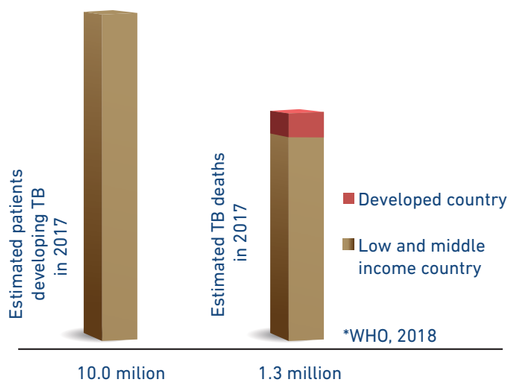
Joint
Effort for
Elimination of
Tuberculosis

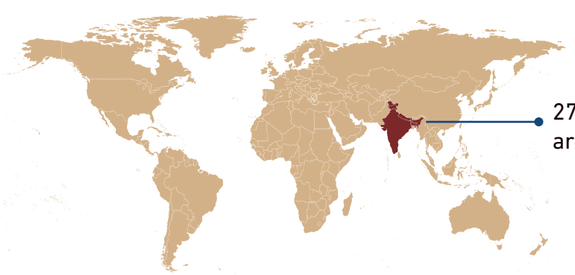
TUBERCULOSIS POSES A HUGE PUBLIC HEALTH THREAT TO INDIA

Tuberculosis: A deep-rooted problem

According to WHO, in 2017, an estimated 10.0 million people developed tuberculosis (TB) and 1.3 million died from the disease, globally[1]



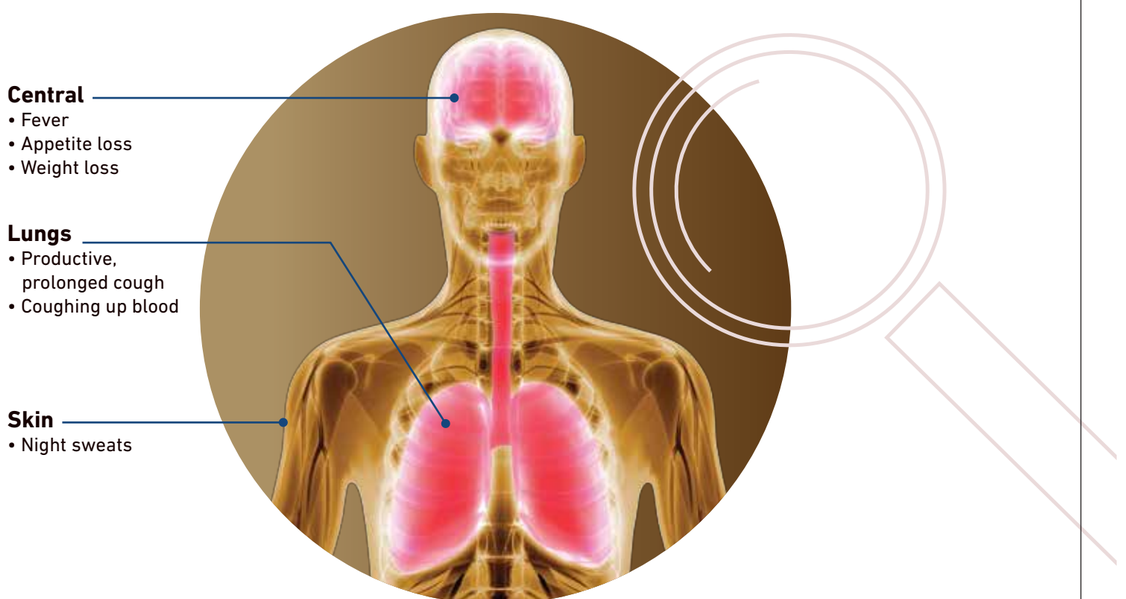
More than 1/4th of these TB cases were reported from India[2]



1 person dies of tuberculosis every minute[3]

