020	Mr. M. P. Sarvanan Mr. Jameel Ahmed Mr. Govindanarayanswamy
10	Sensitization meeting on ‘The processes involved in manufacturing of BCG vaccine’ at BCG vaccine laboratory, Chennai	30.09.2020 and 28.10.2020	Dr. S. Uma Shankar
11	Online Training Program “Budgeting & Financial Management”	07.10.2020	Mr. Amit Kumar
12	VC held by ICMR on training related to electronic data entry on eVelos	31.10.2020	Dr. S. Uma Shankar
13	As expert member, National operational research committee meeting for review of “Modified BPal regimen trial protocol”	11.11.2020	Dr. N. Somashekar Dr. V K Chadha
14	Meeting at Karnataka Drugs and Logistics Department for POC (Molecular assay) testing equipment procurement	01.12.2020	Dr. Reena K Mrs. Mamatha H G
15	Demo on NAAT procurement at state-NIV Bangalore	02.12.2020	



16	Meeting to discuss revised proposal “Multi-centric cohort study of recurrence of tuberculosis among microbiologically confirmed new pulmonary tuberculosis patients treated under NTEP with the 6-month daily regimen” Technical inputs to NIRT Chennai.	02.12.2020	Dr. V K Chadha
17	Desk review: Root cause analysis for errors in CBNAAT EQA for labs under IRL Lucknow	02.12.2020	Dr. Reena. K
18	Desk review: Root cause analysis for errors in CBNAAT EQA for labs under IRL Nagpur	03.12.2020 and 04.12.2020	
19	LIMS Logistic Module Demo	04.12.2020	Dr. Sarika Jain Agrawal Dr. Reena K Mrs. Mamtha H G Dr. Kavitha A.K
20	Meeting with all IRLs for LPA Interpretation AI tool by CTD	07.12.2020	Dr. Reena K Mrs. Mamtha H.G Dr. Kavitha A.K
21	Annual EQA OSE Visit to STDC Karnataka	9.12.2020 to 15.01.2021	Dr. Reena K Mrs. Mamatha H.G Mr. Charan Mr. Ganesh
22	As vice-chair, India TB research consortium- implementation research, ICMR	10.12.2020 and 29.12.2020	Dr. V K Chadha

23	Meeting with AIIMS Jodhpur regarding certification process for LPA	17.12.2020	Dr. Reena K
24	NATCON 2020 (virtual)	18.12.2020 to 20.12.2020	Dr. N. Somashekar Dr. V K Chadha Dr. S. Umashankar Dr. C. Ravichandra Dr. Sarika Jain Agrawal
25	Lab visit to STDC/IRL Karnataka	21.12.2020	Dr. N. Somashekar Dr. Reena K Mrs. Mamtha.H.G Dr. Kavitha A.K
26	NORC meeting on several research projects (Proposed, ongoing) reviewed	22.12.2020 to 23.12.2020	Dr. N. Somashekar Dr. V K Chadha
27	FMR Echo session for WGS	23.12.2020	Dr. Reena.K Mrs. Mamtha.H.G Dr.Kavitha
		15.01.2021	
		12.03.2021	
28	Meeting by NIRT on Revisiting DRTB in India through NG-WGS: Lessons learnt	30.12.2020	Dr. Reena K Mrs. Mamtha H.G Dr. Kavitha A.K Dr. Udanesha N Dr. C. Ravichandra Dr. Poornima A

