"IF YOU WANT TO SHINE LIKE A SUN. FIRST BURN LIKE A SUN."

- A.P.J ABDUL KALAM

“Better than a thousand days of diligent – study is one day with a great teacher”

Japanese Proverb

PROF B.K. Khanna

1 DEC 1933- 3 JAN 2018

National Academy of Medical Sciences (India)

DR. RAJENDRA PRASAD

MD,DTCD,FAMS,FCCP (USA) FRCP (GLASG), FRCP (London) FNCCP, FCAI,FIAB,FIMSA,FCCS,FICS,DSc.(Honoris Causa)

Dr. B.C. Roy National Awardee

Emeritus Professor National Academy of Medical Sciences, India

Director Medical Education & prof , Pulmonary Medicine

Era's Lucknow Medical College & Hospital, Lucknow

Convenor, State Chapter, Uttar Pradesh, National Academy of Medical Sciences, India

Former Director, V.P. Chest Institute, Delhi

Former Director, U.P. Rural Institute of Medical Sciences & Research, Saifai

Former Prof. & Head Pulmonary Medicine, KGMU, Lucknow

Vice-Chairman , National Task Force NTEP, India

Senior Vice Chairman, Uttar Pradesh Tuberculosis Association

E-mail: rprasadkgmc@gmail.com

NAMS (India)

- Established on 21st April, 1961 as a registered Society namely, the ***'Indian Academy of Medical Sciences'*** under Societies Registration Act XXI of 1860, with the objective of promoting the growth of medical sciences

- Inaugurated at New Delhi on 19th December, 1961 by Pt. Jawaharlal Nehru, the first Prime Minister of India

- First Convocation of the Academy held on 8th December, 1963 was addressed by Dr. S. Radhakrishnan, the then President of India

- The Academy was re-named National Academy of Medical Sciences (India) on 16th November, 1976 on the Working Group set up by Government of India

- NAMS is one of the unique institution which fosters and utilises academic excellence as its resource to meet the medical and social goals

NAMS Family

1. **Fellows (FAMS)**
2. **Members (MAMS)**
3. **Associate Fellow (Associate Fellow <45 years)**
4. **Members (After DNB) (MNAMS)**
5. **Associate Member (After MD/MS)**
6. **Emeritus Professor**

NAMS Associate Membership

NAMS Associate Membership has been introduced for the Medical /Dental Scientists who have completed Postgraduate qualifications (MD/ MS/ MDS) or PhD/MSc Biotechnology in SINGLE ATTEMPT and have a postgraduate degree with Any ONE of the following:

a. Membership of a National Professional organization in his/her specialty
b. Publication in a Scientific Journal
c. Presentation at the Annual Scientific Conference of National Professional organization

The application form, must be proposed by any of the following:

Head of Institution
Head of Department
Head of Unit
NAMS Fellow

Applications are accepted throughout the year.

The link for online application is as follows; https://namsdigital.in/Home/AMAMSHome

NATIONAL TUBERCULOSIS ELIMINATION PROGRAMME (NTEP)- AN UPDATE

DR. RAJENDRA PRASAD

MD,DTCD,FAMS,FCCP (USA) FRCP (GLASG), FRCP (London) FNCCP, FCAI,FIAB,FIMSA,FCCS,FICS,D,Sc.(Honoris Causa)

Dr. B.C. Roy National Awardee

Emeritus Professor National Academy of Medical Sciences, India

Director Medical Education & prof , Pulmonary Medicine

Era's Lucknow Medical College & Hospital, Lucknow

Convenor, State Chapter, Uttar Pradesh, National Academy of Medical Sciences, India

Former Director, V.P. Chest Institute, Delhi

Former Director, U.P. Rural Institute of Medical Sciences & Research, Saifai

Former Prof. & Head Pulmonary Medicine, KGMU, Lucknow

Vice-Chairman , National Task Force NTEP, India

Senior Vice Chairman, Uttar Pradesh Tuberculosis Association

E-mail: rprasadkgmc@gmail.com

R Prasad Lucknow

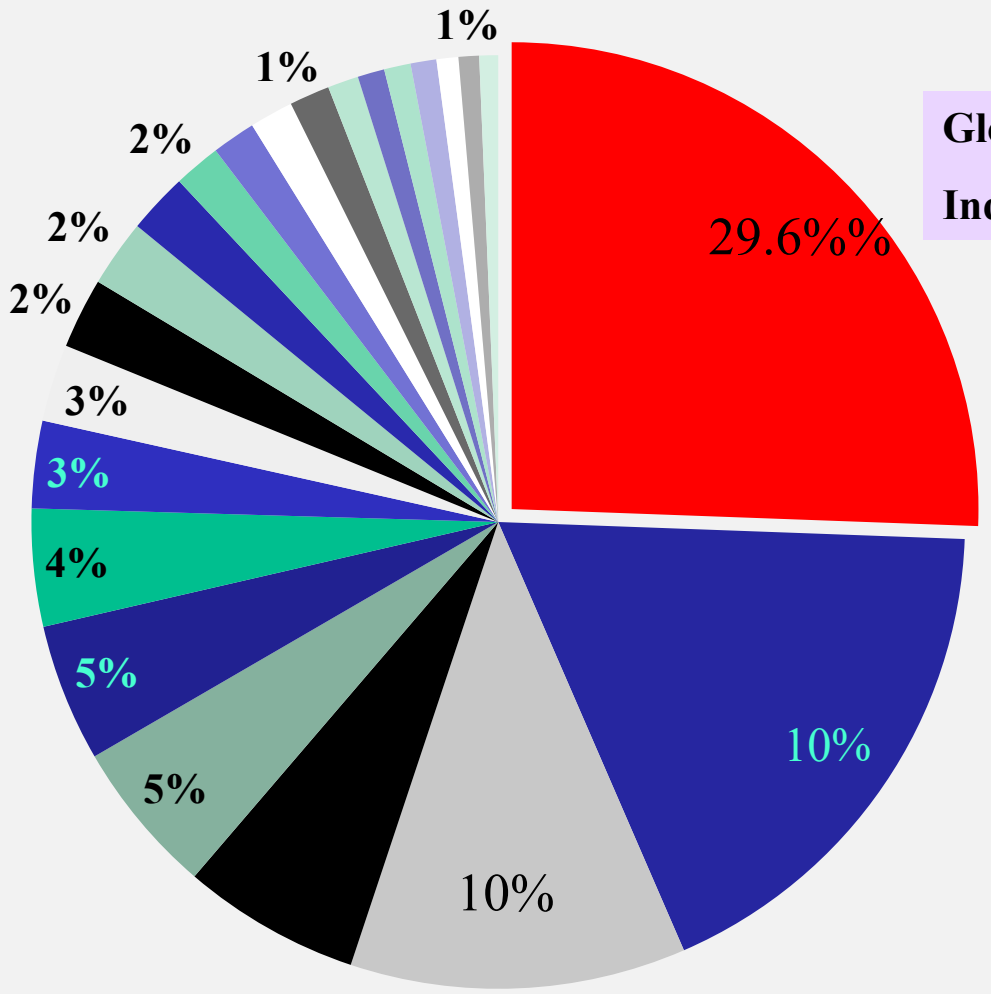
TUBERCULOSIS (TB)

Almost curable if adequate t/t prescribed & taken.

0.357 MILLION Deaths /Year

WHO GLOBAL TB REPORT 2024

India has highest TB burden



Global annual incidence = 10.08 Million

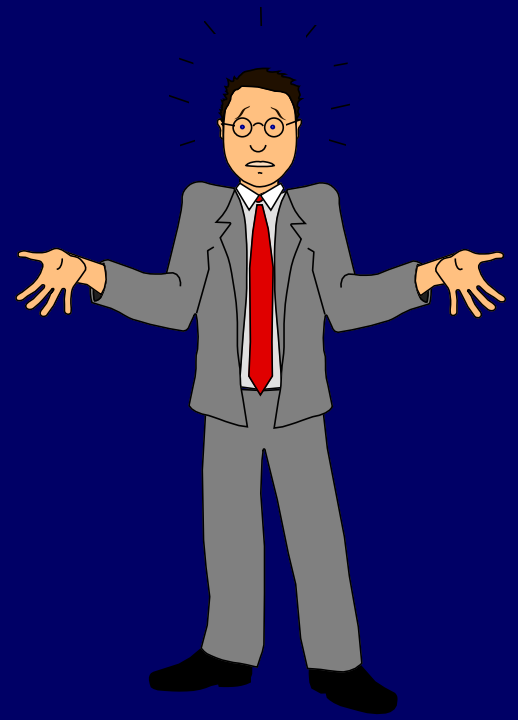
India annual incidence = 2.8 Million

- India
- Other
- South Africa
- Indonesia
- Pakistan
- Bangladeshd
- Philippines
- Ethiopia
- DR Congo
- Myanmar
- Nigeria
- Mozambique
- Russian Federation
- Vietnam
- Kenya
- Brazil
- Thailand

Global TB Report 2024, WHO

TB/Death

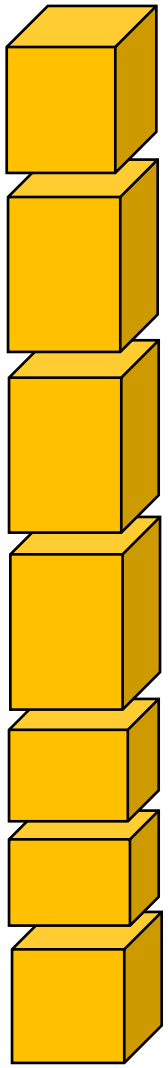
WHY ?



FACTORS PROMOTING DR-TB/DEATH

POOR MANAGEMENT OF TB PATIENTS

EVOLUTION OF NTEP



2020
In January 2020, GoI revised RNTCP to National TB Elimination Program (NTEP)

2017 – 25
NSP (2017 – 25) – patient centric care for TB elimination

2012 -17
National Strategic Plan (2012 -17) - mandatory notification of TB, rapid molecular testing, active case finding and integration of the program with National Health Mission

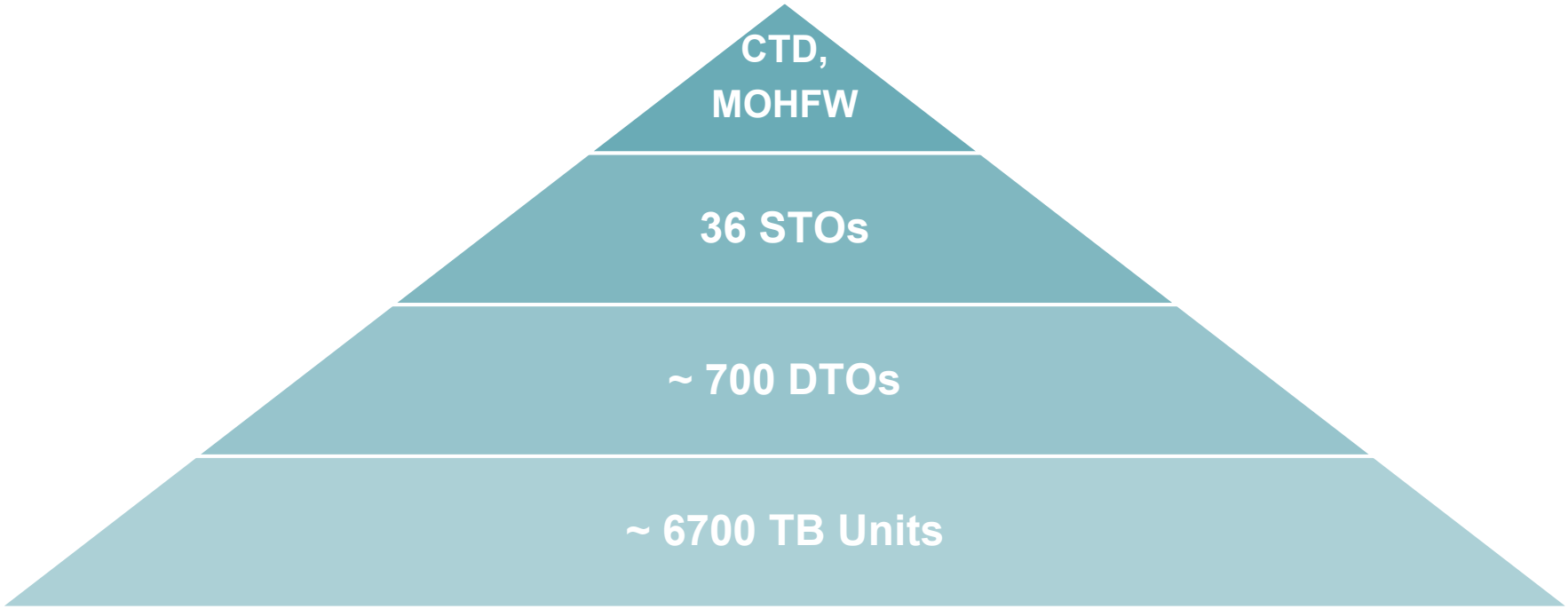
2005 – 11
Second phase of RNTCP – Pan India coverage and improved quality and scale up of services

1997
GoI revised NTP to RNTCP – introduction of DOTS (Directly Observed Treatment Short course)

1993
WHO declares TB as a global emergency

1962
Govt. of India launched the National TB Program and set up District TB Centres

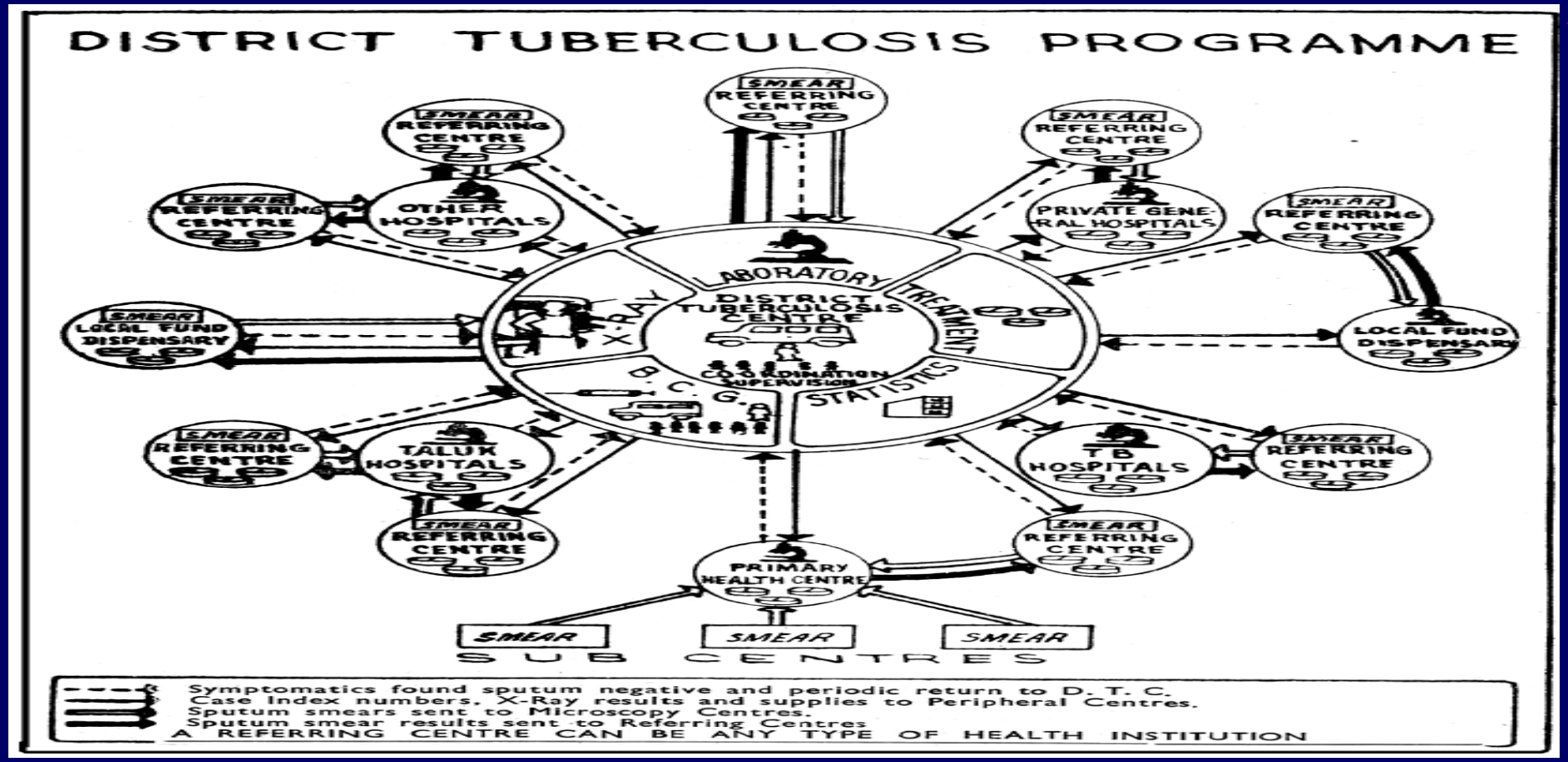
ORGANOGRAM



More than 1.6 lakh Ayushman Arogya Mandirs

Diagnostic Laboratories (NRL, IRL)

Private Health Facilities (Labs, Pharmacists and Clinics)



R1 **S2HT/ 10 HT** **2SHE/10HE** **2SHP/10HP**

R2 **12 HTorHE** **$12S_2H_2$**

Ra **2 EHRZ/6TH**

R_B **2 SHRZ/$4S_2H_2R_2$**

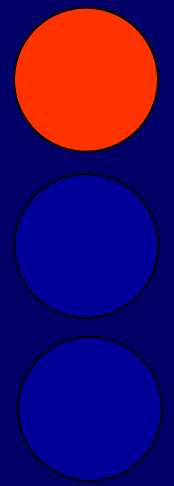
Nagpaul D R. District tuberculosis control programme in concept & outline. The Indian Journal of Tuberculosis Sept. 1967; 14(4)186-198

EVALUATION OF NTP

- Inadequate budgetary outlays and shortage of drugs
- Over emphasis on X-ray instead of sputum for diagnosis
- Poor quality of microscopy
- Emphasis on detection of new cases instead of achievement of cure
- Poor organizational set up and support for tuberculosis
- < 30% t/t completion rate
- Lack of consensus among pract. regarding t/t regimens

GOI-WHO-SIDA-1992

WHO declared Tuberculosis as Global Emergency in 1993



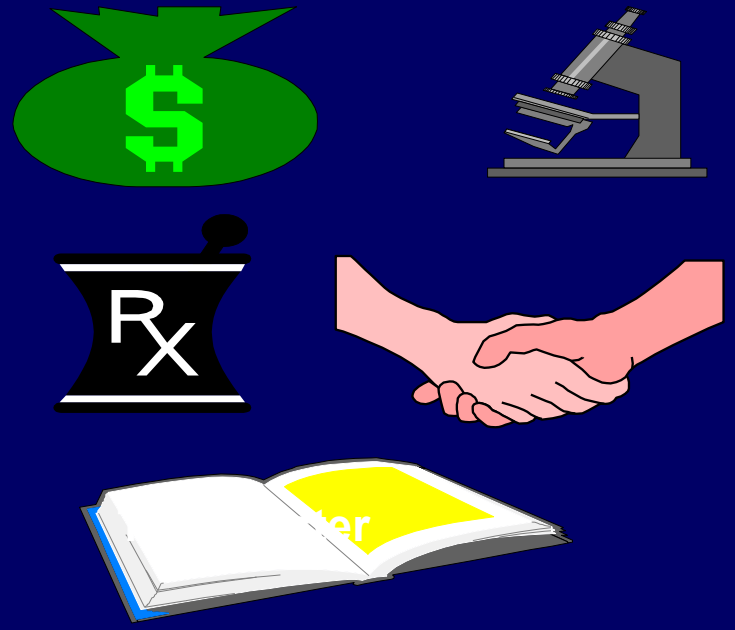
RNTCP

WHAT IS

?