The first step in diagnosis is to suspect tuberculosis

Pulmonary TB (PTB) is characterized by persistent cough for ≥2 weeks with fever, loss of weight and appetite[4]

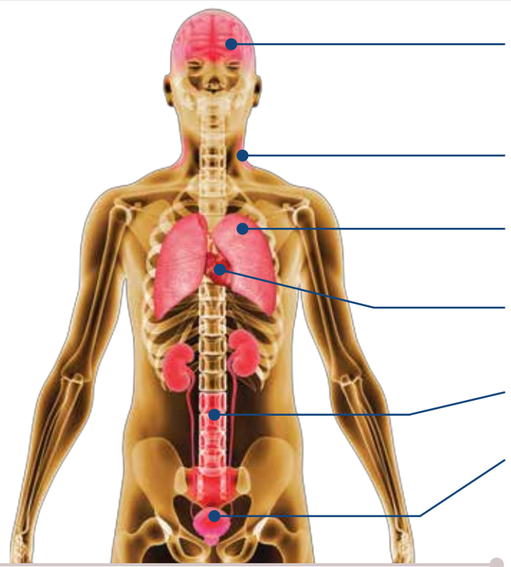


Main symptoms of pulmonary tuberculosis[5]

Complaints of prolonged fever can be a sign of TB, and a chest x-ray must be suggested. Many TB patients seek care for fever, but may not complain about prolonged cough and weight loss.

Tuberculosis can affect any organ in the body

- Extrapulmonary TB (EPTB) affects the central nervous system, lymphatic system, bones and joints of spine or genitourinary system[6]

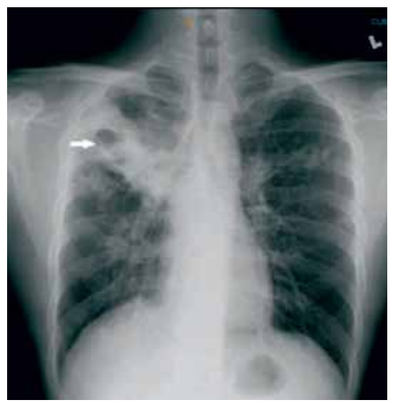


Main sites of extrapulmonary tuberculosis[5]

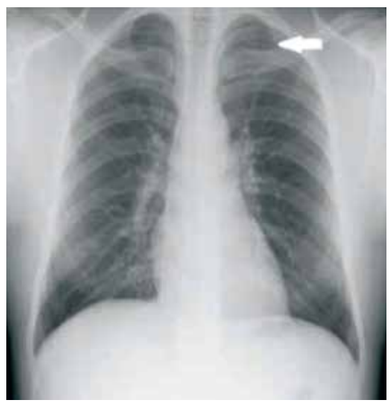
- Underlying conditions like HIV, diabetes, chronic renal disease, cancer are known to weaken the immune system and put patients at a higher risk of TB[7]
- Patients residing in overcrowded localities with unsanitary conditions and poor ventilation are more prone to TB complications[8]

Chest x-ray is only a screening test

It is a screening test but not a confirmatory test



Classical picture of active pulmonary TB[9]



Presumptive TB patient[9]

- Chest x-rays: Provide supportive evidence for pulmonary TB[10,11]
- Chest x-rays: Neither specific nor sensitive[10,11]
- Other diseases may mimic TB on chest x-rays[10,11]
- Supplement to microscopy, NAAT+ and culture[10,11]

Treatment of TB purely on the basis of x-rays can result in significant unnecessary overtreatment with adverse consequences for non-TB patients[9]

WHO-endorsed tests for TB diagnosis

CBNAAT [12]

99% specificity and 94% sensitivity when compared to culture

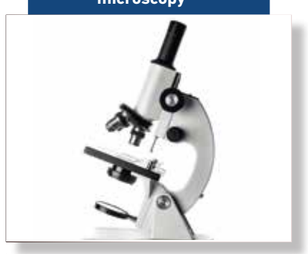
LPA (Line Probe Assay)[13]