29	NABL Pre Assessment of NTI laboratory	05.01.2021	Dr. N. Somashekar Dr. Sarika Jain Agrawal Mr. Surendra HD All Lab staff
30	Virtual Training on DST for newer drugs by NIRT Chennai	07.01.2021 and 08.01.2021	Dr. Sarika Jain Dr. George Sebastian Dr. Reena.K Mrs. Mamtha.H.G Dr. Kavitha A.K Mr. Raghunadhan Mr. Somashekharayya.H Mr. Jayaganesh
31	Virtual meeting for C& DST labs conducted by STDC Karnataka	11.01.2021	Dr. Reena.K Mrs. Mamatha.H.G
32	Meeting with STO Karnataka for submission of NRL EQA OSE visit report	13.01.2021	Dr. Reena.K Mrs. Mamatha.H.G Dr. Kavitha A.K
33	Virtual Post CBNAAT EQA review of CBNAAT sites in Karnataka	15.01.2021	Dr. Reena.K Dr. Kavitha A.K
34	Management review meeting (NABL)	19.01.2021	Dr. N. Somashekar Dr. Udanesha N Dr. Sarika Jain Agrawal Dr. Poornima A All staff of Laboratory
35	Meeting with MD NHM to brief about the NRL EQA OSE visit findings	20.01.2021	Dr. N. Somashekar Dr. Reena.K Mrs. Mamatha.H.G Dr. Kavitha A.K
36	Steering Committee meeting of National TB prevalence survey	21.01.2021	Dr. N. Somashekar Dr. V K Chadha

37	Post CBNAAT EQA OSE visit to Pandavapura CBNAAT	25.01.2021	Dr. Reena.K Mr. Somashekharayya.H Mrs. Geetha
38	K. R. Pet Truenat site visit	25.01.2021	
39	On site refresher training for lab staff at IRL Bangalore	27.01.2021 to 29.01.2021	Dr. Reena.K Mrs. Mamatha.H.G Dr. Kavitha A.K Mr. Somashekharayya.H
40	Meeting with DTO's , field staff of Bangalore Urban, city and Rural : to discuss issues related to diagnostic services provided by NTI	28.01.2021	Dr. N. Somashekar Dr. Sarika Jain Agrawal Dr. Poornima A Dr. Reena.K Mrs. Mamatha.H.G Dr. Kavitha A.K Mr. Surendra HD
41	Participated in NTI-IEC Sub-Committee meeting for assessing Serious Adverse Event pertaining to causality that occurred in a participant who was admitted at Victoria Hospital on 10th Feb 2021.	23.02.2021	Dr. S. Uma Shankar
42	Preliminary meeting to plan activities for commemoration of World TB Day at State TB Cell, Karnataka	19.02.2021	Dr. Poornima A

43	Virtual meeting with faculty of Center for Public Health Kinetics, New Delhi regarding implementation research proposals	19.02.2021	Dr. V K Chadha
44	Task force on “Sub-national certification of progress towards TB elimination”	24.02.2021 and 19.03.2021	
45	NABL Final Assessment by External Assessors	27.02.2021 and 28.02.2021	Dr. N. Somashekar Dr. Sarika Jain Agrawal Mr. Surendra HD, All staff of Laboratory
46	International conference organized by Kerala: TB elimination	04-03-2021	Dr. N. Somashekar Dr. V K Chadha
47	As chairman of working group- Implementation research, India TB research consortium meeting, ICMR, 9 protocols reviewed	10.03.2021	
48	Participated as Expert: Pre-scientific advisory committee of National Institute of Research in Tuberculosis, Chennai on, 21 Protocols discussed	17.03.2021	Dr. V K Chadha
49	Training program on service matters (Pay fixation, MACP, Leave and TA Rules) Retirement benefits and NPS conducted by Systematic Institute of Economic Research Development (SIERD) at Goa.	17.03.2021 to 19.03.2021	Dr. Udanesha N Mr. Rony Jose Kokkad Mr. Jameel Ahmed

50	Vaccine trial expert committee annual meeting	17.03.2021	Dr. S. Uma Shankar
51	Vaccine trial meeting with CDSA monitor and all vaccine trial staff in KCG to discuss effective follow up strategy and participant retention plan	25.03.2021	
52	World TB Day :Webinar on TB & NTEP for paramedical and life sciences faculty was organized and conducted by NTI	24.03.2021	Dr. N.Somashekar Dr. C. Ravichandra Dr. S.Uma Shankar Dr. S.K Tripathy Dr. Sarika Jain Agrawal Dr. Poornima A
53	WHO global leprosy task force on definitions, criteria and indicators for transmission and incidence of leprosy: final hybrid meeting at central leprosy training and research institute, Chengalpattu.	24.03.2021 to 26.03.2021	Dr. V K Chadha
54	Good clinical Practice (GCP) training	29.03.2021	