TB CONTROL RNTCP
THE 5 COMPONENTS OF DOTS

- Political commitment
- Diagnosis by microscopy
- Adequate supply of the right drugs
- Directly observed treatment
- Accountability



Millennium development goal

Indicator 23

Between 1990 to 2015 to half the prevalence & mortality of TB.

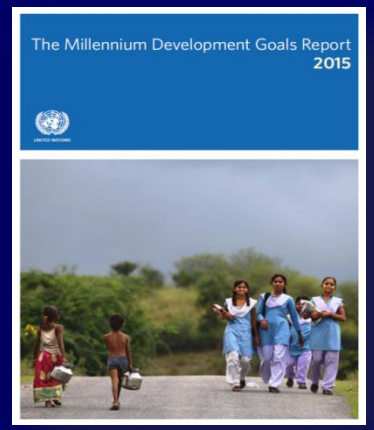
Indicator 24

To detect 70% of infectious cases & successfully treat 85% of detected sputum positive patient.

TB INDIA 2013-ANNUAL REPORT

Goal 6:
Combat HIV/AIDS, malaria and other diseases

MDG6 TB target achieved

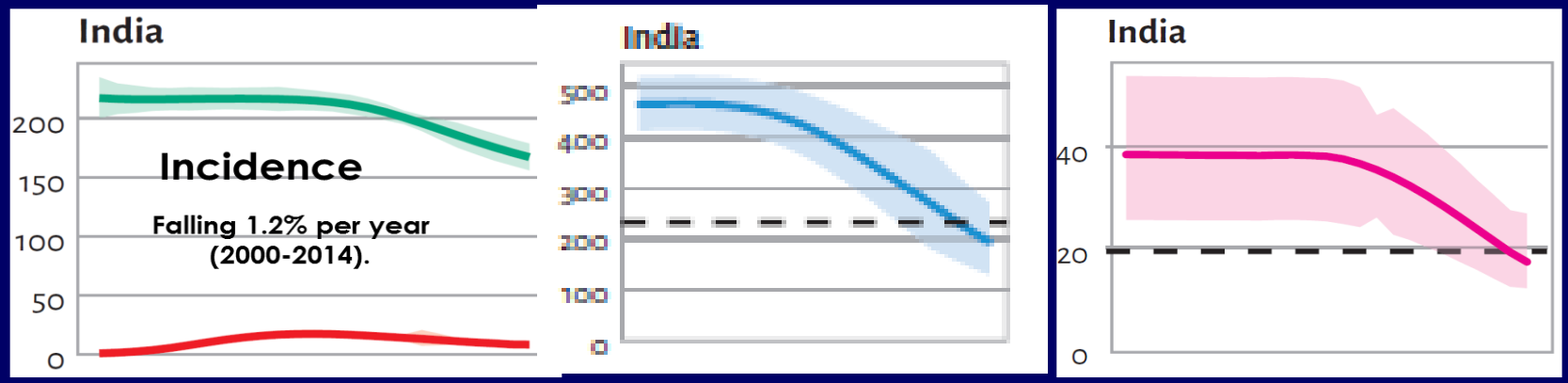


3.5 million additional lives saved since inception

TB EPIDEMIC REVERSED

50% DROP IN TB MORTALITY

50% DROP IN TB Prevalence



But huge burden of deaths and suffering remains in India.
Estimated 22 lakh incident TB cases in 2014, with 2.2 lakh deaths

Revised National Tuberculosis Control Program(RNTCP)

has changed to

National Tuberculosis Elimination Program (NTEP)

30Th December 2019

NTEP

WHAT IS

?

Global Milestones – End TB Strategy & SDG

Vision: A world free of TB

Zero TB deaths, Zero TB disease, and Zero TB suffering

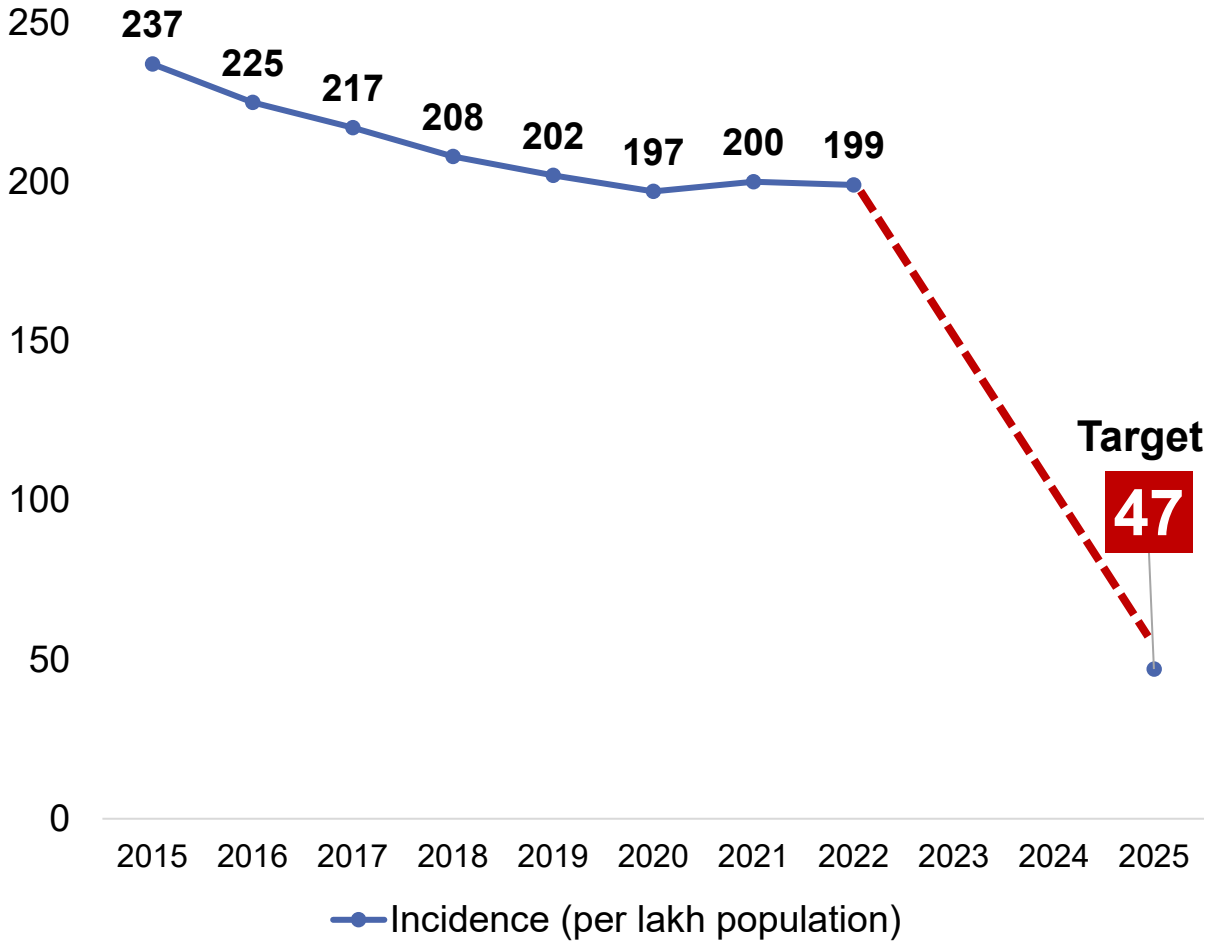
Goal: End the Global TB Epidemic (<10 cases per 100,000 population)

INDICATORS	MILESTONES		TARGETS	
	2020	2025	*SDG* 2030	*End TB* 2035
Reduction in number of TB deaths compared with 2015 (%)	35%	75%	**90%**	**95%**
Reduction in TB incidence rate compared with 2015 (%)	20% (<85/100 000)	50% (<55/100 000)	**80% (<20/100 000)**	**90% (<10/100 000)**
TB-affected families facing catastrophic expenditures due to TB (%)	Zero	Zero	**Zero**	**Zero**

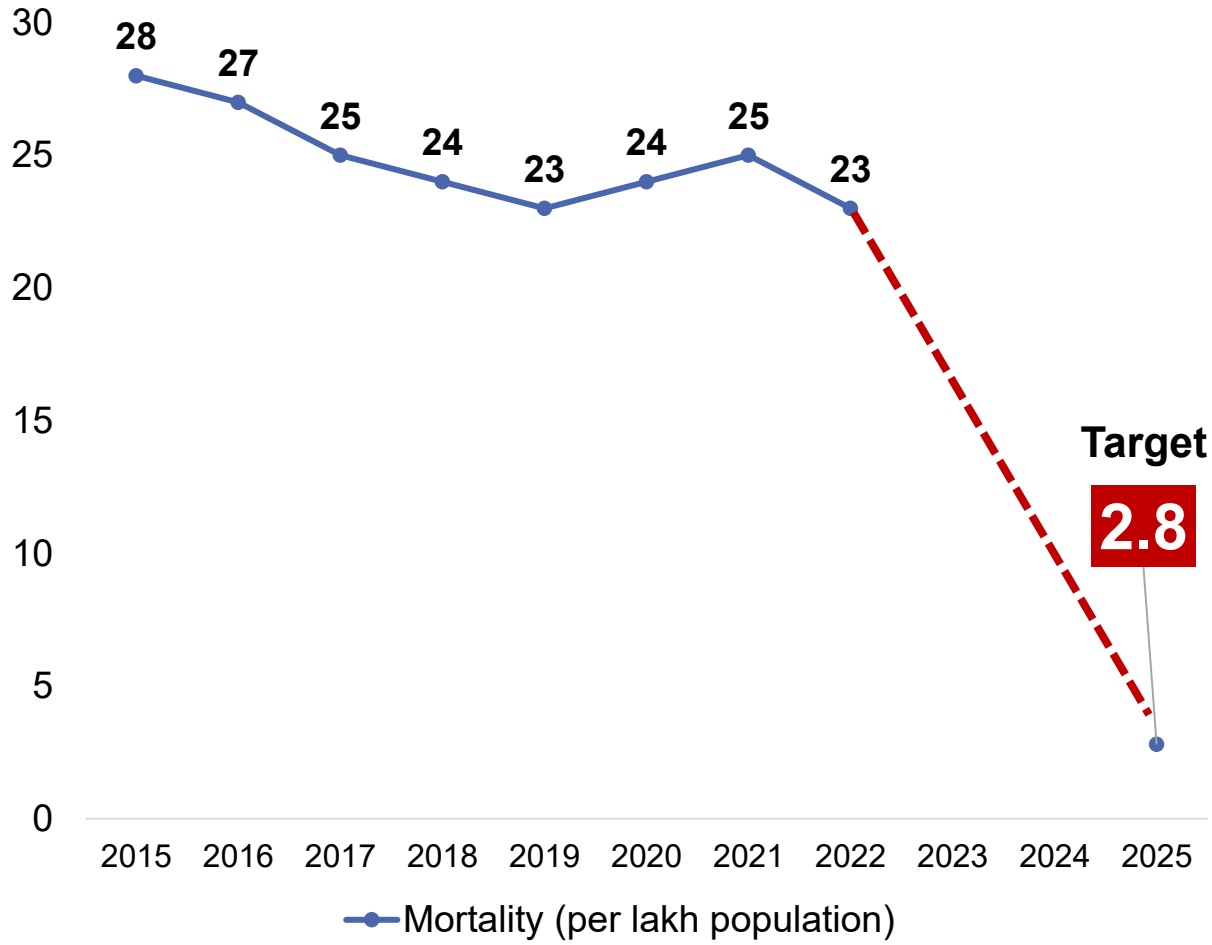

Stop TB Partnership
Government of India
END TB
Delhi END-TB Summit
13 March 2018 | New Delhi
INNOVATION AND ACTION TO EN
NATIONAL HEALTH MISSION
DOTS
GOI want to end TB by 2025

TB Burden in India Vs target

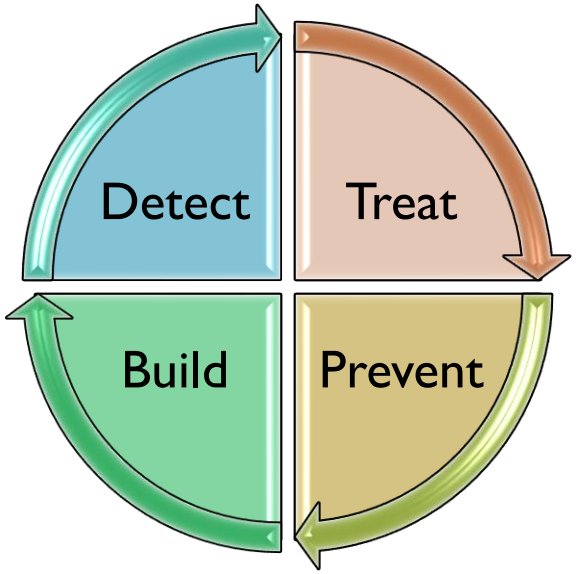
Incidence
(per lakh population)



Mortality
(per lakh population)



NATIONAL STRATEGIC PLAN (2017-2025)



Find all TB cases with an emphasis on reaching every TB patient in the private sector

Treat all TB cases with high quality anti TB drugs

Prevent the emergence of TB in susceptible populations and stop catastrophic expenditure due to TB by all

Build & strengthen supportive systems including enabling policies, empowered institutions & human resources

National Consultation Workshop on the Development of India's National Strategic Plan (NSP) 2025-30 for TB Elimination

21ST-22Nd February 2025

THEMATIC AREAS DISCUSSED

- Incidence reduction
- Mortality reduction
- Out-of-pocket expenditure reduction
- Strengthening health system for TB elimination
- Strengthening multi-sectoral involvement
- Strengthening surveillance, supervision, monitoring and evaluation
- Research – basic, programmatic and newer drugs, diagnostics and vaccine

Strategies to Reduce TB Incidence

Mapping vulnerable population and area

- >60 years, Malnourished, Diabetes, HIV, Smokers, Alcoholic, Past TB cases and Household Contacts of Tb patients

Intensified case finding

- Screening in Vulnerable Population
- Screening in people visiting special clinics

Use of X-Ray and NAAT (Nucleic acid amplification test)

Timely Treatment of TB

TB Preventive Treatment

- Rule out Active TB and testing for TB infection
- Once a week preventive treatment

Strategies to Reduce TB Mortality

Early detection and right treatment

Differentiated TB Care approach

- Risk assessment for Diabetes, HIV, Cancer, Heart, Kidney, Liver disease.
- Priority care for high-risk cases
- Admission in hospital, if required

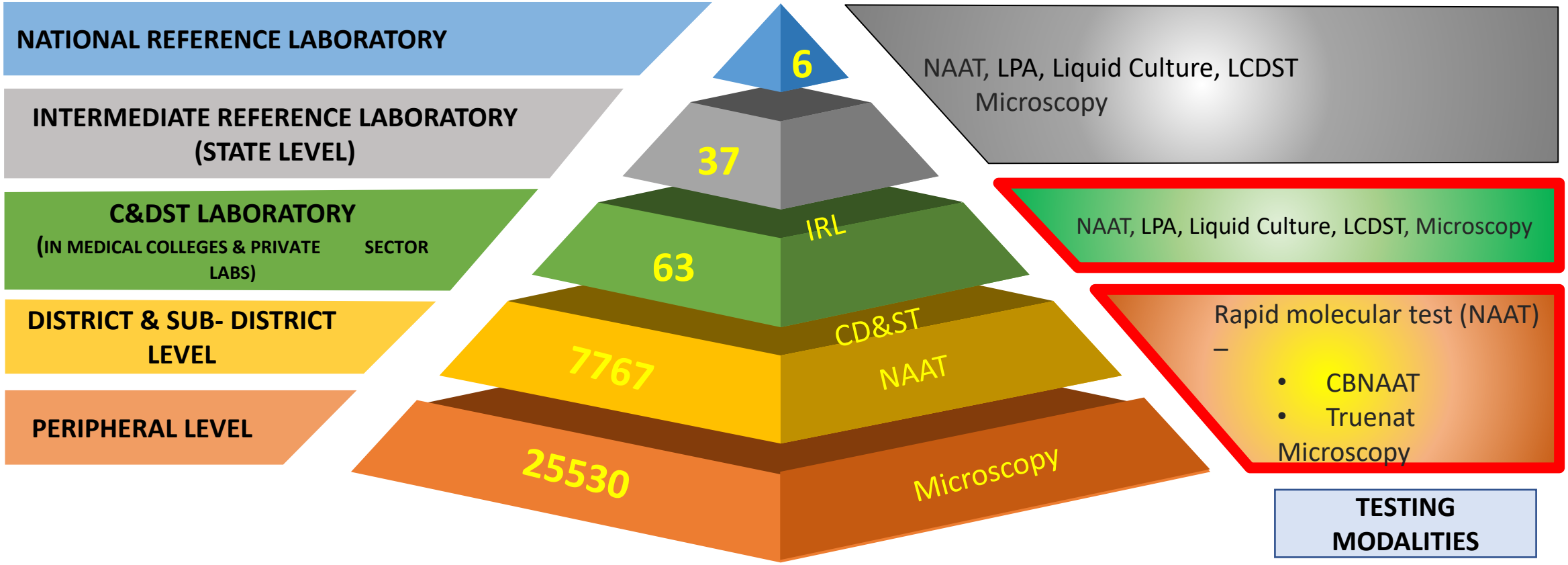
Nutrition support

- Rs 1000 / month Ni-kshay Poshan Yojana
- Ni-kshay Mitra – cover household contacts
- Energy dense nutrition support with treatment for malnourished TB patients

Follow up & monitoring

Death Audit

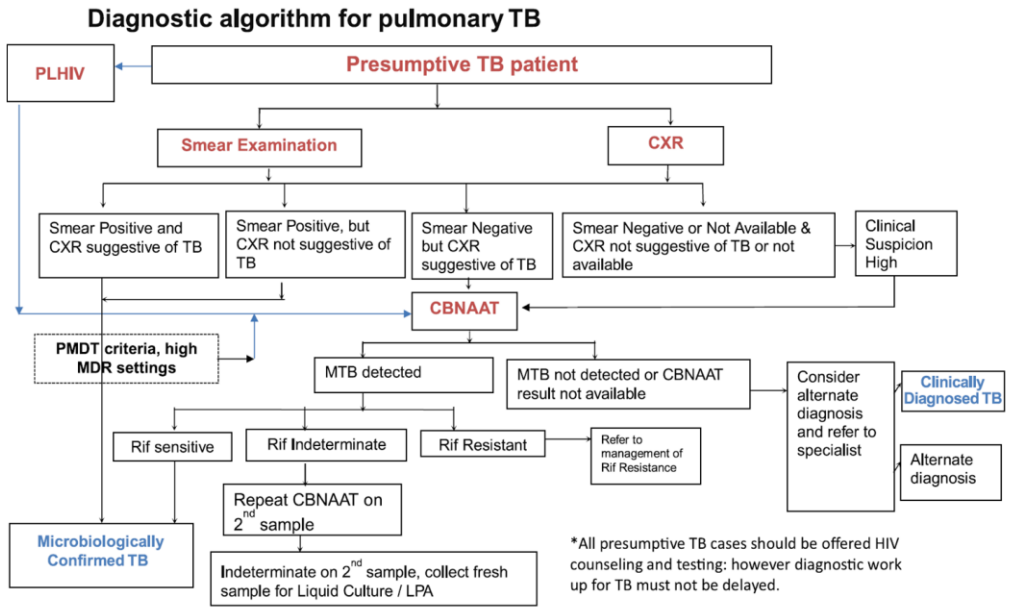
NTEP Diagnostic Network



NAAT- Nucleic Acid Amplification Test; LPA- Line Probe Assay; LC DST- Liquid Culture Drug Susceptibility Testing