99% specificity and 98% sensitivity for RIF resistance

99% specificity and 84% sensitivity for INH resistance

First-line LPA is only for smear positive

LED microscopy[14]



10%-20% more sensitive than conventional microscopy

Culture (Liquid and solid)[15]

Liquid culture is the gold standard for diagnosis

Can assay all anti-TB drugs

Ideal test for EPTB and smear-negative PTB

CBNAAT: Cartridge-based nucleic acid amplification test

Serological tests

In 2012, government of India had banned the use of these tests for diagnosis of PTB & EPTB

Sputum microscopy

Sputum - Right clinical specimen for detecting PTB

IGRAs and TST

As per WHO recommendation, should not be used for diagnostic work-up of active TB in adults

WHO assesses the quality of a diagnostic test based on its sensitivity and specificity*

Test type	CBNAAT**[12]	Liquid Culture[14]	Line Probe Assay[13]
Specificity	99%	Gold Standard	99% (RIF & INH)
Sensitivity	94%	Gold Standard	98% - RIF & 84% - INH
MDR resistance	Yes (Only RIF resistance)	Yes (For majority)	Yes (INH & RIF resistance)
Turnaround time	Within **1 day**	Within **15-42 days**	Within **2-3 days**

*Provided sensitivity and specificity is for PTB sample **GeneXpert

CBNAAT test

CBNAAT (Cartridge-based nucleic acid amplification test) is a fast, automated and qualitative real-time PCR test that analyzes the sputum specimens for identification of:[14,15]

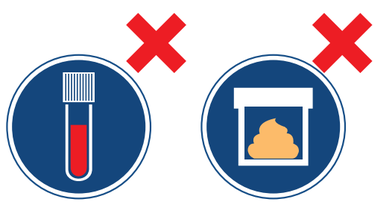
- Mycobacterium Tuberculosis Complex (MTB) DNA
- Resistance to rifampicin (RIF)

Recommended by WHO for detection of pulmonary and extrapulmonary TB in adults as well as children[14,15]

Turnaround time only 2 hours[14,15]

CBNAAT (GeneXpert)

Sample for PTB - 5 ml mucopurulent sputum without saliva or blood



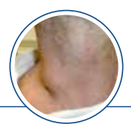
Blood and faeces are not samples for TB diagnosis

Sensitivity & specificity of CBNAAT* for EPTB

Sample	Sensitivity#	Specificity#
Lymph nodes	83%	94%
CSF	81%	98%
Pleural fluid	46%	99%

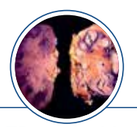
#Compared to culture as the reference standard

Extrapulmonary TB[16]

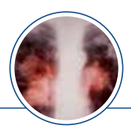


TB lymphadenitis
Lymph node aspirate or biopsy

Ascites (Abdominal TB)
Ascites fluid and peritoneal biopsy

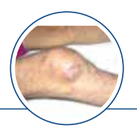


TB meningitis
Cerebrospinal Fluid (CSF)

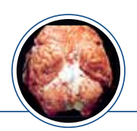


Urinary tract and kidneys TB
Urine and tissue via biopsy

Pleural effusion (TB pleuritis)
Pleural fluid and pleural biopsy



Bone and joint TB
Bone/synovial tissue via biopsy



Genitourinary tract TB
Tissue via biopsy (Endometrial tissue in women)