## **INSTITUTIONAL ETHICS COMMITTEE MEETINGS**

During the period under report, two IEC meetings were held:

1. The 25<sup>th</sup> Institutional Ethics Committee Meeting was held in the Institute on 28.08.2020 and under the Chairmanship of Dr. Srigiri S Revadi.
  - The meeting was attended by Director, NTI; Brief presentation on the two protocols submitted for ethical clearance was made by the Principal Investigators / Presenters and ethical issues pertaining to each protocol was discussed.
  - Both the protocols were approved by the Chairman and committee members.
  - While concluding the meeting, Director expressed appreciation to the Chairman and the members for their contribution in this meeting. The suggestions given by the Chairman/Members were incorporated in the minutes and communicated to the concerned Principal/Co- Investigators.
  
2. The 26<sup>th</sup> Institutional Ethics Committee Meeting was held in the Institute on 19.01.2021 under the Chairmanship of Dr. Srigiri S Revadi.
  - The meeting was attended by Director, NTI; the IEC members and the Principal Investigator / Presenters of the protocol. Brief presentation on the progress of the ongoing approved research protocols by the NTI-IEC.
  - While concluding the meeting, Director expressed gratitude to the Chairman, Member Secretary and the members for their valuable presence in this meeting. Minute of the meeting was prepared as per the suggestions given by the Chairman/Members and circulated to the Chairman and members for their approval. On receipt of approved minutes, copy of the same was provided to the concerned Principals/co-investigators.

## **RESEARCH DOCUMENTATION CELL (RDC)**

The Research Documentation cell is carrying out the responsibility to digitize and upload the published TB research in Indian context as a nodal centre of NTI. The uploaded research articles are available in the research documentation portal [www.tbresearch.ntiindia.org.in](http://www.tbresearch.ntiindia.org.in). The portal includes the published TB research from the following institutions/organization:

- Indian Institute of Science (IISc), Bangalore
- Institute of Bioinformatics, Bangalore
- Mahatma Gandhi Institute of Medical Sciences (MGIMS), Wardha
- National Institute for Research in Tribal Health (ICMR), Jabalpur
- National Institute for Research in Tuberculosis (NIRT), Chennai
- National Institute of Tuberculosis and Respiratory Diseases (LRS), New Delhi
- National JALMA Institute of Leprosy and other Mycobacterial Diseases, Agra
- National Operations Research Committee, Central TB Division, Govt. of India
- National Task Force, Zonal Task Force & State Task Force of Medical Colleges
- National Tuberculosis Institute (NTI), Bangalore
- New Delhi TB Centre (NDTBC), New Delhi
- State Tuberculosis Centres.
- Tuberculosis Association of India (TAI)

The following activities were undertaken by Research Documentation Cell during Apr 2020 to Mar 2021

### **(A) Research Documentation Cell:**

- Web Administration of TB research portal [www.tbresearch.ntiindia.org.in](http://www.tbresearch.ntiindia.org.in)
- Correspondence with all the participating nodal centers.
- Processed access request to the documentation portal as & when requested.
- Digitization and uploading of Indian TB research articles (57 Nos) received from collaborating centres and published in various publications viz. Int J Tuberc & LD, IJMM, IJMR, IJTB, PHA etc.



**(B) Institutional Ethics Committee (NTI - IEC)**

- Organization of 25th & 26th NTI IEC meetings held during the year 2020-2021.
- Maintaining the records and correspondence between NTI IEC and researchers
- Correspondence with CDCSO with regards to change in the membership of NTI-IEC process.

**(C)** Compiling of the Annual Report in consultation with the all the Division/ Unit Heads of NTI and submitting to the Ministry.

**(D) WHO CC Activities**

- Submitted Annual Report of NTI as WHO Collaborating Centre pertaining to approved work plan for the year 2020-21.
- Correspondence with WHO SEARO
- Initiated the process of re-designation as WHO Collaborating Centre (2021-2025) and assisted Director's office in drafting the proposed activities in concurrence with the respective Division Heads and Advisor, NTI.