DR-TB treatment Centres	Functional
792	

Revision of Diagnostic Algorithm

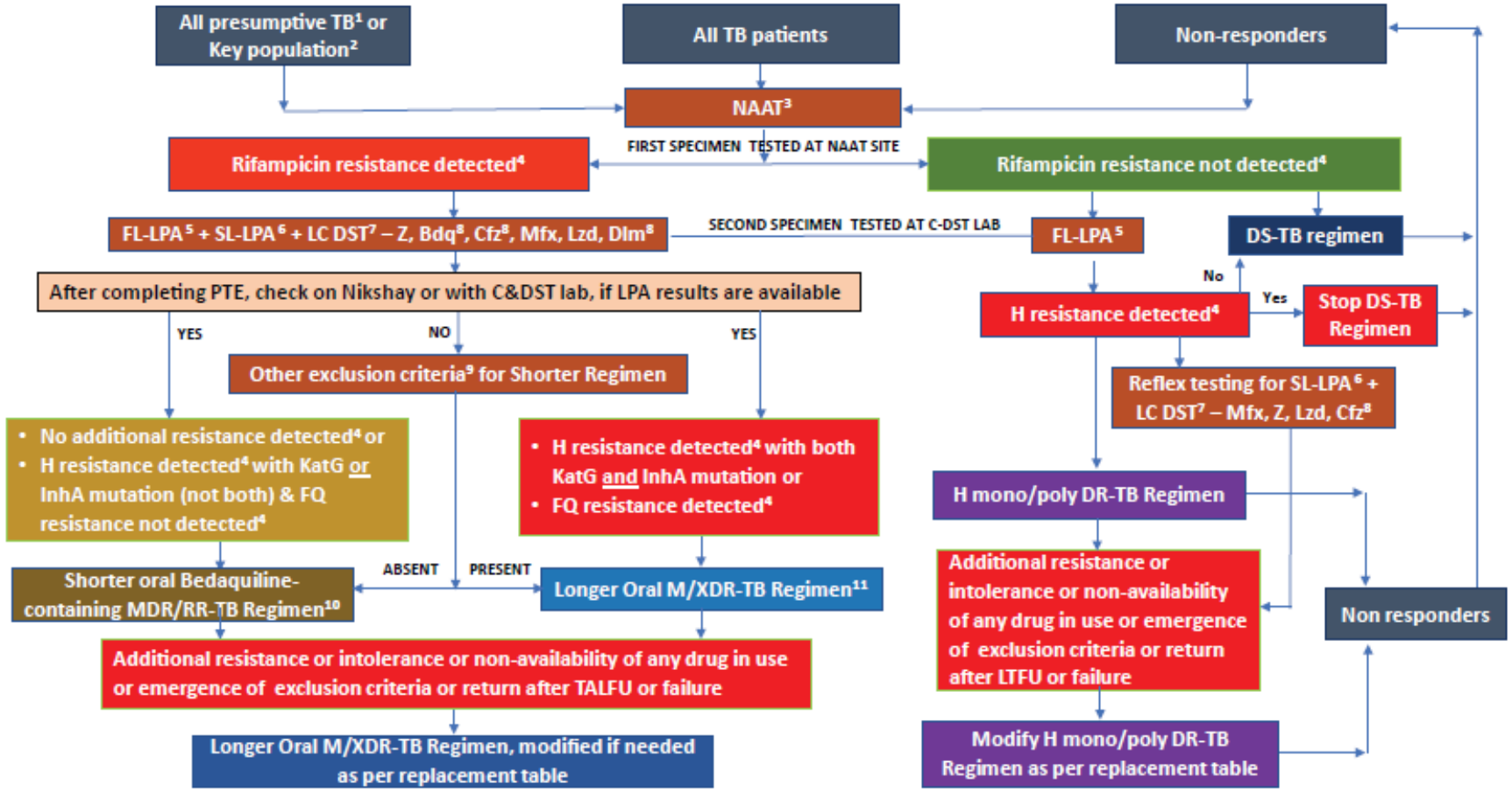


All efforts to undertake microbiologically confirmation in the diagnosis of TB patients.

- Smear microscopy and CXR
- CBNAAT – CXR suggestive TB
- CBNAAT upfront
  - Children
  - Extra pulmonary
  - PLHIV
- CBNAAT – Universal DST

Linkages – Sample Collection – Sample Transport

Integrated diagostic and treatment algorithm for drug resistant tuberculosis



1. In areas transitioned to NAAT for TB diagnosis. 2. Key population includes PLHIV, children, EP-TB, smear –ve/NA with CXR suggestive of TB, contacts of DR-TB patients, other vulnerable groups. 3. CBNAAT or Truenat. All EP-TB specimen except FNAC of peripheral LNs & CSF to be sent directly to C&DST laboratory for further processing. For processing FNAC & CSF specimen at NAAT sites, refer to the text. 4. As per mutation pattern, includes resistance inferred. 5. Discordance in RR results between NAAT & FL-LPA to be resolved with a repeat NAAT at C&DST lab and microbiologists will provide the final decision. InhA mutation associated with Eto resistance. Use other exclusion criteria to decide regimen if FL-LPA is done on culture isolates for patients with smear negative specimen. 6. To assess Lfx, Mfx and Am resistance. 7. Start treatment based on LPA results and modify based on LC&DST results later. 8. Whenever DST is available. 9. Other exclusion criteria for shorter oral bedaquiline-containing MDR/RR-TB regimen includes: • History of exposure for > 1 month to Bdq, Lfx, Eto or Cfz, if result for DST (Bdq, FQ, Inh A mutation, Cfz & Z) is not available; • Intolerance to any drug or risk of toxicity from a drug in the shorter oral bedaquiline-containing MDR/RR-TB regimen (e.g. drug–drug interactions); • Extensive TB disease – presence of bilateral cavitary disease or extensive parenchymal damage on chest radiography. In children aged under 15 years, presence of cavities or bilateral disease on chest radiography; • Severe EP-TB disease - presence of miliary TB or TB meningitis or CNS TB. In children aged under 15 years, extra-pulmonary forms of disease other than lymphadenopathy (peripheral nodes or isolated mediastinal mass without compression); • Pregnant and lactating women (with conditional exceptions); and • Children below 5 years. 10.This portion applies as states move to shorter oral bedaquiline-containing MDR/RR-TB regimen under guidance of NTEP. 11.Patients who were initiated on longer oral M/XDR-TB regimen based on h/o exposure for > 1 month and in whom resistance is not detected to H or FQ may be switched to shorter oral bedaquilinecontaining MDR/RR-TB regimen based on the FL & SL LPA results, if the duration of longer oral M/ XDR-TB regimen drugs consumed is < 1 month.

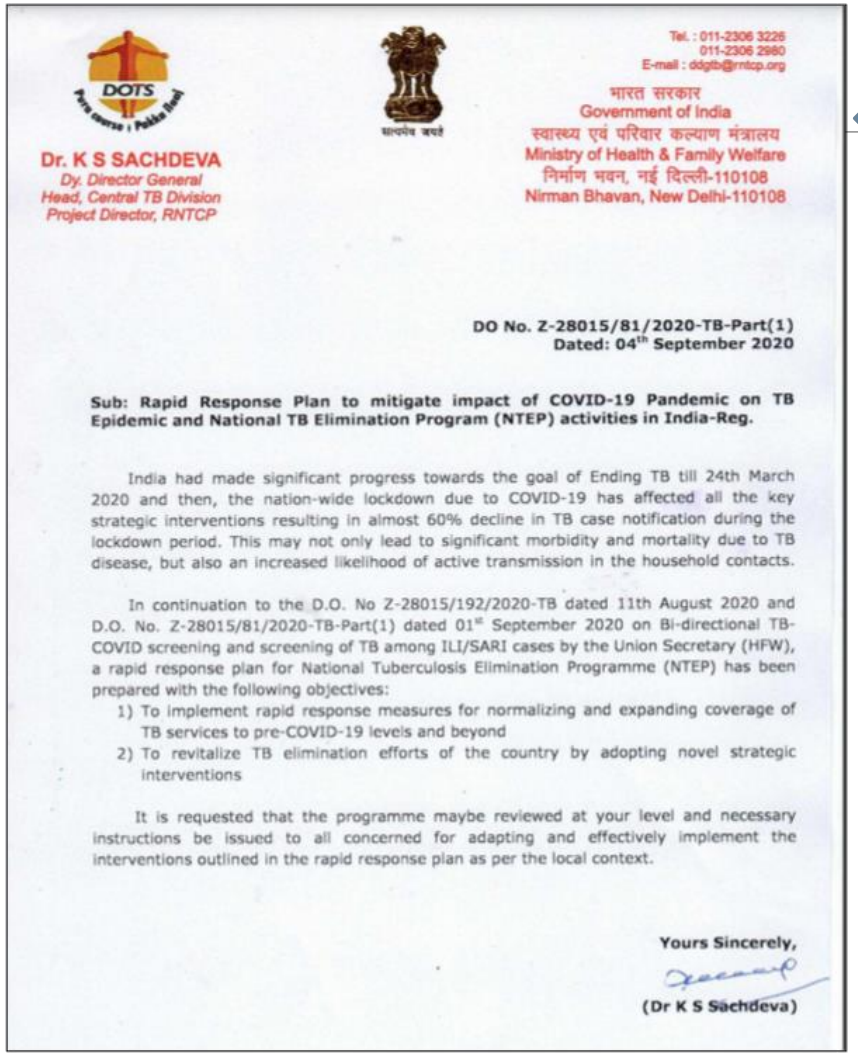
Intensified TB Case Finding in Vulnerable Patients

Most important risk factors* contributing to TB incidence in India are -

Risk Factor	Estimated Attributable Cases (L) (2022)
Undernourishment	7.44 L (6.3 L – 8.6 L)
Alcohol Use Disorders	2.48 L (0.9 L – 4.9 L)
Smoking	1.06 L (0.25 L – 2.46 L)
Diabetes	1.02 L (0.37 L – 1.99 L)
HIV Infection	0.94 L (0.29 L – 1.97 L)

Collaborative activities for bidirectional screening and referral are being implemented under NTEP through Intensified Case Finding efforts with NACP, NP-NCD, RBSK, RKSK, RMNCHA+N and NTCP.

Measures taken to improve Case Finding



Dr. K S SACHDEVA
Dy. Director General
Head, Central TB Division
Project Director, RNTCP

Tel. : 011-2306 3226
011-2306 2960
E-mail : ddgtb@rntcp.org

भारत सरकार
Government of India
स्वास्थ्य एवं परिवार कल्याण मंत्रालय
Ministry of Health & Family Welfare
निर्माण भवन, नई दिल्ली-110108
Nirman Bhavan, New Delhi-110108

DO No. Z-28015/81/2020-TB-Part(1)
Dated: 04th September 2020

Sub: Rapid Response Plan to mitigate impact of COVID-19 Pandemic on TB Epidemic and National TB Elimination Program (NTEP) activities in India-Reg.

India had made significant progress towards the goal of Ending TB till 24th March 2020 and then, the nation-wide lockdown due to COVID-19 has affected all the key strategic interventions resulting in almost 60% decline in TB case notification during the lockdown period. This may not only lead to significant morbidity and mortality due to TB disease, but also an increased likelihood of active transmission in the household contacts.

In continuation to the D.O. No Z-28015/192/2020-TB dated 11th August 2020 and D.O. No. Z-28015/81/2020-TB-Part(1) dated 01st September 2020 on Bi-directional TB-COVID screening and screening of TB among ILI/SARI cases by the Union Secretary (HFW), a rapid response plan for National Tuberculosis Elimination Programme (NTEP) has been prepared with the following objectives:

1) To implement rapid response measures for normalizing and expanding coverage of TB services to pre-COVID-19 levels and beyond
2) To revitalize TB elimination efforts of the country by adopting novel strategic interventions

It is requested that the programme maybe reviewed at your level and necessary instructions be issued to all concerned for adapting and effectively implement the interventions outlined in the rapid response plan as per the local context.

Yours Sincerely,

(Dr K S Sachdeva)

Advisory on bi-directional TB-Covid Screening

Active Case Finding in Community

Increasing OPD Referrals

Regular Review of States

Strengthening Case Finding in the Private Sector

Schedule H1 Implementation: No. of chemists notifying was 2318 in 2018 and 430 in 2021 (Jan-Oct21).

Provision of Govt. supplied **Free FDCs** for private sector patients

Mandatory Notification by private providers

Patient Provider Support Agency through JEET and Domestic Resources: From 48 cities through JEET in 2017 to 98 districts in 2021. In 2019, 125 districts received approvals for PPSA through domestic resources increasing to 443 in 2021-22.

Guidance Document on Partnerships (2019)

- **Sensitization conducted for all States.**
- **Case-wise support being extended to States for transition of Partnership options from 2014 guidance.**

77% Increase in private sector notification from 3.8 lakhs in 2017 to 6.8 L in 2021.

Updates - Diagnosis

- 10 Symptoms of Presumptive TB

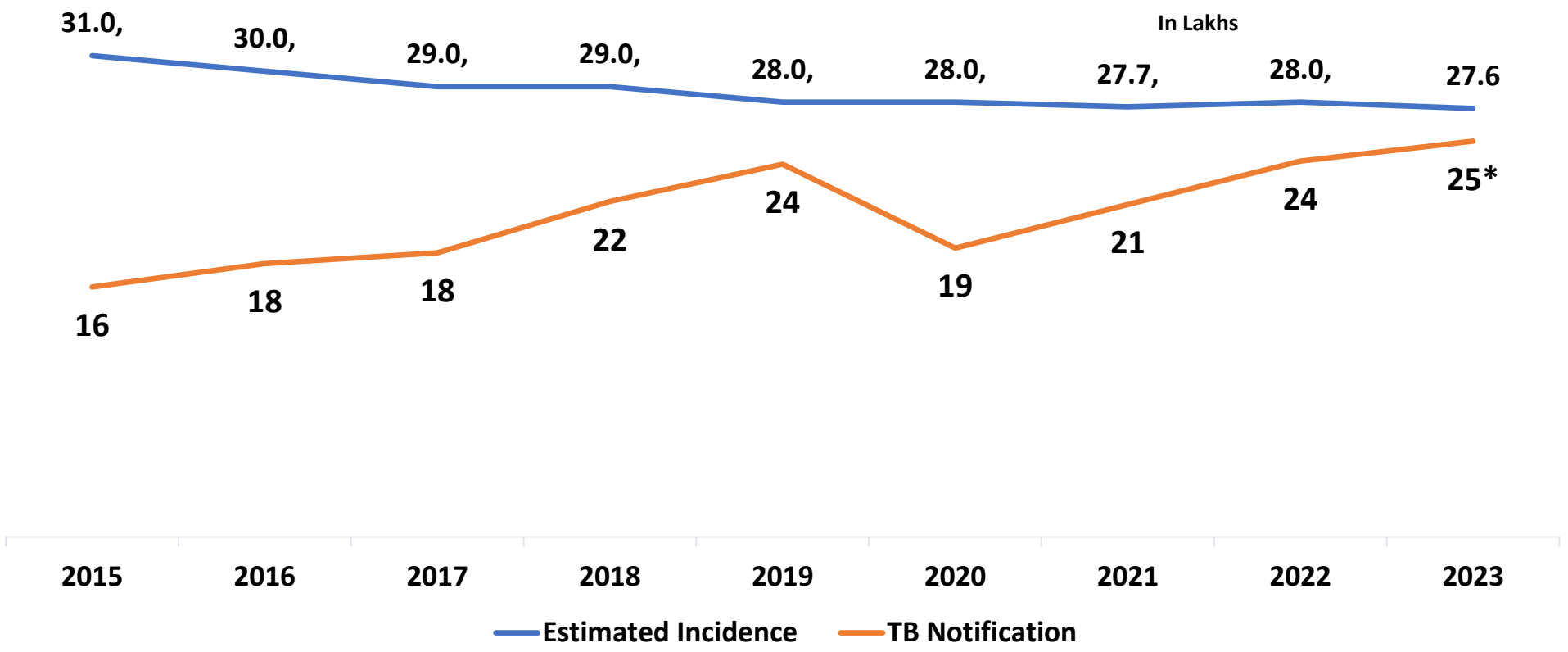
i. Cough for more than 02 weeks
ii. Fever
iii. Night sweating
iv. Wt. loss
v. Haemoptysis
vi. shortness of breath
vii. Chest pain
viii. Loss of appetite
ix. tiredness
x. Nodular swelling in Neck/ sign or symptoms of the extra-pulmonary TB

- 10 Asymptomatic TB Screening in vulnerable population, HRG-

✓ HHC,
✓ PLHIV,
✓ PLDM,
✓ Past h/o TB
✓ Alcoholics
✓ Smokers
✓ Coal/Other mine workers
✓ Silica workers