*GeneExpert

FDC - The advantages

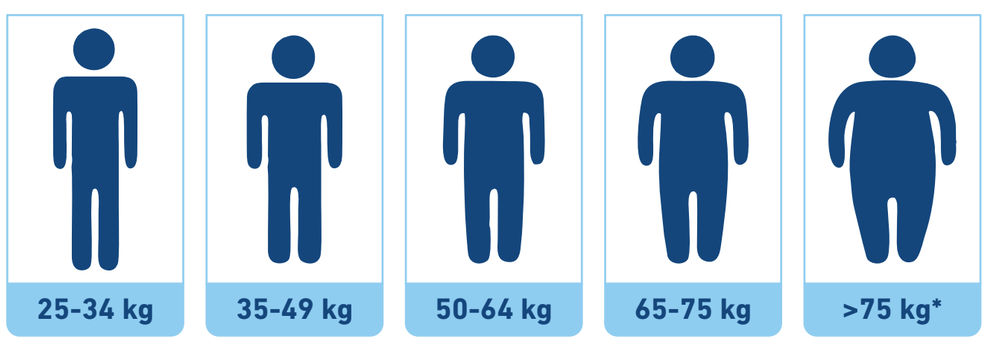
Simplicity of treatment

Increased patient acceptance

Fewer tablets to swallow

Prevents 'concealed' irregularity. Many a time patients will consume a few drugs and leave out some; this gets mitigated when FDCs are used.

- Lower risk of emergence of drug resistance
- Easier-to-adjust dosages by body weight
  (There are 5 adult weight bands and 6 pediatric weight bands classified by RNTCP)



FDC - Fixed dose combination

Daily FDC regimen schedule for adults

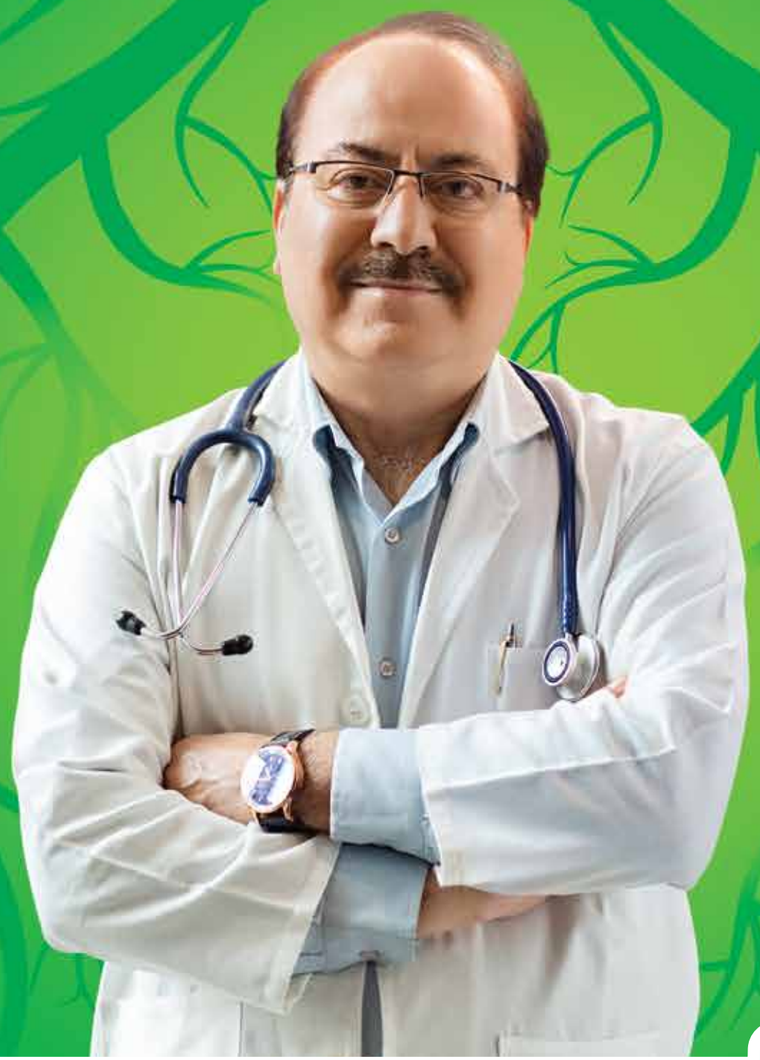
Weight category	Type of case	Number of tablets to be consumed			Number of tablets to be consumed		
		Intensive phase	Dose in IP	No. of strips in IP	Continuation phase	Dose in IP	No. of strips in CP
		HRZE (4 FDC)			HRE (3 FDC)		
		75/150/400/ 275 mg per tab		Each strip contains 28 tablets	75/150/275 mg per tab		Each strip contains 28 tablets
25-34 kg	New and previously treated	2	56 doses	4 strips	2	112 doses	8 strips
35-49 kg		3	56 doses	6 strips	3	112 doses	12 strips
50-64 kg		4	56 doses	8 strips	4	112 doses	16 strips
65-75 kg		5	56 doses	10 strips	5	112 doses	20 strips
>75 kg*		6	56 doses	12 strips	6	112 doses	24 strips

