



SNS COLLEGE OF ALLIED HEALTH SCIENCES
SNS Kalvi Nagar, Coimbatore - 35
Affiliated to Dr MGR Medical University, Chennai



DEPARTMENT OF CARDIOPULMONARY PERFUSION CARE
TECHNOLOGY

COURSE NAME: PATHOLOGY II
II YEAR

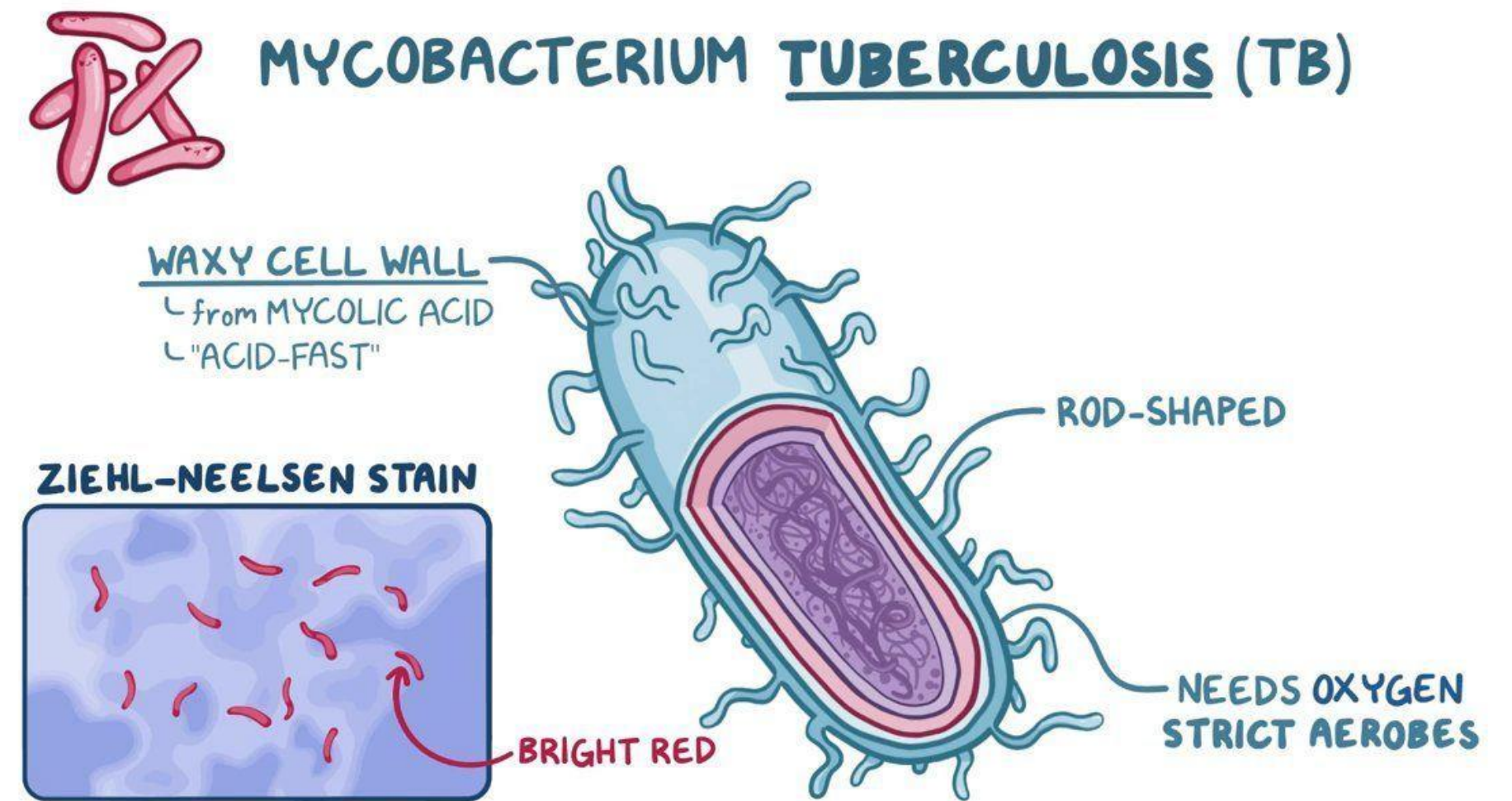
UNIT II : PATHOLOGY OF LUNG
TOPIC : TUBERCULOSIS