- Screening Among Admitted Patients

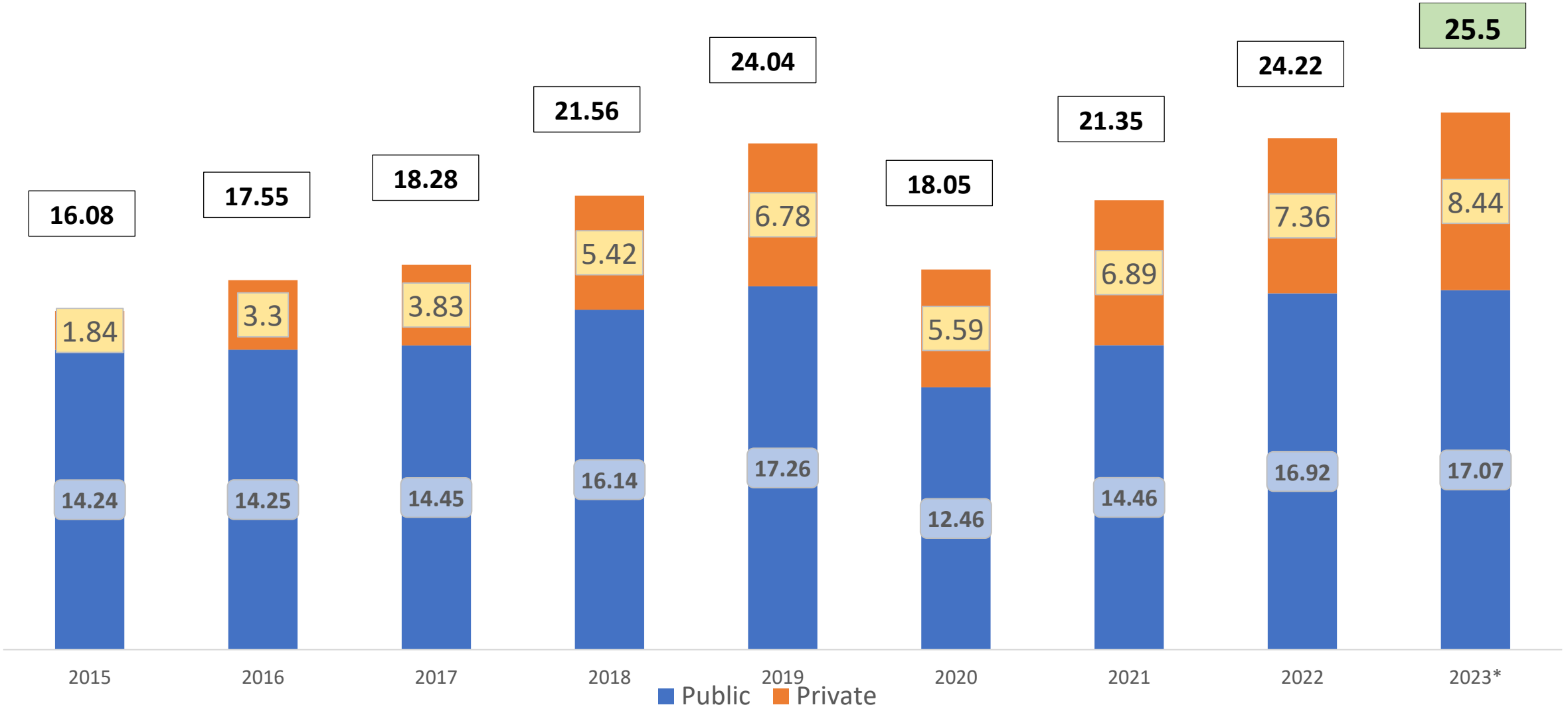
INCIDENCE OF TB IN INDIA AND THE PROGRESS IN NOTIFICATION



Missing cases have been reduced
1 million in 2015 → 0.21 million in 2023

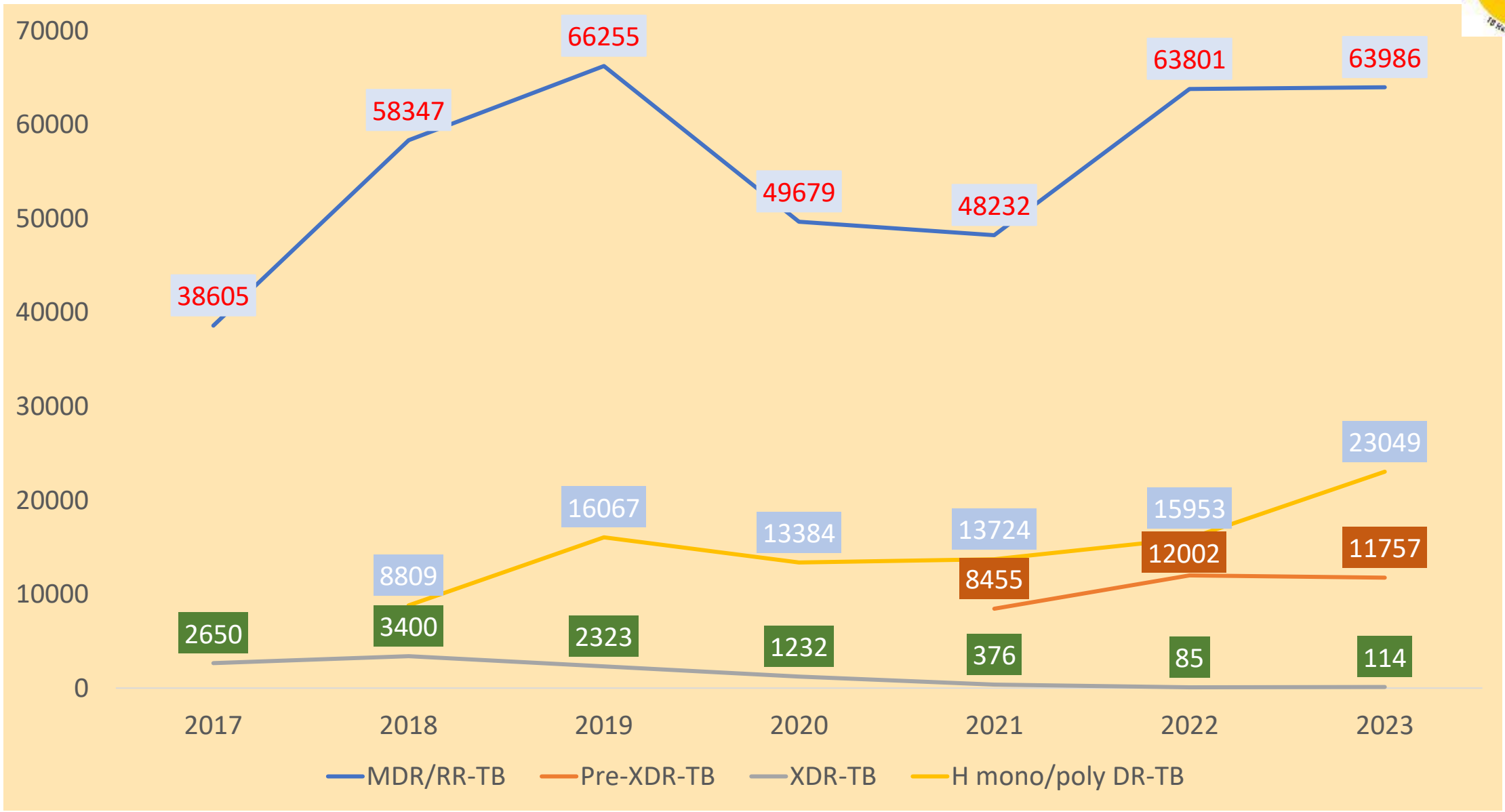
** Data source: Ni-kshay, as on 01-03-2024 and GTB-2023 report*

Notified TB in lakhs
(public and private)



** Data source: Ni-kshay, as on 01-03-2024*

Trend of DR-TB detection



*No. of MDR/RR-TB are inclusive of Pre-XDR-TB and XDR-TB

TB TREATMENT

CLINICAL STANDARDS FOR DRUG SUSCEPTIBLE PULMONARY TB

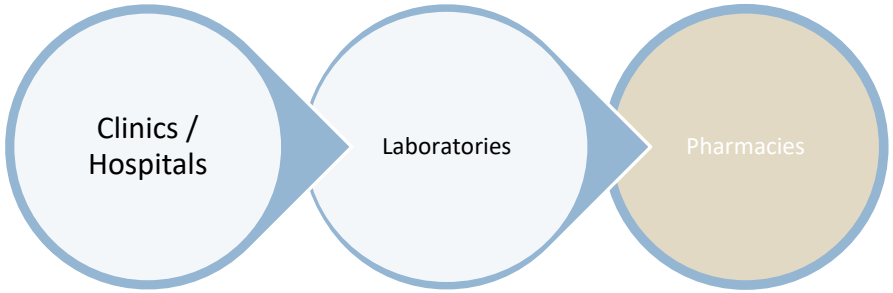
STANDARD 7

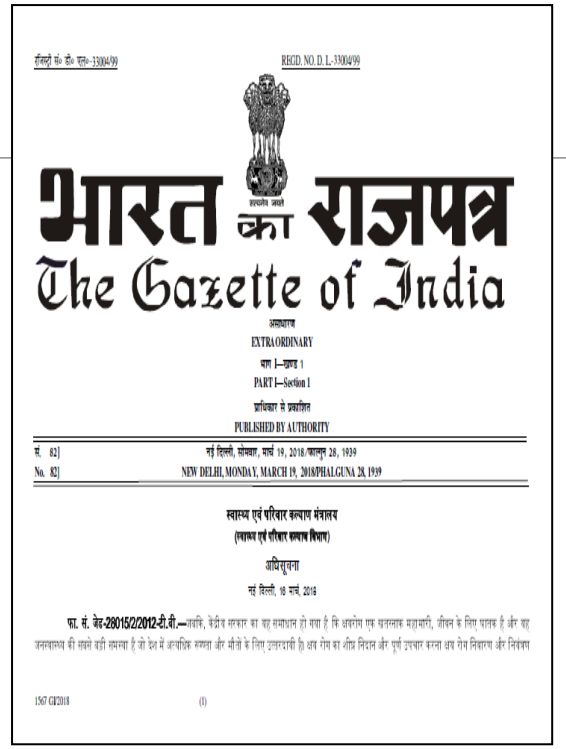
For each patient with PTB, a set of public health actions should be conducted

Clinical standards for drug-susceptible pulmonary TB, INT J TUBERC LUNG DIS 26(7):592–604,2022 The Union

Gazette on TB Notification

- **Mandatory Notification of TB patients**
  - **7th May 2012- First Order : Laboratories, Private practitioner**
  - **21st July 2015- First Amendment : Included Public Health Action**
  - **19th March 2018- Second Amendment: Chemists**




REGD. NO. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

असाधारण
EXTRAORDINARY
भाग I—खण्ड 1
PART I—Section 1
प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 82] नई दिल्ली, सोमवार, मार्च 19, 2018/फाल्गुन 28, 1939
No. 82] NEW DELHI, MONDAY, MARCH 19, 2018/PHALGUNA 28, 1939

स्वास्थ्य एवं परिवार कल्याण मंत्रालय
(स्वास्थ्य एवं परिवार कल्याण विभाग)
अधिसूचना
नई दिल्ली, 16 मार्च, 2018

फा. सं. जेड-28015/2/2012-टी.बी.—यतः, केंद्रीय सरकार का यह समाधान हो गया है कि क्षयरोग एक खतरनाक महामारी, जीवन के लिए घातक है और यह जनस्वास्थ्य की सबसे बड़ी समस्या है जो देश में अत्यधिक रुग्णता और मौतों के लिए उत्तरदायी है अब रोग का शीघ्र निदान और पूर्ण उपचार करना अब रोग नियंत्रण और निवंधन

1567 GI/2018 (1)

- **Failure to take the mandated steps may attract the provisions of Sections 269 and 270 of the Indian Penal Code (IPC)**

2 FIR

519 Notices

Public Health Actions

Contact Investigation:

- All household contacts should be screened for TB and evaluated for active TB disease
- In case of paediatric TB patients, reverse contact tracing for search of any active TB case in the household of the child must be undertaken
- This information must be entered in Ni-kshay

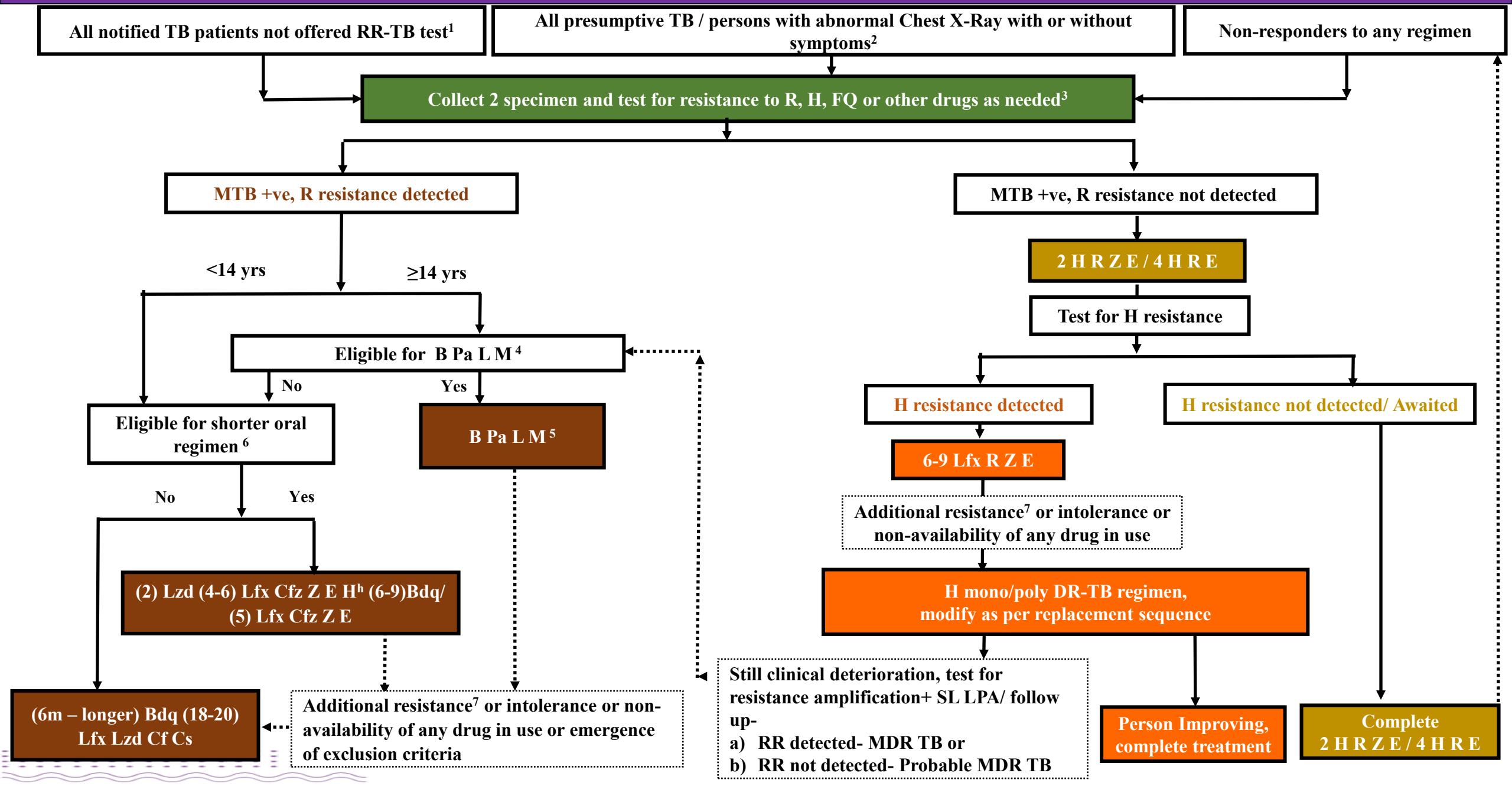
Long Term Follow Up

- After completion of treatment, the patients should be followed up clinically at the end of 6, 12, 18 & 24 months
- In the presence of any clinical symptom, sputum microscopy and/or culture of the biological specimen should be considered.
- This is important in detecting recurrence of TB at the earliest.

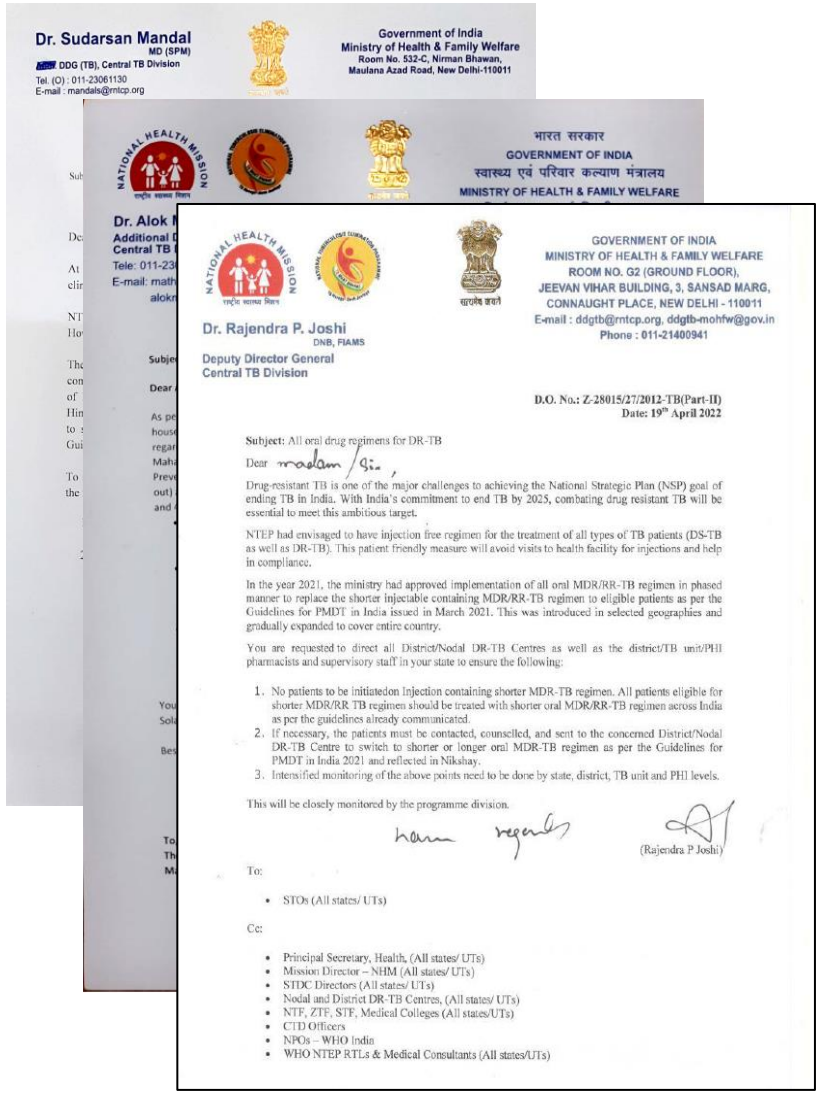
TB-Treatment

- Treatment of Drug Susceptible TB
- Treatment of Drug Resistant TB

Integrated Diagnostic and Treatment Algorithm for Drug Susceptible and Resistant Tuberculosis



Updates - Treatment



- Revised definition of Universal Drug Susceptibility Test
- Pan-country roll-out of shorter oral MDR/RR-TB regimen – Since April 2022
- Use of Bedaquiline in MDR-TB patients in the age =/>5 years weighing at least 15 kg
- Use of Delamanid in MDR-TB patients in all age groups weighing atleast 10 kg
- Use of Bedaquiline during pregnancy
- Introduction of preventive treatment in contacts of DR-TB in 12 selected states
- Shorter TPT Regimens- 1HP (in PLHIV) and 3HP
- BPaLM- https://tbcindia.mohfw.gov.in/wp-content/uploads/2025/01/National-Guidelines-for-Management-of-DR-TB_Final.pdf