Daily FDC regimen schedule for pediatric (<18 yrs)

Weight category	Type of case	Number of tablets to be consumed				Number of tables to be consumed			
		Intensive phase		Dose in IP	3 FDC No. of Strips & Tabs in IP	Continuation phase		Dose in IP	3 FDC No. of strips & tabs in IP
		HRZ (3 FDC-P) 50/75/150 mg	E* 100 mg			HR (2 FDC-P) 50/75/150 mg	E* 100 mg		
4-7 kg	New and previously treated	1	1	56	2 x 28s E-56	1	1	112	4 x 28 E-112
8-11 kg		2	2	56	4 x 28s E-112	2	2	112	8 x 28 E- 224
12-15 kg		3	3	56	6 x 28s E-168	3	3	112	12 x 28 E-336
16-24 kg		4	4	56	8 x 28s E-224	4	4	112	16 x 28 E-448
25-29 kg		3+1 A*	3	56	6 x 28s E-168 A-56	3+1 A*	3	112	12 x 28 E-336 A-112
30-39 kg		2+2 A*	2	56	4 x 28s E-112 A-112	2+2 A*	2	112	8 x 28 E- 224 A-224

*Patient >75kg may receive 5 tablets/day if they do not tolerate. Dose to be adjusted by treating physician in individual cases if required