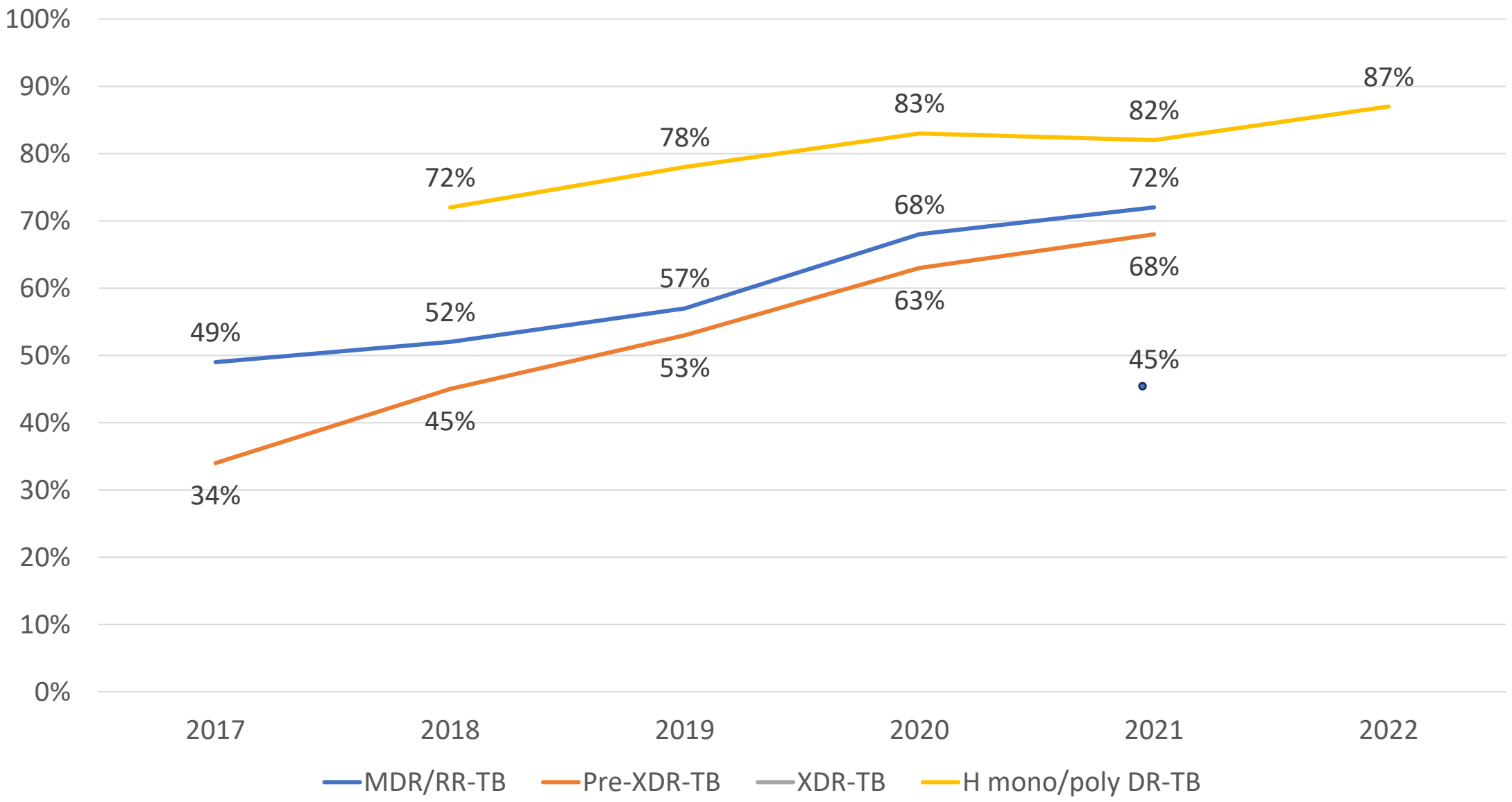
Treatment Outcome of DS & DR TB Patients

Treatment Outcome of DS TB-2020 and 2021

Type of Provider	Total DS TB Notified in 2019 (In lakhs)	Success Rate
Public	17.1	83%
Private	6.2	79%
Total	23.3	82 %

Type of Provider	Total DS TB Notified in 2020 (In lakhs)	Success Rate
Public	12.76	83%
Private	4.75	82%
Total	17.51	83%

Trend of treatment success rate of M/XDR TB patients



TB-Comorbidities – TB HIV & TB-Diabetes
(Jan-Dec 2021)

TB HIV

Type of Provider	TB Notified Patients	Known HIV Status (%)	TB-HIV Coinfected (%)
Public Sector	14.46	1509432(96%)	36272 (2.50%)
Private Sector	6.89	511862 (92%)	2168 (0.31%)
Total	21.35	2021294 (95%)	38440 (1.8%)

TB Diabetes

Type of Provider	TB Notified Patients	Known DM Status (%)	TB-DM patients (%)	TB-DM Patients linked to anti-DM treatment (%)
Public Sector	14.46	1410182 (89%)	123021 (9%)	79970 (65%)
Private Sector	6.89	489861 (88%)	34466 (7%)	17176 (50%)
Total	21.35	1900043 (89%)	157487 (8%)	97146 (62%)

Direct benefit transfer (DBT): Incentives under NTEP

1	NI-KSHAY POSHAN YOJANA	INR. 1000/- per month for the entire duration of treatment to every TB patient EDNS
2	INCENTIVE FOR TREATMENT SUPPORTER	Drug sensitive TB: INR. 1000/- at completion of treatment Drug Resistant TB: INR. 5000/- at completion of treatment TPT Patient: INR. 250/- at completion of treatment
3	INCENTIVE FOR NOTIFICATION AND OUCTOME	Incentive of INR. 500/- for reporting a confirmed TB case and INR. 500/- on reporting of outcome
4	TRAVEL SUPPORT	INR 750/- is provided to all TB patients notified from tribal/hilly/difficult areas

INR 50/- Incentive to ASHAs or community volunteers for facilitating PwTB bank account within 15 days from date of treatment initiation. However, It's not a DBT scheme under NTEP.

“Nikshay Sampark” – The National TB Call Centre

(May-18 to Dec-21)

Current Operational Processes

- TOLL FREE 1800-11-6666 (TB Helpline)
- Outbound TB processes

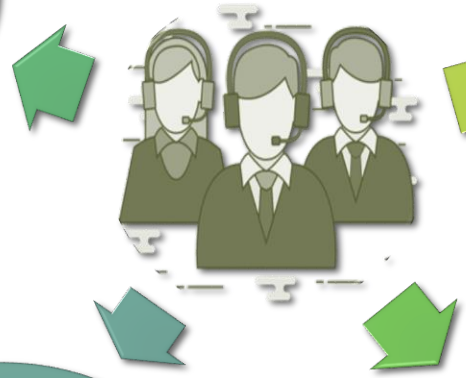
TB Call Centre Dimension

- Pan India Coverage
- Citizen- Patient- Providers
- 14 Languages
- 154 Seats
- Time- 7 am to 11 pm

Total Calls handled (TB)
52,56,557

Total Inbound Calls answered COVID-19 + Co-WIN
21,54,889

Total Inbound Calls Answered (TB)
13,65,029



Hepatitis Calls Answered
1366

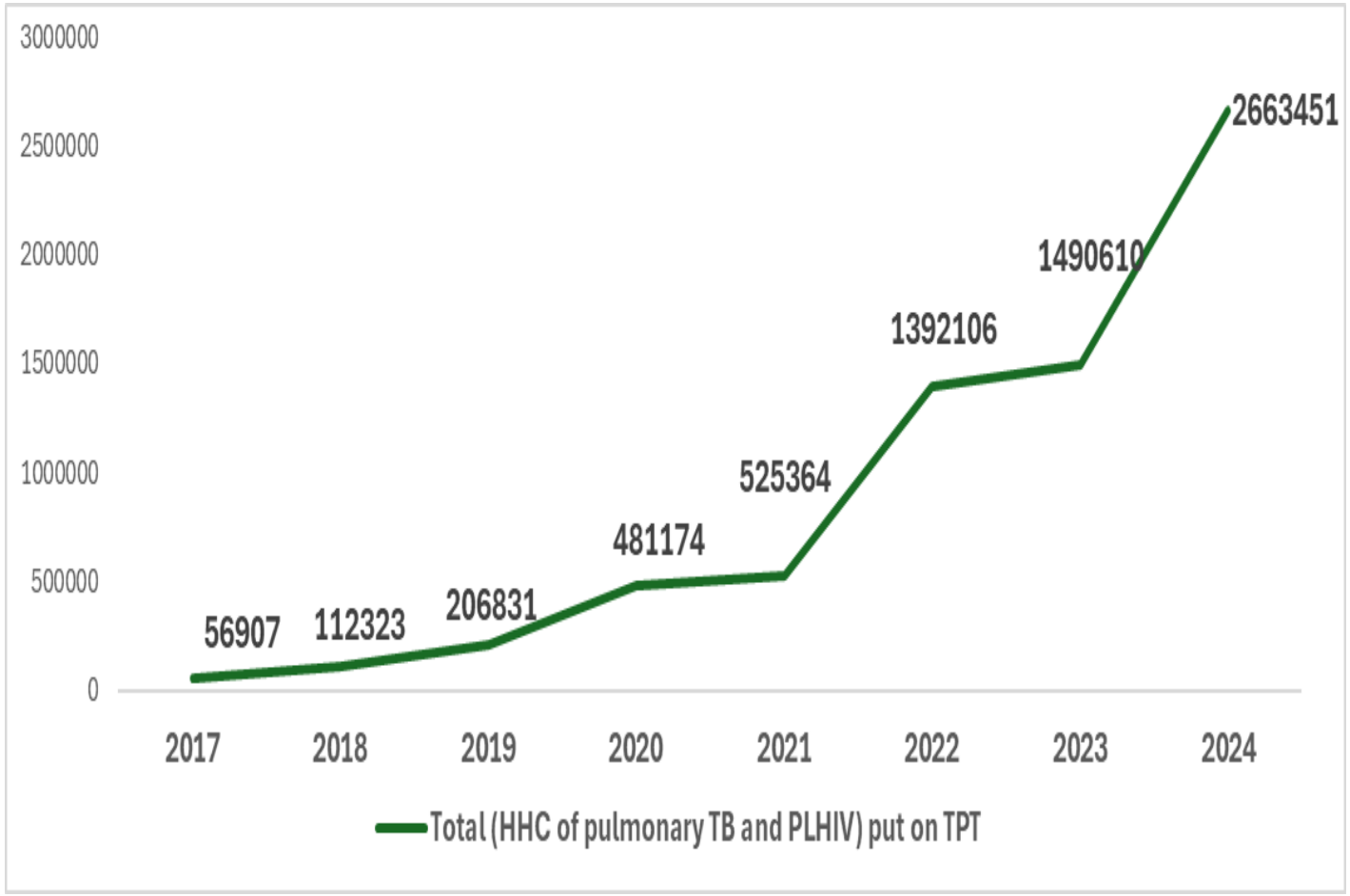
Total Outbound Calls Dialed (TB)
38,91,528

TB Preventive Treatment (TPT)

Initiative: TB Prevention

- **Policy shift**
  - Expansion to all household contacts and Other High risk group
  - Test for TB infection and Treat
  - Newer Shorter TPT Regimen
- **Strategic implementation**
  - Increase coverage in household contacts
  - Expansion of availability of CXR through handheld X-Rays for ruling out of active TB
  - Link Active Case Finding with TB prevention
  - Digital platform- Ni-kshay

TPT coverage



Adult BCG vaccination in India: Rationale

- **A Chingleput trial (1968)**- a large-scale double-blind, placebo-controlled BCG vaccination community trial covering 29 villages and 9 towns Chingleput district of Tamil Nadu, South state of India. Individuals aged ≥1 yr undertook a tuberculin test with 3 IU of purified protein derivative (PPD) and 10 units of PPD-B. The population randomized at the individual level into 0.1 mg BCG dose, 0.01 mg BCG dose and placebo arms, respectively. The incidence of TB disease measured over 15 years
- **Reanalysis of 269,727 individuals** who were vaccinated indicated that the BCG vaccination in a community offered **modest** protection **with 36% efficacy** against the development of TB disease at the end of 15 years.*
- **16 countries recommend multiple BCG vaccinations in elder children and adolescents.**

Sources:
*Revisiting the Chingleput BCG vaccination trial for the impact of BCG revaccination on the incidence of tuberculosis disease. Indian J Med Res. 2023 Feb-Mar;157(2&3):152-159
BCG World Atlas 3rd edition. Available from http://www.bcgatlas.org/about.php

Study Setting in India

A **restricted randomization process** followed for the study with -

50% of the NTEP districts of the consenting State/ UT are allocated to **intervention arms**

and rest 50% of NTEP allocated to **control arm.**

24 states/ UTs expressed consent for participation.

Out of 527 NTEP districts -

264 are in **intervention arm**

263 are in **comparator arm**

Andaman and Nicobar Islands	Gujarat (4 districts) *	Odisha
Andhra Pradesh	Haryana	Puducherry
Assam (2 Districts)*	Himachal Pradesh	Punjab
Chhattisgarh	Jammu & Kashmir	Rajasthan (4 Districts)*
Dadra, Nagar Haveli & Daman & Diu (1 District)*	Jharkhand	Tamil Nadu
Delhi	Karnataka (6 Districts)*	Telangana
Goa	Madhya Pradesh	Tripura
West Bengal (7 districts)*	Maharashtra	Uttar Pradesh

The Adult BCG Vaccination Programmatic study

Study Title

Effect of BCG vaccination amongst vulnerable adult population on reducing TB disease: a programmatic study.

Study Design

Programmatic stratified cluster randomized parallel arm study

Study Objectives

Primary objective

To **evaluate the effectiveness** of a strategy to vaccinate vulnerable individuals older than 18 years with BCG vaccine under programmatic settings on the occurrence of notified TB cases upto a period of 36 months post-intervention.

Primary outcome :

Change in notified TB cases from baseline in intervention districts. **Net adjusted** for decline in control districts, as per Ni-kshay portal during 36 months post intervention adjusted for other programmatic interventions (to be measured bi-annually).

Study Population: Inclusion Criteria

The target population is individuals aged 18 years and above, meeting any of the following criteria: (single criteria or multiple criteria's)

History of TB disease
People who are reported to have at least **one episode of TB in past 5 years.**

Individuals aged **60 years or above**

Individuals with a **history of smoking tobacco** *(Current / Past User)- self reported*

Close contacts of TB patients
Contacts of current TB patients as well as all those contacts of index TB cases enrolled in Ni-kshay from 1st January 2021

Individuals with **history of Diabetes** *(Self- reported). Wherever feasible, documentary evidences of diagnosis and treatment for diabetes will be obtained.*

Individuals with a Body Mass Index of **less than 18 kg per sq.mts**

Current Status

- Launched on 10 Jan 2024 in Goa
- 18 State/UTs have currently implemented
- Over 1.03 Crore Adult BCG Vaccinations given across 18 State/UTs till 15.03.2024
- TB-WIN Portal designed for registering data on Adult BCG Vaccination
- SAFEVAC portal integrated into TB-WIN for recording AEFI
- Ni-skhay integrated with TB-WIN to record follow-up of beneficiaries till 36 months.
- 97% of the AEFI recorded were minor
- Amongst the Serious and Severe AEFI recorded - the National AEFI committee reviewed and classified them as coincidental.
- Data Safety Monitoring Board have observed no safety concerns

Study Population : Exclusion Criteria

Individual’s age **< 18 years**

Those who haven't consented or cant consent to take adult BCG vaccine

Individuals with a known **history of HIV**

Individuals with a known history of **immunodeficiency or on immunosuppressive drugs** or recipients of any procedure interfering with **immune status or transplant or malignancy**

Pregnant or lactating women

Individuals with a history of blood transfusion in last 3 months

Individuals with a history leading to high-risk of getting HIV infection

History of known severe reaction to BCG or any other vaccines administered

Currently sick due to any reason

Special consideration for Adult BCG vaccination

Individuals currently on **ATT (Anti Tuberculosis Treatment)** are **NOT eligible** for BCG vaccine.

One can get adult BCG vaccine **4 weeks** after completion of current treatment.

Sick and hospitalized individuals will be vaccinated after recovery and medical advise.

4 WEEKS

Individuals on **TB Preventive Treatment (TPT)** would be vaccinated **4 weeks after completion of TPT** as per NTEP guidelines.

Individuals who **received adult BCG vaccine and eligible for TPT** to be **provided TPT only after 4 weeks post vaccination.**

National TB Elimination Programme (NTEP)

100 days campaign

Goal & Importance of the campaign

- The Goals of the campaign are:

1. To increase case detection through intensified IEC campaign on community awareness and screening & testing of vulnerable populations
2. To reduce death among people with TB by implementing a differentiated TB care approach with nutritional support interventions
3. To prevent occurrence of new TB cases in the community by providing TB preventive treatment to household contacts, PLHIV & vulnerable populations

Geographical prioritization

- To identify high focus districts, the following criteria has been adopted:

Sr. No.	Criteria*	Number of districts
1	Death rate >=3.6% & presumptive TB examination rate (testing rate) <1700/lakh population	195
2	Death rate >=3.6% & presumptive TB examination rate (testing rate) >=1700	119
3	Incidence rate >=200/lakh population	21
4	TB Prevalence > 400/lakh population	12

State/UTs may add more districts / local areas / settings, if required based on local vulnerability

Key strategies

- NTEP will accelerate its strategies to reduce TB incidence and TB related deaths. There will be special focus on vulnerable and marginalized populations. A summary of key interventions and approaches are provided below:

- To identify early and all TB patients, there will be focus on identification of high burden area, mapping vulnerable population and conduct pro-active extensive screening & testing campaigns (*Ni-kshay Shivir*). The methods of screening and testing use high sensitivity tools like X-Ray, Nucleic Acid Amplification Test **(**NAAT) and any newer tool as available in the future.
- **High Risk Groups**
- Previous TB patients
- Household contacts of TB patients
- People with malnutrition,
- People with diabetes,
- People with HIV,
- People over 60 years
- History of smoking or alcohol use

Key strategies to reduce TB deaths

- To reduce TB mortality, the strategy focuses on early diagnosis and appropriate treatment of TB patients. A differentiated TB care approach will be implemented by which risk-stratifications of all TB patients will help identify high-risk TB cases for intensified care. This approach is focusing on assessing individuals for severity of disease and for presence of comorbidities such as diabetes, HIV, cancer, or chronic conditions of the heart, kidneys, or liver, that could lead to disease worsening. These high-risk patients will be provided a prioritized medical care, including hospital admission if required, to ensure timely intervention as well as care for comorbidities.

- Nutritional support is a crucial aspect of TB treatment. The Ni-kshay Poshan Yojana (NPY) provides a monthly incentive of Rs 1,000 to support dietary needs during TB treatment, while the Ni-kshay Mitra Initiative extends nutritional support to household contacts of TB patients. Additionally, patients with a body mass index (BMI) below 18.5 will be provided with two months of energy dense nutritional supplements (EDNS) along with their TB treatment, bolstering their chances of recovery.

Campaign Implementation Timelines

- The 100 days campaign will be launched on 7th December 2024 and will culminate on 24th March 2025 – the World TB Day. Below are the timelines for the campaign implementation

Timelines	Activities
Before campaign launch	
1 -14 October 2024	Finalization and approval of Campaign, Communication to States
11 – 18 October 2024	Sensitization of States & Resource Mapping
23 October 2024	Orientation of State TB Officers
7 – 15 November 2024	• Training & Micro planning at grassroot level • Mapping & Identification of Vulnerable Population and Community Mobilization
16 – 30 November 2024	Pre-campaign visits by Prabhari officers to states & districts
6 December 2024	Completing the preparation for campaign
Launch of Campaign – 7th December	
7 December 2024	Launch of campaign in all State/UTs & 347 Districts
8 December 2024 – 17 March 2025	• Ni-kshay Shivir and implementation of campaign activities at District / Block and Panchayat level • Concurrent monitoring of indicators • Supervisory visits to States & Districts
17 – 23 March 2025	• Analysis of data of campaign • Shortlist best performing districts and states
Culmination of Campaign – 24th March 2025	
24 March 2025	• World TB Day Celebration • Culmination of Campaign

Expected outputs

- The campaign will impact positively towards the overall goal of reducing mortality and morbidity due to TB. Specific Outputs expected from the Campaign are as under:

1. Detect additional 2 lakh cases
2. At least 90% screening by X-Ray of line-listed vulnerable individuals and 90% testing by NAAT
3. Increase upfront NAAT for diagnosis of TB/MDR-TB from existing 30% to 70% testing of patients with presumptive TB.
4. 100% coverage by Ni-kshay Poshan Yojana & Ni-kshay Mitra.
5. 50,000 Panchayats prepared for TB free certification

Role of Medical Colleges

Need to involve Medical Colleges in NTEP

1. **Medical Colleges, being tertiary referral unit,** does not have a limited geographical area to be covered
2. Hence **the patients are being referred to medical colleges** from within the districts the college is established and even from outside the districts and state
3. There is **huge potential for the detection of TB cases** from TB and chest departments as well as from the other departments too
4. **Not only TB case detection** but medical colleges can play an important role in advocating TB and TB control programs amongst the UGs/PGs and medical faculties from medical colleges and involved in operational research
5. **Mainstreaming Management of DR-TB**

Structure of Task Force- Task Force Mechanism

Structure of Task Force

National Task Force

CTD | **Medical Colleges** | **National Institutes (NTI/NITRD/NIRT)** | **WHO**

⇩

Zonal Task Force

STO of each state | **STF representative of the state**

⇩

State Task Force

STO of the state | **A representative from each medical college**

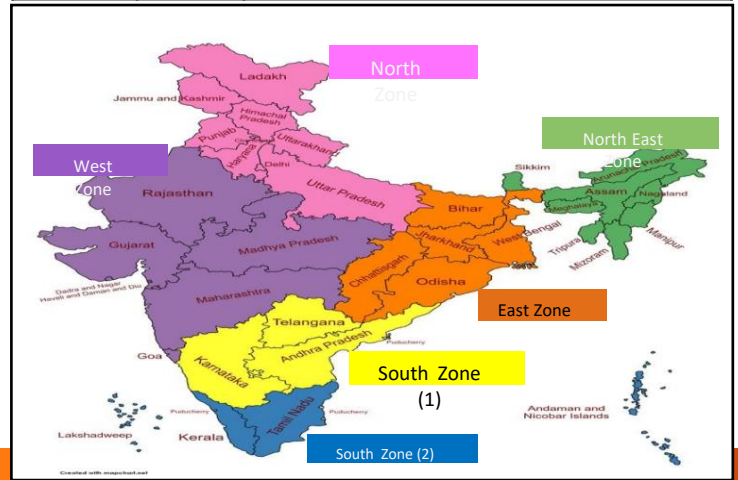
⇩

Core Committee
(in each medical college)

Chairmen:
Director/Dean/Principal/Senior Medical Superintendent

Nodal office (Clinical): Faculty from Pulmonary Medicine/ General Medicine/ Clinical Department
Nodal office (Public Health): Faculty from Community Medicine
Members: HODs from ALL departments

Zone	No. of States/ UTs	Names of States/UTs in the Zone
North East	8	Meghalaya, Sikkim, Arunachal Pradesh, Assam, Tripura, Mizoram, Manipur, Nagaland
East	5	Bihar, Jharkhand, Odissa, Chhatisgarh, West Bengal
West	5	Gujarat, Madhya Pradesh, Maharashtra, Goa,, Dadra & Nagar Haveli and Daman & Diu
South-1	3	Karnataka, Telengana, Andhra Pradesh
South-2	5	Puducherry, Tamilnadu, Kerala, Lakshadweep, Andaman & Nicobar
North	10	Punjab, Haryana, Chandigarh, Jammu & Kashmir, Uttar Pradesh, Delhi, Rajasthan Uttarakhand, Ladakh, Himachal Pradesh
Total	36	Presently there is no medical college established in Nagaland, Lakshadweep; Ladakh



Role of medical colleges

Engagement with the NTEP

- Formation of the **Core Committee**
- **Establish** - mandatory
  - **TB diagnostic Centre & Treatment Support Centre** (Microscopy & DOT centers) in all medical colleges
  - **DRTBC-Nodal/Dist**
- **Service delivery** - Diagnosis/ treatment of TB (DSTB/DRTB)/TBI
- **Ensure that the NTEP guidelines** for diagnosis/ treatment of TB are being followed in medical colleges
- **Strengthening** of infrastructure
  - C & DST Laboratories
  - COE TB / COE pediatric TB

Training/ teaching of NTEP amongst

- **Programme to ensure NTEP training** in each medical college with support from medical college faculties & DTO
- **Conducting periodic training / Sensitization workshops/ CMEs** for faculties/ PGs/ Interns / Paramedical staff (LTs & Nursing staff)
- Faculty members to ensure cooperation and internal referrals of all chests symptomatic to be diagnosed as TB and treated as per NTEP

Advocacy of the NTEP

- **Organize seminars/ conferences/ continuing medical education** for medical college faculty and **private sectors**
- **Sensitization/training** through **IMA**, other professional bodies, and their members
- **Involvement of MCI – NMC** in the long run emphasis is to give to the teaching of TB as per NTEP guidelines by making it mandatory for approved medical colleges to train and include in teaching, field, and practical teaching, examination papers, etc
- Using **newsletters, press & other media**

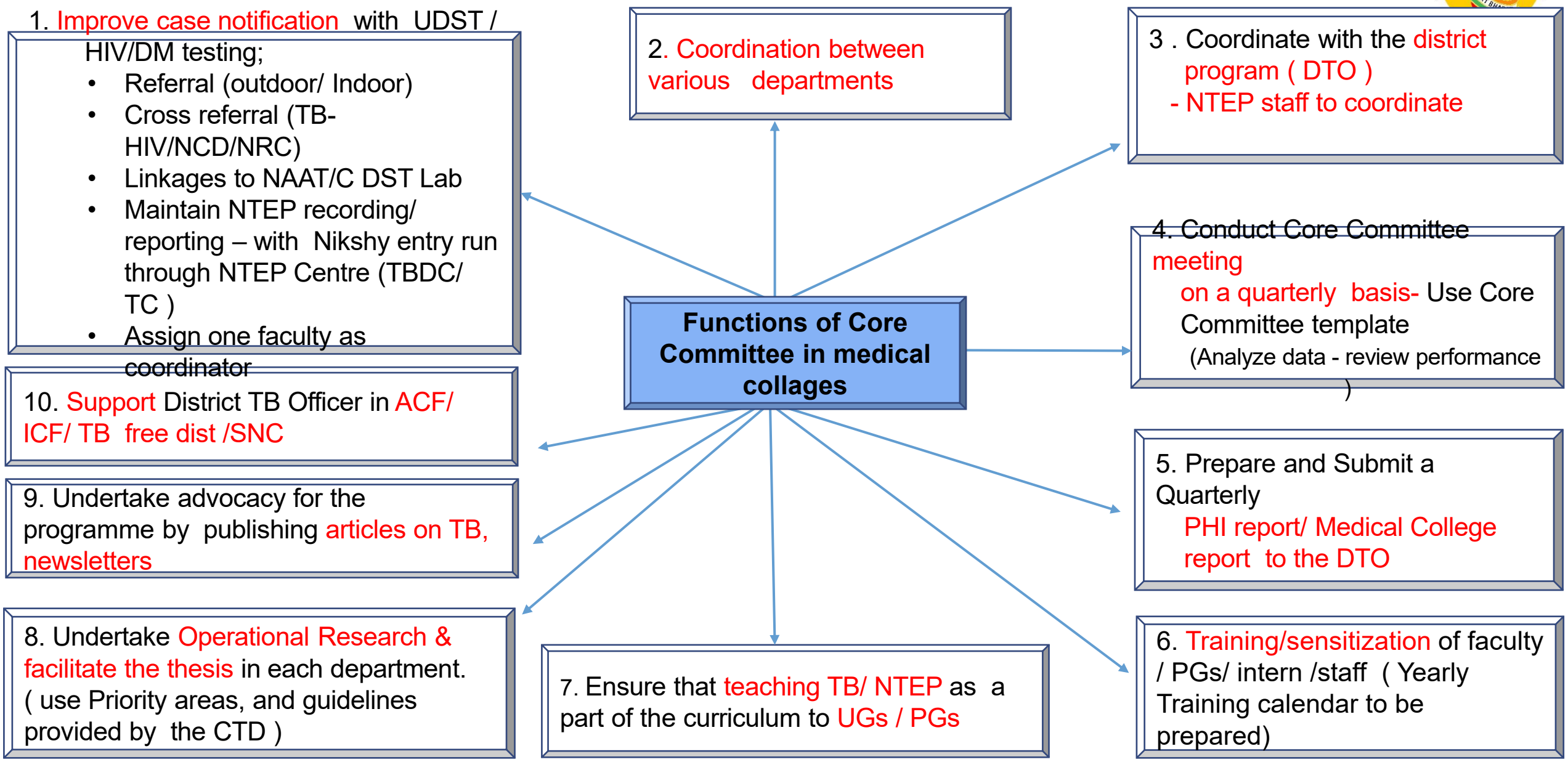
Operational Research

Operational research should be directed on a priority basis, toward the broader objectives

Other areas

- ADR Management(aDSM)
- Tele-Radiology-promote telemedicine & teleradiology
- Air Borne Infection Control measures
- Planning, Surveillance & Quality Improvement**
- TPT Implementation
- Private Provider Engagement
- Active Case Finding
- Intensified case finding
- Sub-National TB Free Certification

Functions of Core Committee



Collaborations to address risk factors of TB

National Programme for Prevention and Control of :

- Cancer,
- Diabetes
- Cardiovascular Diseases
- and Stroke

National AIDS Control Program

Poshan Abhiyaan

National Tobacco Control Program

Rashtriya Bal Swasthya Karyakram

Ayushman Bharat – Health and Wellness Centres

Integration with Primary Health Care: Ayushman Bharat Health & Wellness Centres

Population Based Screening for TB as part of the Community Based Assessment Checklist (CBAC)

Diagnostic and treatment-support services for TB

Thematic monthly IEC activities as part of TB Harega Desh Jeetega/ NIKSHAY Diwas on - Anti-spitting, Anti-tobacco, Nutrition awareness campaign, contact programme for TB patient bank seeding and effective utilization of incentives, Conducting Gram Sabhas at Gram Panchayat and ward level in Urban areas

Inter-Ministerial Coordination

AYUSH (Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy)

- Policy Document prepared
- Joint Letter to States sent

Railways

- Joint Working Group to be formed to monitor implementation

Defence

- Action Plan developed.

MoLE/Mo-DONER/Mo Tribal Affairs

Other sector engagement

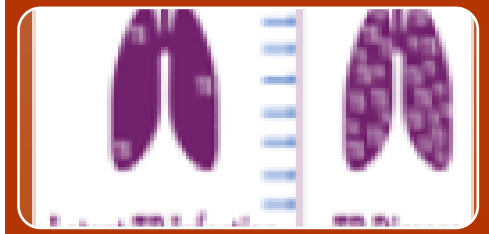
Community Engagement

TB Forums set up at the National / State & District levels - give platform to TB patients to voice their suggestions and raise their concerns

TB survivors are mentored to become TB Champions who can lead the fight against TB.

Engaging with the Corporate Sector

- Corporate Social Responsibility (CSR)
- Corporate TB Pledge supported by The Union and CII
- A DR-TB Consortium to focus on CSR for DR-TB management
- NTWG on NTEP-Corporate Hospitals & Labs collaboration (1st meeting on 20/1/21)



Latent TB Infection Management

- TPT to be scaled up to adolescents, adults Household contacts of pulmonary TB patients and select high-risk groups ~ 40 lakh / year

- Treatment based on short-course regimens

- LTBI Testing (IGRA/TST) offered to high-risk group

Commitment to End TB by States/ UTs

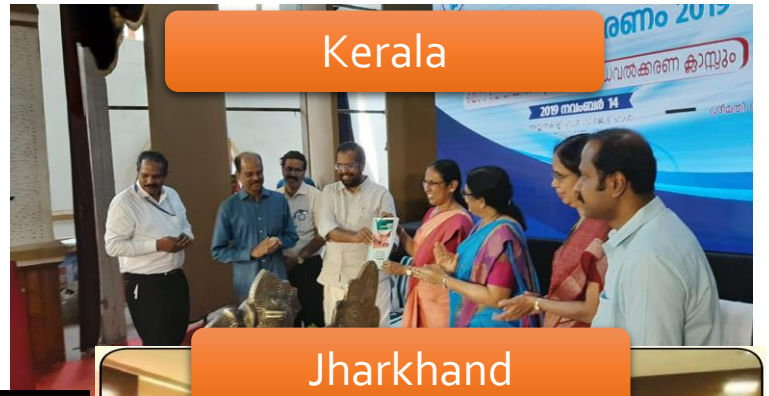
State level commitment: 18 States/UT

2020-Kerala

2021-Himachal Pradesh

2022- Gujarat, Lakshadweep, Sikkim

2025- A&N Islands, Bihar, Chhatisgarh, Daman& Diu and Dadra & Nagar Haveli, Jammu & Kashmir, Jharkhand, Madhya Pradesh, Puducherry, Punjab Tamil Nadu and Uttar Pradesh, Karnataka, Ladakh



Initiative: "PRADHAN MANTRI TB MUKT BHARAT ABHIYAAN"

1. The Hon'ble President of India launched "Pradhan Mantri TB Mukt Bharat Abhiyan (PMTBMBA) on 9th September, 2022

2. Additional diagnostic, nutritional, and vocational support to those on TB treatment

3. Encouraging community to become Ni-kshay Mitra (donor)

4. To bring together people and invoke the essence of Jan Bhagidhari to End TB by 2025

PMTBMBA Status (as on 01-03-2024)	
TB patients on treatment	13.46 lakh
TB patients consented	9.58 lakh
No. of Ni-Kshay Mitra registered	1.58 lakh
Commitment by Ni-kshay Mitra	9.53 Lakh (99%)
TB patients received support from Ni-kshay Mitra	6 lakh

Patient
Plus
All HHC of Family

END TB SUMMIT, DELHI 2018 - Landmark event towards elimination of TB from the south-east Asia region

ONE WORLD TB SUMMIT, VARANASI 2023 - India reaffirms its commitment towards ensuring a TB-free society

India’s efforts are a new model for the global war on TB

VISION: TB FREE INDIA

On 13 March 2018, India committed to End TB by 2025, five years ahead of Global SDG target

Indicators	Global SDG TB Targets	TB Free India Targets	% decline*
	By 2030	**By 2025**	**2023**
1. Reduction in TB mortality rate (compared to 2015)	**90%**	**90%** (3 per 1,00,000 population)	**21.4%*** (22 per 1,00,000 population)
2. Reduction in TB incidence rate (compared to 2015)	**80%**	**80%** (45 per 1,00,000 population)	**17.7%*** (195 per 100,000 population)
3. TB-affected families facing catastrophic costs due to TB	**0%**	**0%** (Zero catastrophic costs due to TB)	**19%***

*As per Global TB Report 2023

PM Narendra Modi, Chaired a meeting on India’s mission to eliminate TB. Driven by active public participation, the movement has gained significant momentum over the last few years. Our Government remains committed to working closely with all stakeholders to realise the vision of a TB-free India.

13.5.2025 AT 7.20 PM ON X

- PM reviews status and progress of TB Mukt Bharat Abhiyaan

PM lauds recent innovations in India’s TB Elimination Strategy which enable shorter treatment, faster diagnosis and better nutrition for TB patients

PM calls for strengthening Jan Bhagidari to drive a whole-of-government and whole-of-society approach towards eliminating TB

PM underscores the importance of cleanliness for TB elimination

PM reviews the recently concluded 100-Day TB Mukt Bharat Abhiyaan and says that it can be accelerated and scaled across the country

- Posted On: 13 MAY 2025 8:32PM by PIB Delhi

ON 13.5.2025 AT 7.20 PM

- Prime Minister Shri Narendra Modi chaired a high-level review meeting on the National TB Elimination Programme (NTEP) at his residence at 7, Lok Kalyan Marg, New Delhi earlier today.

- Lauding the significant progress made in early detection and treatment of TB patients in 2024, Prime Minister called for scaling up successful strategies nationwide, reaffirming India's commitment to eliminate TB from India.

- Prime Minister reviewed the recently concluded 100-Day TB Mukt Bharat Abhiyaan covering high-focus districts wherein 12.97 crore vulnerable individuals were screened; 7.19 lakh TB cases detected, including 2.85 lakh asymptomatic TB cases. Over 1 lakh new Ni-kshay Mitras joined the effort during the campaign, which has been a model for Jan Bhagidari that can be accelerated and scaled across the country to drive a whole-of-government and whole-of-society approach.

ON 13.5.2025 AT 7.20 PM

- Prime Minister stressed the need to analyse the trends of TB patients based on urban or rural areas and also based on their occupations. This will help identify groups that need early testing and treatment, especially workers in construction, mining, textile mills, and similar fields. As technology in healthcare improves, Nikshay Mitras (supporters of TB patients) should be encouraged to use technology to connect with TB patients. They can help patients understand the disease and its treatment using interactive and easy-to-use technology.

- PM said that since TB is now curable with regular treatment, there should be less fear and more awareness among the public.

ON 13.5.2025 AT 7.20 PM

- Prime Minister said that since TB is now curable with regular treatment, there should be less fear and more awareness among the public.

- Prime Minister highlighted the importance of cleanliness through Jan Bhagidari as a key step in eliminating TB. He urged efforts to personally reach out to each patient to ensure they get proper treatment.

ON 13.5.2025 AT 7.20 PM

- During the meeting, Prime Minister noted the encouraging findings of the WHO Global TB Report 2024, which affirmed an 18% reduction in TB incidence (from 237 to 195 per lakh population between 2015 and 2023), which is double the global pace; 21% decline in TB mortality (from 28 to 22 per lakh population) and 85% treatment coverage, reflecting the programme's growing reach and effectiveness.

- Prime Minister reviewed key infrastructure enhancements, including expansion of the TB diagnostic network to 8,540 NAAT (Nucleic Acid Amplification Testing) labs and 87 culture & drug susceptibility labs; over 26,700 X-ray units, including 500 AI-enabled handheld X-ray devices, with another 1,000 in the pipeline. The decentralization of all TB services including free screening, diagnosis, treatment and nutrition support at Ayushman Arogya Mandirs was also highlighted.

ON 13.5.2025 AT 7.20 PM

- Prime Minister was apprised of introduction of several new initiatives such as AI driven hand-held X-rays for screening, shorter treatment regimen for drug resistant TB, newer indigenous molecular diagnostics, nutrition interventions and screening & early detection in congregate settings like mines, tea garden, construction sites, urban slums, etc. including nutrition initiatives; Ni-kshay Poshan Yojana DBT payments to 1.28 crore TB patients since 2018 and enhancement of the incentive to ₹1,000 in 2024. Under Ni-kshay Mitra Initiative, 29.4 lakh food baskets have been distributed by 2.55 lakh Ni-kshay Mitras.

- The meeting was attended by Union Health Minister Shri Jagat Prakash Nadda, Principal Secretary to PM Dr. P. K. Mishra, Principal Secretary-2 to PM Shri Shaktikanta Das, Adviser to PM Shri Amit Khare, Health Secretary and other senior officials.