*E-Ethambutol *A-Adult FDC Tab



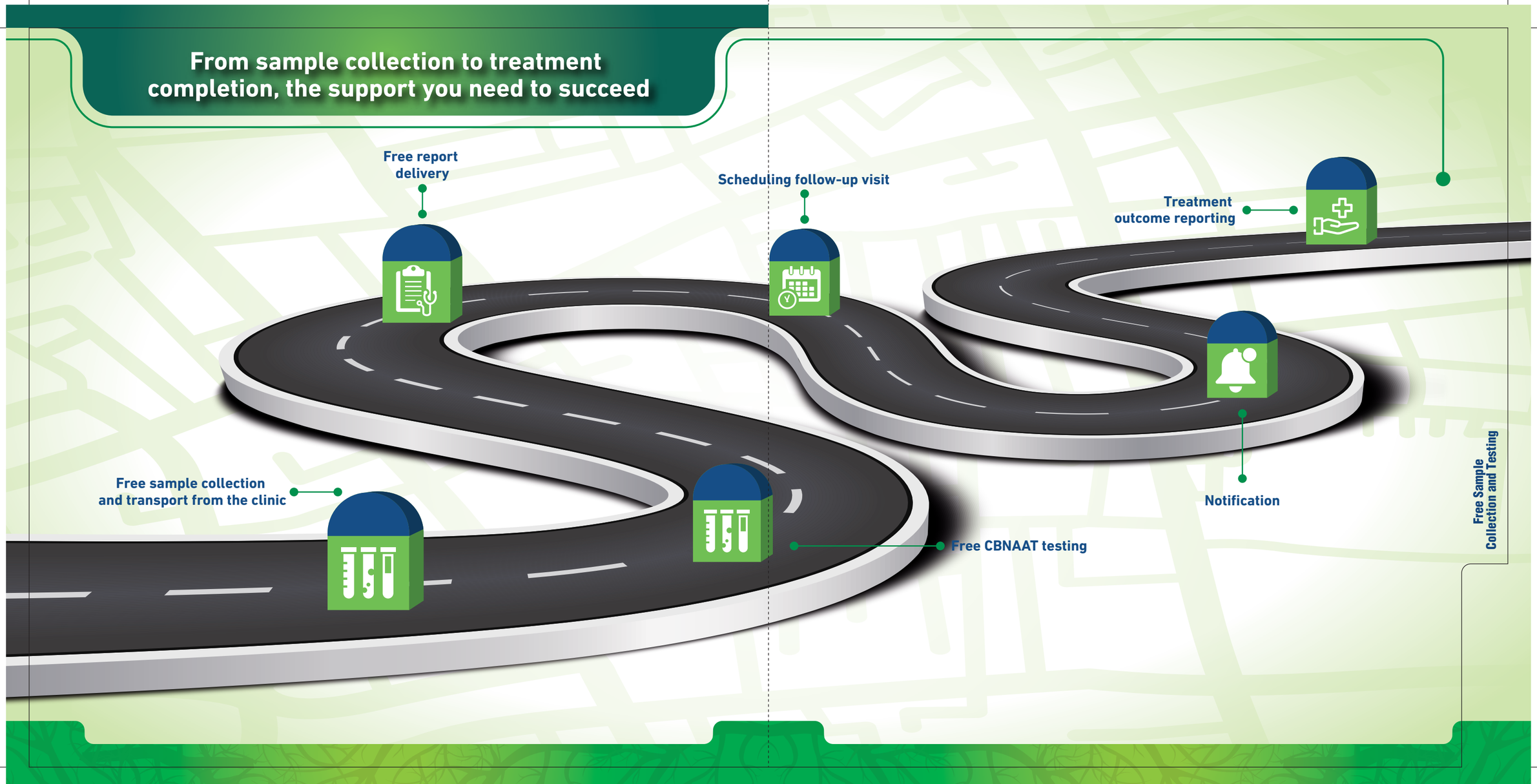
ELIMINATION OF TB BY 2025
IS **POSSIBLE ONLY** WITH
YOUR SUPPORT

TOGETHER WE STAND AGAINST TB

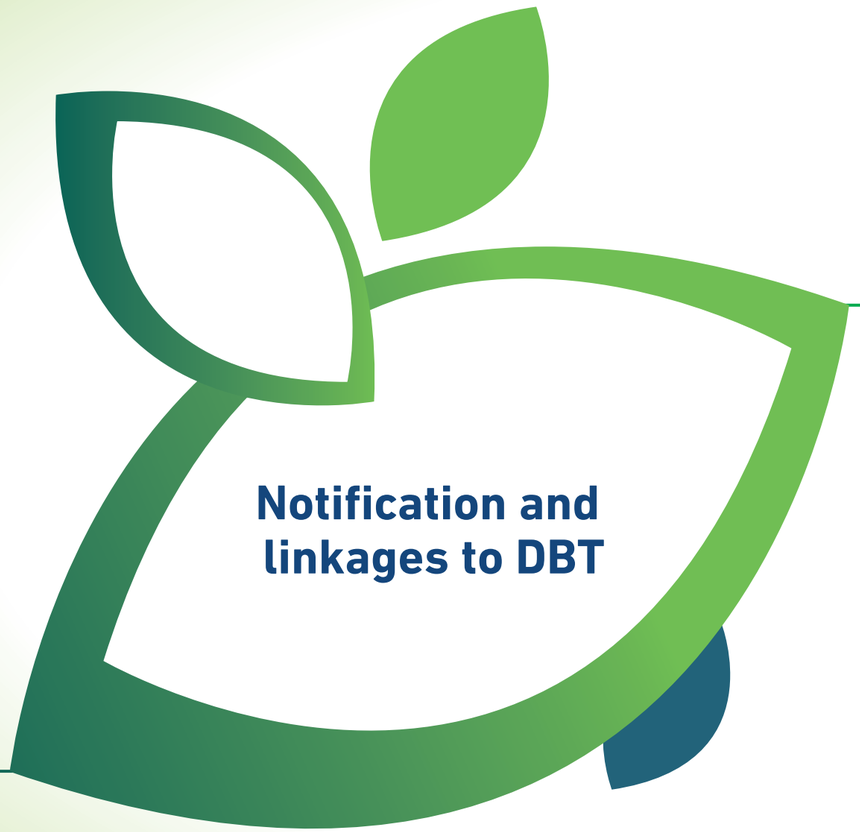
Joint
Effort for
Elimination of
Tuberculosis