ON 13.5.2025 AT 7.20 PM

Challenges

- -Reaching the unreached: hard to reach areas, urban slums, migrants etc
- -Huge reservoir of latent TB infection
- - Social determinants outside health
- - Quality of care in private sector
- - Stigma and discrimination
- - Poor outcomes in drug resistant patients

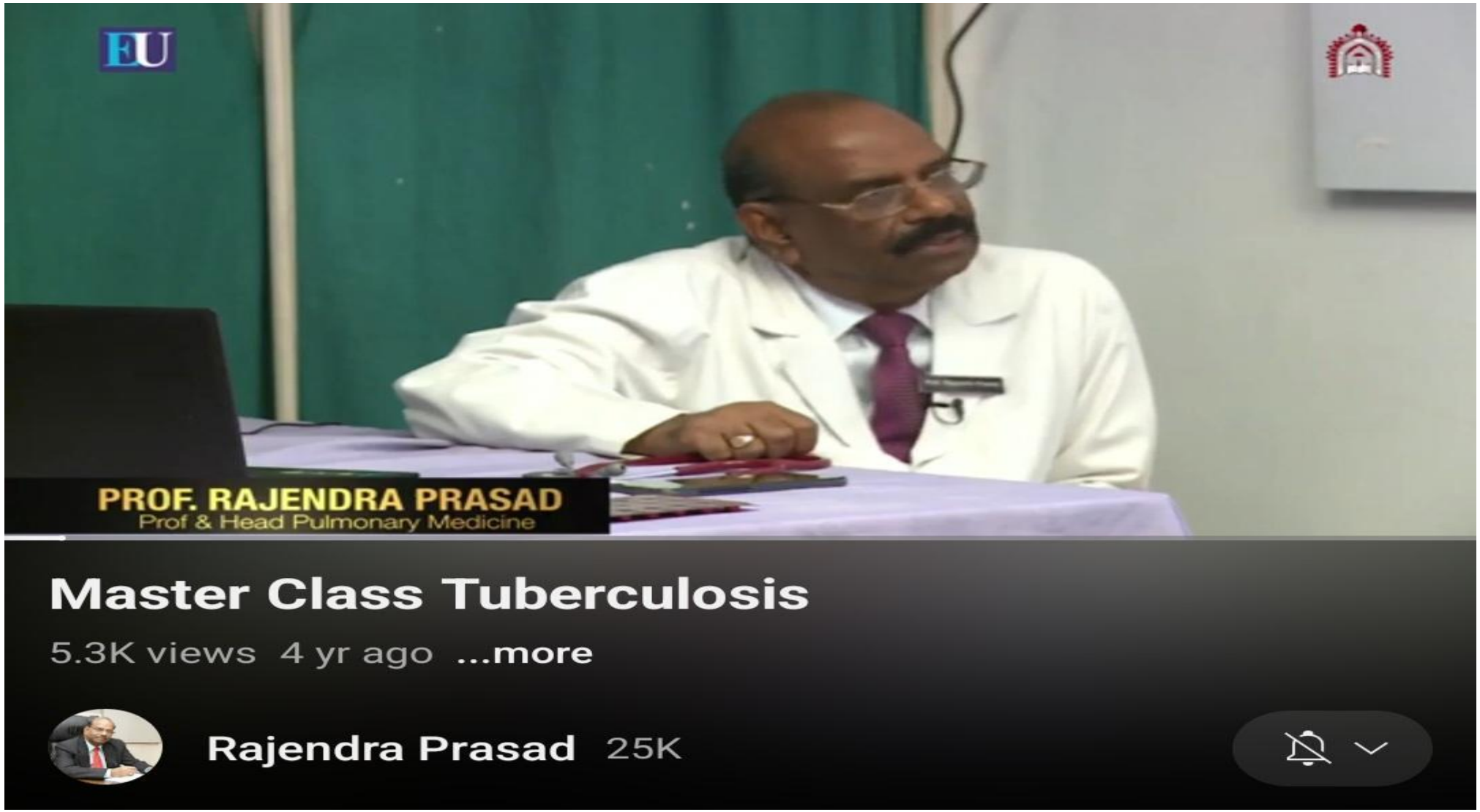
It’s time to come together to end TB

Dr. Rajendra Prasad Lectures on You-Tube

Recent changes in Treatment of TB

https://youtu.be/00xy9blXiWY

Masterclass on Tuberculosis



https://youtu.be/CD6WBViyRGs?si=6mrfu1-SYfHrXezb

Dr. Rajendra Prasad Lectures on you-tube

Approach to respiratory patients – History Taking

https://youtu.be/n121fS2tMRA

Approach to respiratory patients - History

6,931 views

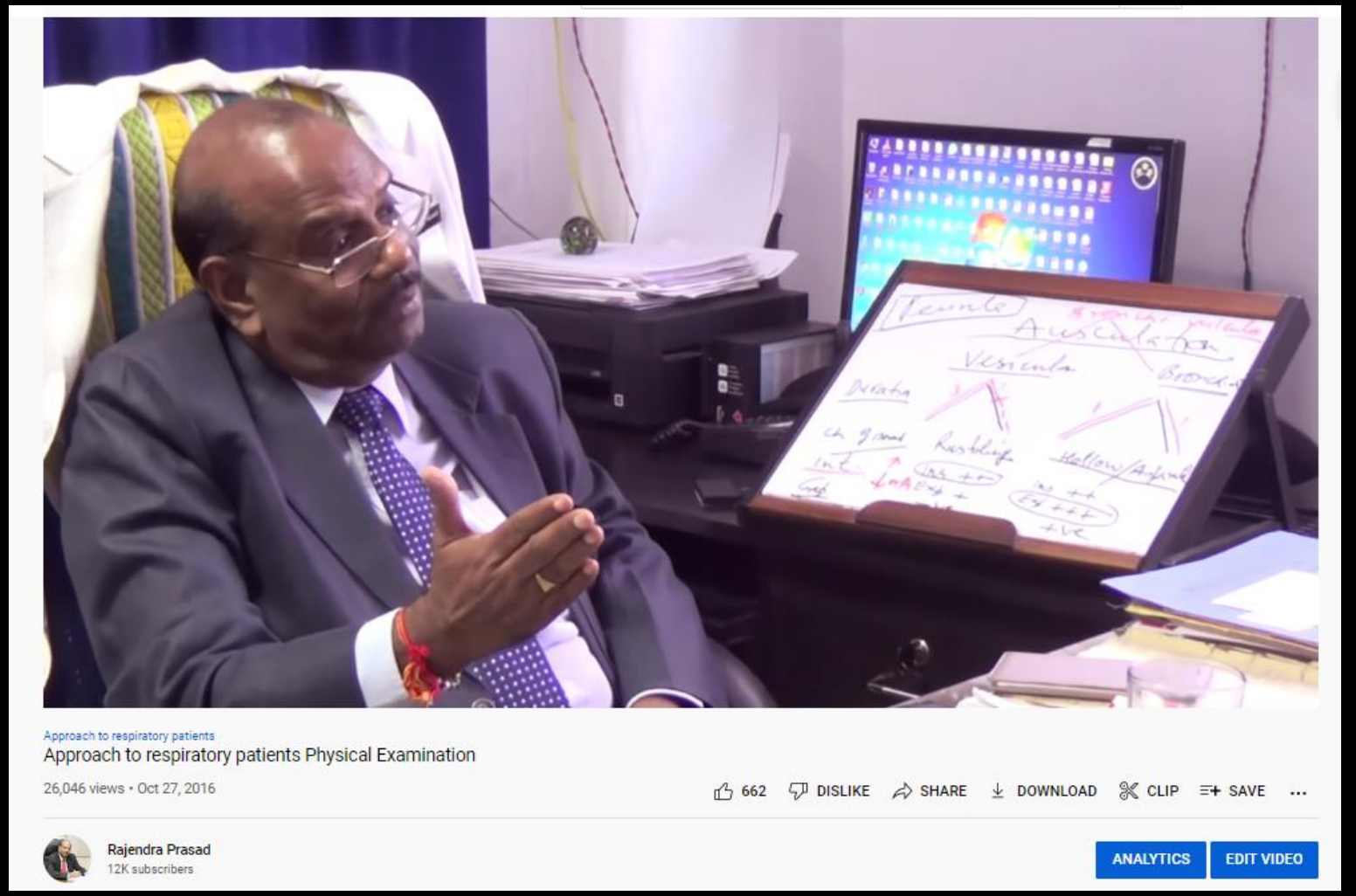
148 4 SHARE

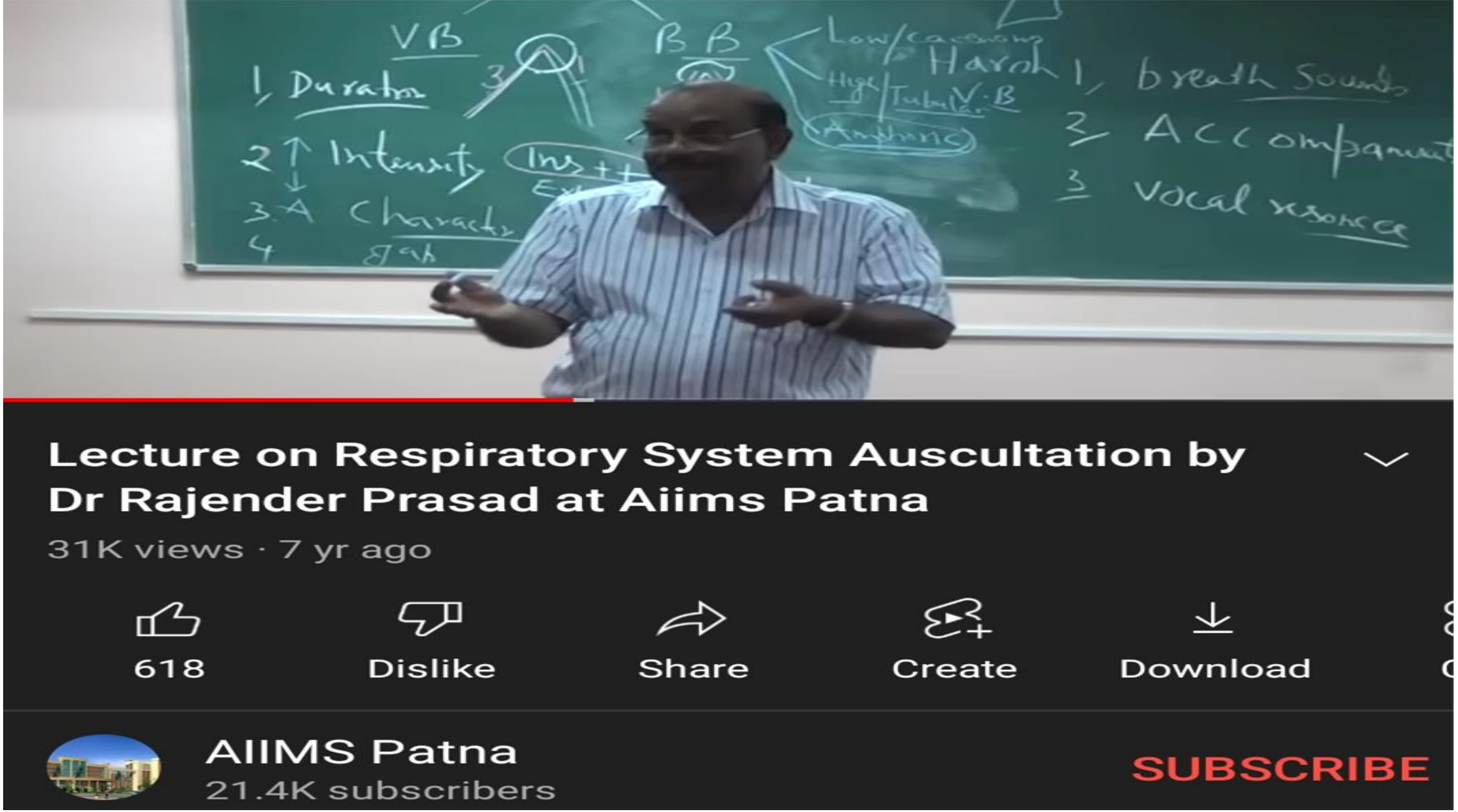
Rajendra Prasad
Published on Oct 27, 2016

SUBSCRIBE 2K

Approach To Respiratory Patients Physical Examination

https://youtu.be/R9ZLd2H37So





https://youtu.be/VYU3M6aYIxU

Chest X Ray interpretation for U.G. Students in Hindi

Rajendra Prasad
26.3K subscribers

Analytics | Edit video

8.1K | Share | Promote

317K views 1 year ago
...more

Manual *of* TUBERCULOSIS

This book "Manual of Tuberculosis" is written with the aim of defining a practical approach to every aspect of tuberculosis. Chapters practically covers all the aspects of tuberculosis ranging from epidemiology, diagnosis and practical approach to the treatment of pulmonary as well as common extra-pulmonary tuberculosis including HIV and TB. It also covers practical approach to drug resistant including multidrug resistant tuberculosis and extensively drug resistant tuberculosis. Chapters also include prevention of tuberculosis and TB control in India. Pharmacokinetics of antituberculosis used in new and retreatment cases of tuberculosis including their doses, regimens and adverse effects are highlighted. Special chapters on case based approach to treatment of tuberculosis in special situation and MDR-TB have also been included. Chapters have been written in the background of current literature and practical experience gained from day to day dealing with different patients suffering from tuberculosis. Undergraduate, Postgraduate medical students, practitioners and program manager in TB control will find this book as practical guide.

Prof. Rajendra Prasad MD DTCD FAMS FCCP (USA) FNCCP FCAI FIAB FIMSA DSC (Honoris Causa) Director, Vallabhbhai Patel Chest Institute, University of Delhi, Delhi (India). Former Professor & Head, Department of Pulmonary Medicine, King George's Medical University, Lucknow and Former Director, UP Rural institute of Medical Sciences & Research, Saifai, Etawah, did his MBBS in 1974 & MD in 1979 from King George's Medical College, Lucknow. He received advance training in Pulmonary Medicine including clinical tuberculosis and TB control from Japan. He is also honorary consultant to Armed Forces Medical Services, India in Respiratory Diseases. Professor Prasad is currently Vice President of South Asia Association of Allergy, Asthma and Applied Immunology. He has been International Governor of American College of Chest Physicians (USA). He has unique distinction of being president of all major scientific bodies in the field of Pulmonary Medicine in India. Besides several prestigious fellowship of reputed National and International organization, he was awarded Fellowship of the National Academy of Medical Sciences India. He has supervised about 150 Researches and Published 225 Articles in reputed National and International Journals and books. He has presented over 1200 guest lectures, scientific papers at various National and International meetings.

Prof. Rajendra Prasad is a nationally acclaimed chest physician and tuberculosis expert, possessing nearly 4 decades' illustrious teaching and research experience with proven excellence in quality patient care. Apart from being a clinician par excellence, he is also a very popular medical teacher in Pulmonary Medicine. Prof. Prasad's contribution in the field of Tuberculosis and Multidrug Resistant Tuberculosis (MDR-TB) are widely acclaimed. He took keen interest in Revised National Tuberculosis Control Programme (RNTCP) from its inception. His dynamic leadership in academic and administrative areas has earned him a large number of awards from various International and National Scientific societies. He has been mentor of many students who are now assuming important positions in pulmonary medicine.

Available at all medical book stores
or buy directly from Jaypee Brothers through online shopping
at www.jaypeebrothers.com

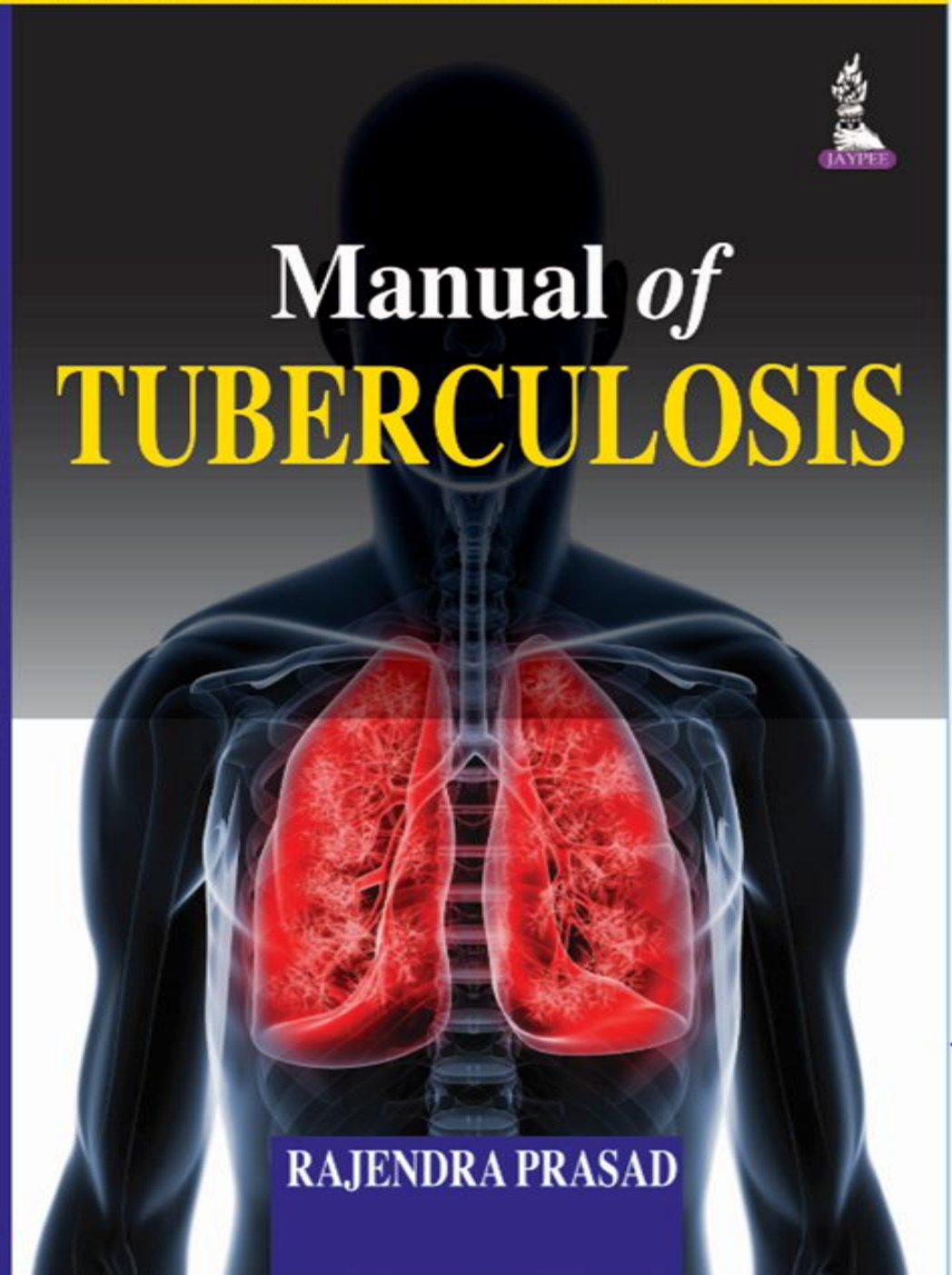
JAYPEE BROTHERS
Medical Publishers (P) Ltd.
www.jaypeebrothers.com
Join us on facebook.com/jaypeebrothers

Manual *of* TUBERCULOSIS

PRASAD

JAYPEE

Manual *of* TUBERCULOSIS



RAJENDRA PRASAD

CLINICAL TUBERCULOSIS
Diagnosis & Treatment

"This book" Clinical Tuberculosis: Diagnosis and Treatment is written with the aim of defining a practical approach to every aspect of tuberculosis. Chapters practically covers all the aspects of tuberculosis ranging from epidemiology, varying presentations of tuberculosis, diagnosis and practical approach to the treatment of pulmonary as well as common extra pulmonary tuberculosis including HIV and TB. It also covers practical approach to drug resistant including multidrug resistant tuberculosis and extensively drug resistant tuberculosis. Chapters also include prevention of tuberculosis and TB control in India. Pharmacokinetics of anti-tuberculosis used in new and retreatment cases of tuberculosis, including their doses, regimens, adverse effects are highlighted. Special chapters on case based approach to treatment of tuberculosis in special situation and MDR-TB have also been included. Chapters on TB in children, TB in elderly, non-tuberculous mycobacteria and infection control in TB are also included. Chapters have been written in the background of current literature and practical experience gained from day to day dealing with different patients suffering from tuberculosis. Undergraduate, Postgraduate medical students, practitioners and program managers in TB control will find this book as practical guide.

Prof. Rajendra Prasad MD DTCD FAMS FCCP FIAMS FIMSA FIAPO FAMS (Hon.) Emeritus Director, Vallabhbhai Patel Chest Institute, University of Delhi, Delhi (India), Former Professor & Head, Department of Pulmonary Medicine, King George's Medical University, Lucknow and Former Director, UP Rural Institute of Medical Sciences & Research, Saifai, Etawah, did his MBBS in 1974 & MD in 1979 from King George's Medical College, Lucknow. He received advance training in Pulmonary Medicine including clinical tuberculosis and TB control from Japan. He is also honorary consultant to Armed Forces Medical Services, India in Respiratory Diseases. Professor Prasad is currently Vice President of South Asia Association of Allergy, Asthma and Applied Immunology, Ex-International Governor of American College of Chest Physicians (USA). He has unique distinction of being president of all major scientific bodies in the field of Pulmonary Medicine in India like National College of Chest Physicians India, Indian Chest Society, Indian College of Allergy, Asthma & Applied Immunology, Indian Association for Bronchology and chairman, Standing Technical Committee, Tuberculosis Association of India. Besides several prestigious fellowships of reputed National and International organizations, he was awarded Fellowship of the National Academy of Medical Sciences, India. He has supervised about 150 Dissertations and Published 225 Articles in reputed National and International Journals and Books. He has presented over 1200 guest lectures, scientific papers at various National and International meetings.

Prof. Rajendra Prasad is a nationally acclaimed chest physician and tuberculosis expert, possessing excellent clinical skills, a tireless teaching and research experience with proven excellence in quality patient care. Apart from being a clinician par excellence, he is also a very popular medical teacher in Pulmonary Medicine. Prof. Prasad's contributions in the field of Tuberculosis and Multidrug Resistant Tuberculosis (MDR-TB) are widely acclaimed. He has been honored in Revised National Tuberculosis Control Programme (RNTCP) for his energetic, his dynamic leadership, academics and achievements over years. He has received more than a large number of awards from various international and National Scientific societies. He has been mentor of many students who are now occupying important positions in pulmonary medicine.

Available at all medical book stores
or buy directly from Jaypee Brothers through online shopping
at www.jaypeebrothers.com

JAYPEE BROTHERS
Medical Publishers (P) Ltd.
www.jaypeebrothers.com
Join us on facebook.com/Jaypeebrothers

CLINICAL TUBERCULOSIS Diagnosis & Treatment PRASAD

CLINICAL TUBERCULOSIS
Diagnosis & Treatment

RAJENDRA PRASAD

MDR & XDR Tuberculosis

This book "MDR and XDR Tuberculosis" is written with the aim of defining a practical approach to every aspect of drug resistance tuberculosisespecially multi-drug resistant tuberculosis (MDR-TB) and extensively drug resistant tuberculosis (XDR-TB).Chapters practically covers all the aspects of drug resistance tuberculosis including MDR and XDR-TB ranging from epidemiology, diagnosis and practical approach to the treatment of MDR and XDR-TB including HIV and DR-TB. Special chapters on case based approach to treatment of MDR-TB have also been included. Chapter on DR-TB in children,DR-TB in Extrapulmonary Tuberculosis, Flouroquinolone resistance, infection control in DR-TB and Newer anti-Tuberculosis Drug are also included. Chapters have been written in the background of current literature and practical experience gained from day to day dealing with different patients suffering from drug resistant tuberculosis. Advances upto 2013 have been included making all the chapters well referenced with the latest references. Undergraduate, Postgraduate medical students, practitioners and program manager in TB control will find this book as practical guide.

Prof. Rajendra Prasad MD DTCD FAMS FCCP (USA) FNCCP FCAI FIAB FIMSA DSC (Honoris Causa) Director, Vallabhbhai Patel Chest Institute, University of Delhi, Delhi (India), Former Professor & Head, Department of Pulmonary Medicine, King George's Medical University, Lucknow and Former Director, UP Rural institute of Medical Sciences & Research, Saifai, Etawah, did his MBBS in 1974 & MD in 1979 from King George's Medical College, Lucknow. He received advance training in Pulmonary Medicine including clinical tuberculosis and TB control fromJapan. He is also honorary consultant to Armed Forces Medical Services, India in Respiratory Diseases. He has beenInternational Governor of American College of Chest Physicians (USA). He has unique distinction of being president of all major scientific bodies in the field of Pulmonary Medicine in India like National College of Chest Physicians India, Indian Chest Society, Indian College of Allergy, Asthma & Applied Immunology, Indian Association for Bronchology and chairman, Standing Technical Committee, Tuberculosis Association of India. Besides several prestigious fellowship of reputed National and International organization, he was awarded Fellowship of the National Academy of Medical Sciences India. He has supervised about 150 Researches, and Published 225 Articles in reputed National and International Journals and Books. He has presented over 1200 guest lectures, scientific papers at various National and International meetings.

Prof. Rajendra Prasad is a nationally acclaimed chest physician and tuberculosis expert, possessing nearly 4 decades' illustrious teaching and research experience with proven excellence in quality patient care. Apart from being a clinician par excellence, he is also a very popular medical teacher in Pulmonary Medicine. Prof. Prasad's contribution in the field of Tuberculosis and Multidrug Resistant Tuberculosis (MDR-TB) are widely acclaimed. His dynamic leadership in academic and administrative areas has earned him a large number of awards from various International and National Scientific societies. He has been mentor of many students who are now assuming important positions in pulmonary medicine.

Available at all medical book stores
or buy directly from Jaypee Brothers through online shopping
at www.jaypeebrothers.com

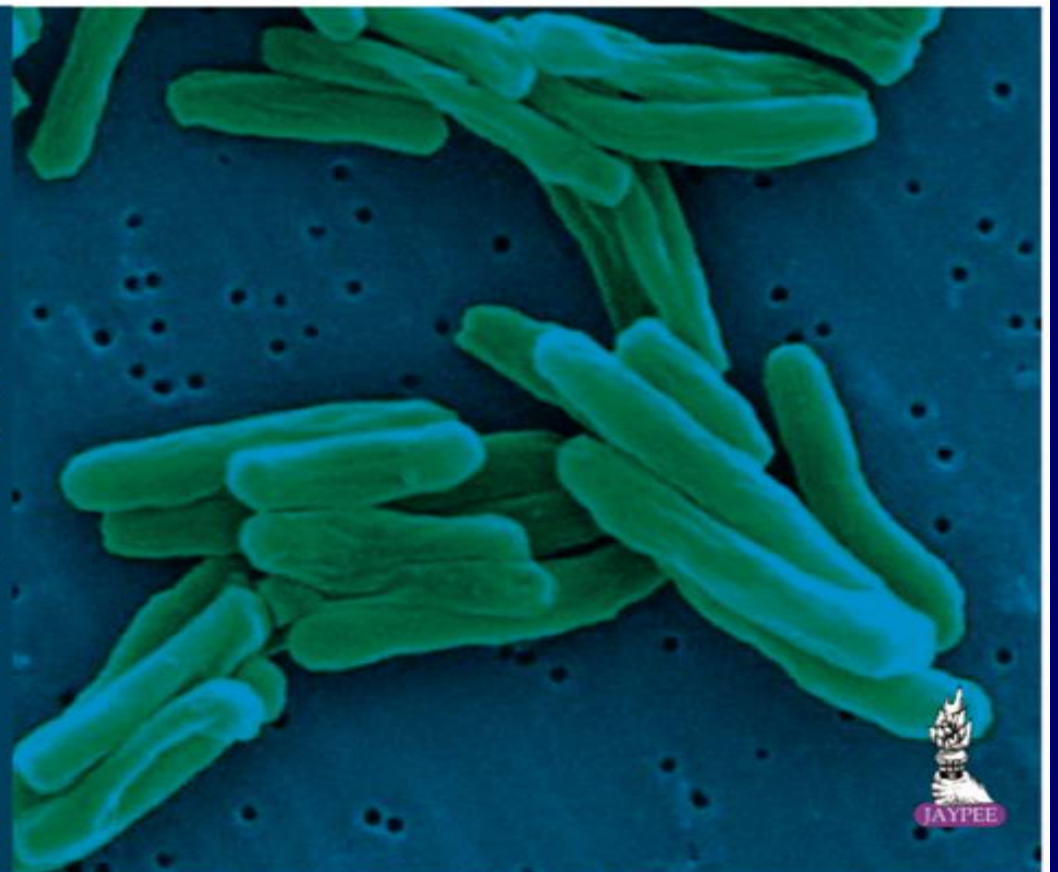
JAYPEE BROTHERS
Medical Publishers (P) Ltd.
www.jaypeebrothers.com
Join us on facebook.com/jaypeebrothers

PRASAD

MDR & XDR Tuberculosis

MDR & XDR Tuberculosis

RAJENDRA PRASAD



Handbook on
Adverse DRUG REACTIONS in TB Treatment

Salient Features

- Comprehensive well-referenced handbook, which contains a plethora of knowledge
- Defines a practical approach to every aspect of adverse drug reactions in tuberculosis treatment
- Covers all the aspects ranging from epidemiology of adverse drug reactions in new and drug-resistant patients
- Includes the case-based approach to treatment of tuberculosis, multi-drug-resistant tuberculosis (MDR-TB) and extensively drug-resistant tuberculosis (XDR-TB) in special situations such as pregnancy, renal insufficiency and liver diseases
- Chapters are organized in a systematic way for easy understanding and for practical approach with illustrative cases
- Serves as a practical guide for undergraduate and postgraduate medical students, practitioners, program managers and healthcare workers in TB control.

Rajendra Prasad MD DTCD FAMS FCCP (USA) FRCP (Glas) FNCCP FICS FCAI FIAB FIMSA FCCS DSc (Honoris Causa) is the Director of Medical Education and Professor and Head, Department of Pulmonary Medicine, Era's Lucknow Medical College and Hospital, Era University, Lucknow, Uttar Pradesh, India. He was the Director, Vallabhbhai Patel Chest Institute, University of Delhi, New Delhi; Professor and Head, Department of Pulmonary Medicine, King George's Medical University, Lucknow; and the Director, UP Rural Institute of Medical Sciences and Research, Saifai, Etawah, Uttar Pradesh. He has been International Governor of American College of Chest Physicians, USA. He has unique distinction of being President of all major scientific bodies in the field of pulmonary medicine in India. He was awarded Fellowship of the National Academy of Medical Sciences, India, American College of Chest Physicians, USA and Royal College of Physicians and Surgeons, Glasgow. He has supervised about 180 researches, and published 340 original articles, reviews and book chapters. He has written 8 books including 4 books on Tuberculosis and an Atlas on Fiber Optic Bronchoscopy based exclusively on Indian patients and presented over 1,600 guest lectures and scientific papers at various national and international meetings. He is recipient of Dr BC Roy National Award for devolving and popularizing pulmonary medicine in India.

Nikhil Gupta MD (Medicine) is an Assistant Professor, Department of General Medicine, Dr Ram Manohar Lohia Institute of Medical Sciences, Lucknow, Uttar Pradesh, India. He was an Assistant Professor, Department of Medicine, Era's Lucknow Medical College and Hospital, Era University, Lucknow from 2012 to 2017. He has more than 30 guest lectures and scientific papers, supervised 15 researches and published 35 original articles, review articles, case reports and book chapters. He has also co-authored 3 books on tuberculosis.

Available at all medical bookstores or buy online at www.jaypeebrothers.com

JAYPEE BROTHERS
Medical Publishers (P) Ltd.
www.jaypeebrothers.com
Join us on facebook.com/JaypeeMedicalPublishers

Shelving Recommendation
MEDICINE

ISBN 978-93-5270-106-3

Handbook on Adverse DRUG REACTIONS in TB Treatment

Prasad • Gupta

Celebrating 50 Passion, Quality and Innovation in Healthcare Publishing

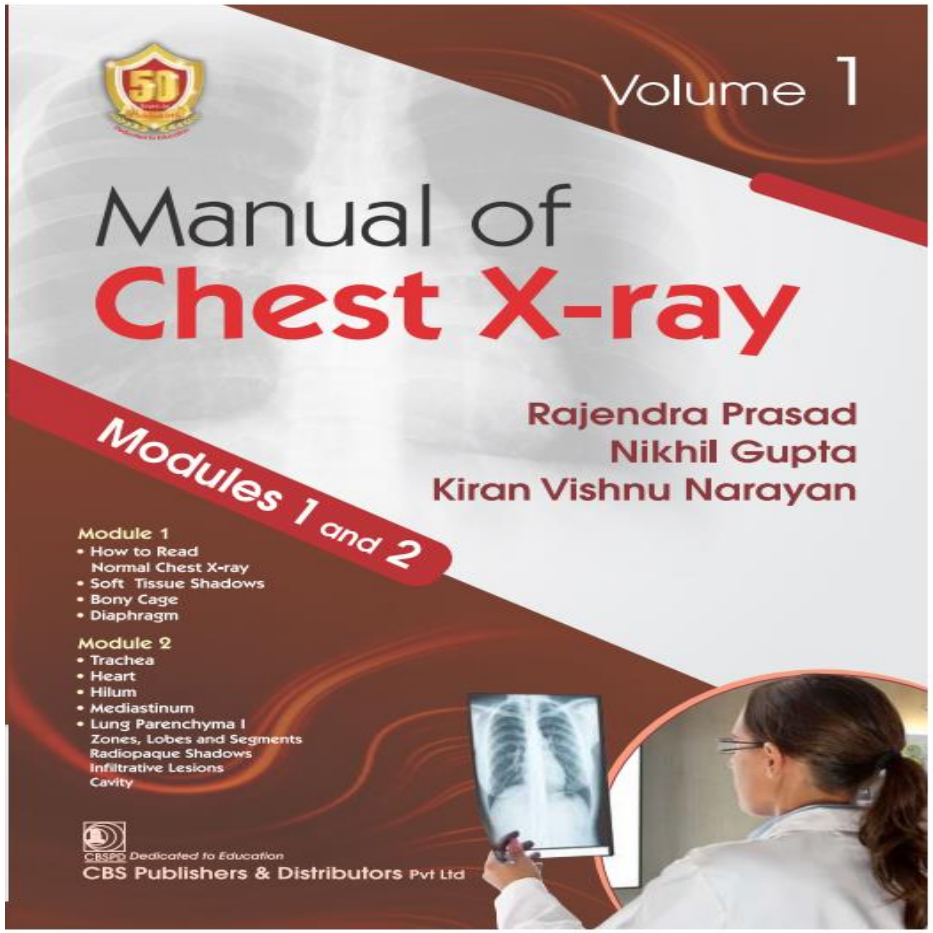
Handbook on
Adverse DRUG REACTIONS in TB Treatment

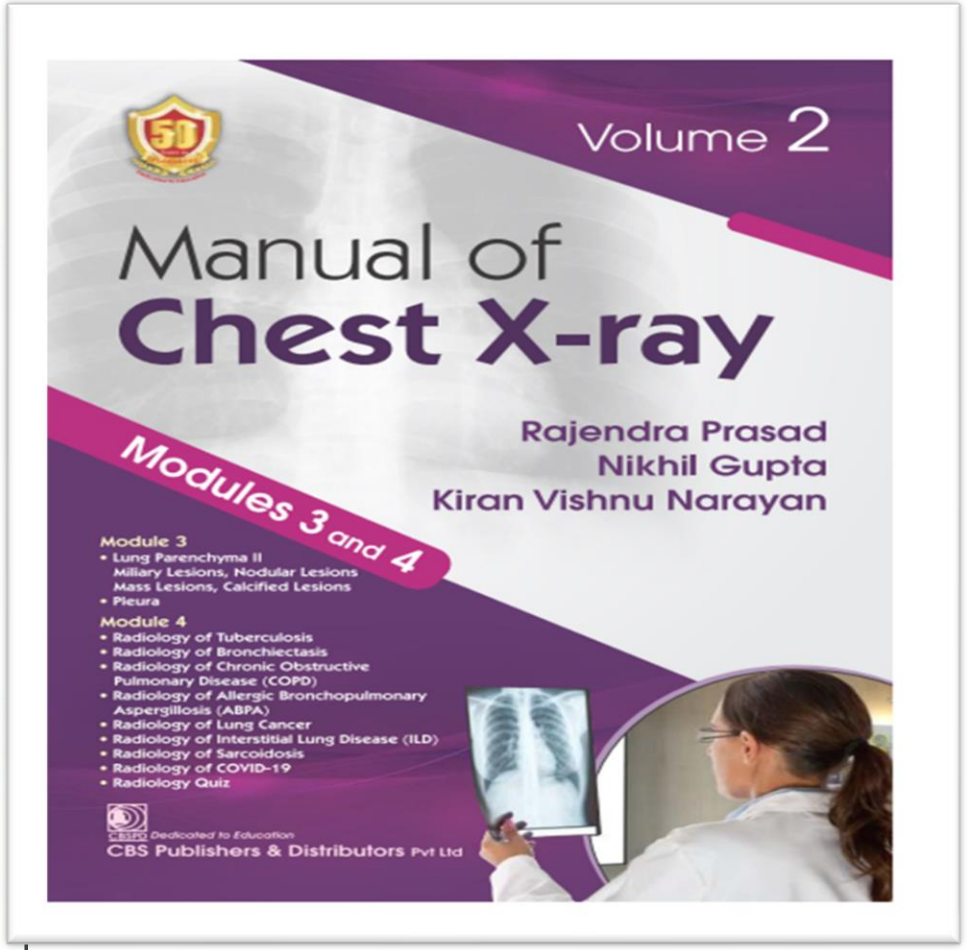
Rajendra Prasad

Co-author
Nikhil Gupta

Foreword
D Behera

JAYPEE





https://www.amazon.in/-/hi/Rajendra-Prasad/dp/9354665098/ref=sr_1_1?crid=29UEXSGTLBVFU&keywords=manual+of+chest+x+ray&qid=1690476714&sprefix=Manual+of+%2Caps%2C244&sr=8-1

A Doctor is a student till his death, when he fails to be a student, he dies.

Sir William Osler

"Anyone who keeps learning stays young"
Henry Ford

I am Still Learning……

Thank You

Questions

? ? ?