JEET

From sample collection to treatment completion, the support you need to succeed



From notification to treatment completion, the support patients need to succeed



NIKSHAY POSHAN YOJANA

Government of India offers all notified patients

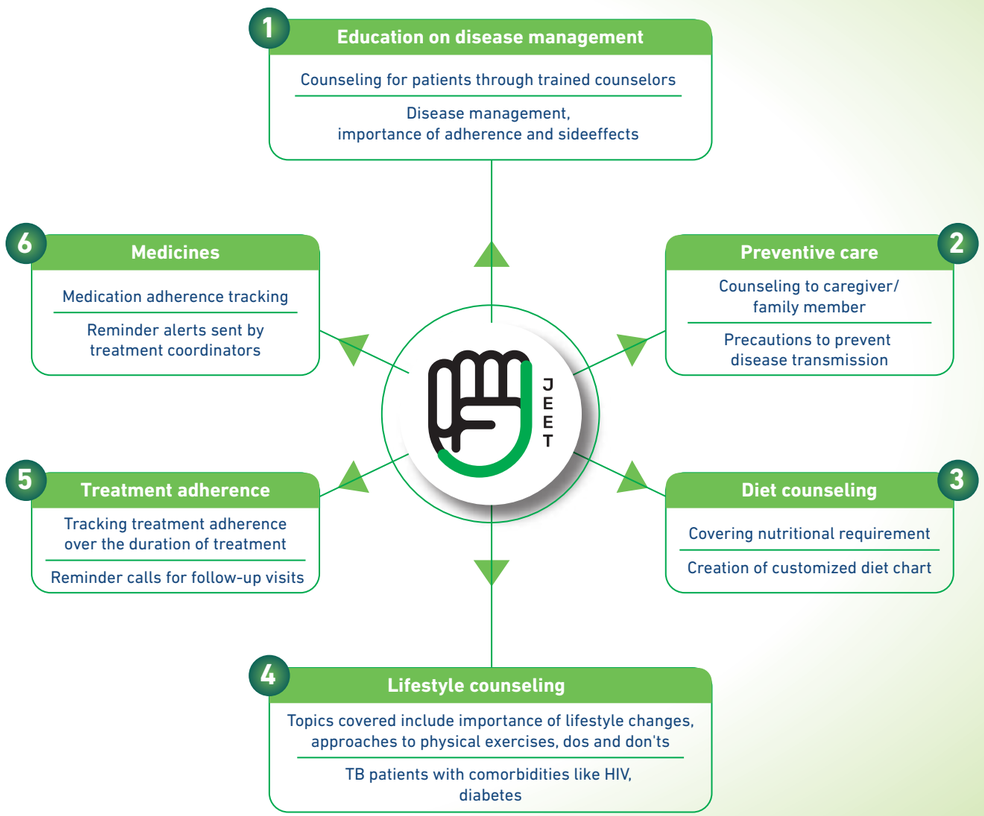
Financial assistance of Rs. 500/- per month

Until treatment completion to support their nutritional needs and fast recovery

JEET team will also support patients until treatment completion

Ensuring treatment adherence for your patients

From treatment initiation to completion, the support your patients need to fight TB



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