Mycobacterium Tuberculosis



- Mycobacterium Tuberculosis is an **aerobic rod shaped bacteria**
- It has waxy cell wall with **mycolic acid**
- It is **acid fast** in nature
- Staining method is **Ziehl Neelson method** (appears as pink bacteria)
- TB is a chronic granulomatous disease
- It is also known as Koch disease

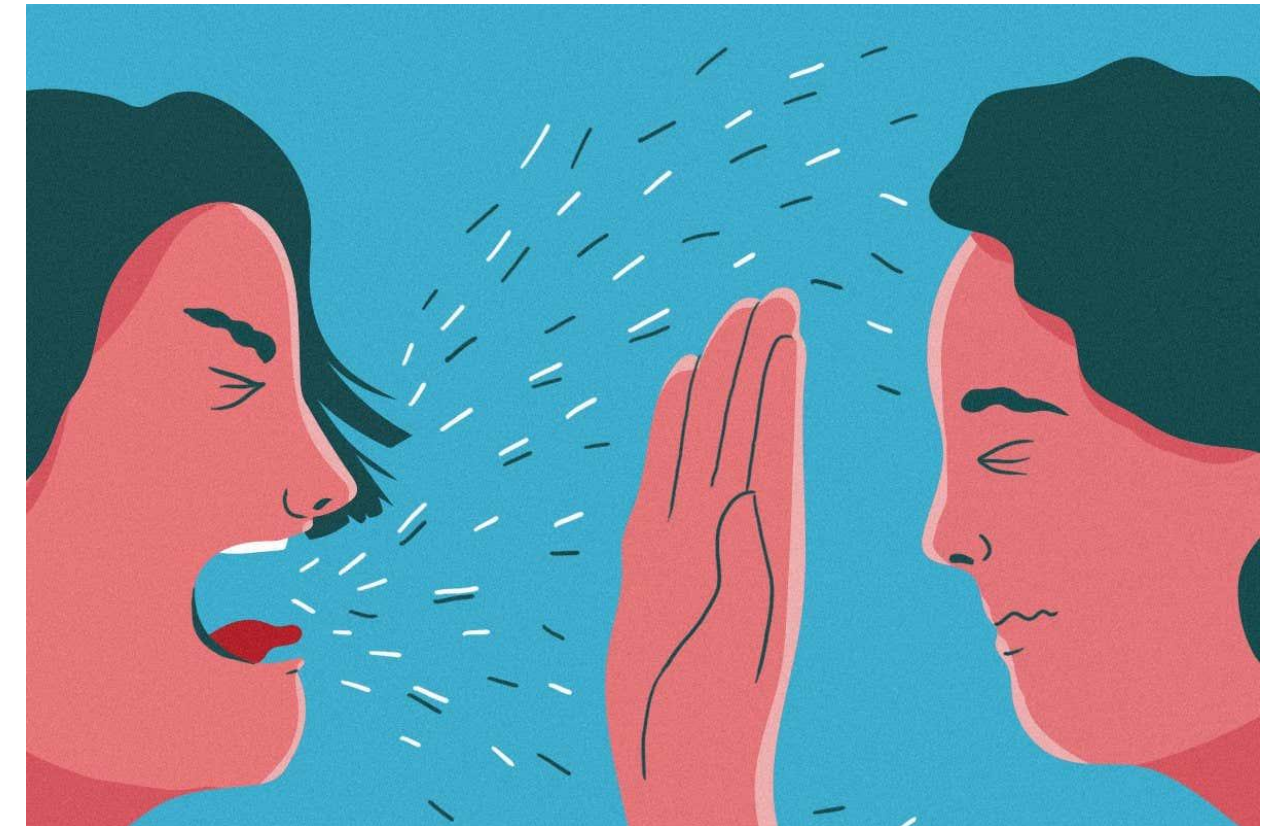




Pre disposing factor



- Through coughing, sneezing, singing etc.,
- Source – airborne
- overcrowd
- Poverty
- Alcoholism
- Chronic illness
- Immunosuppressive patients
- Health care workers who dealing high risk patients

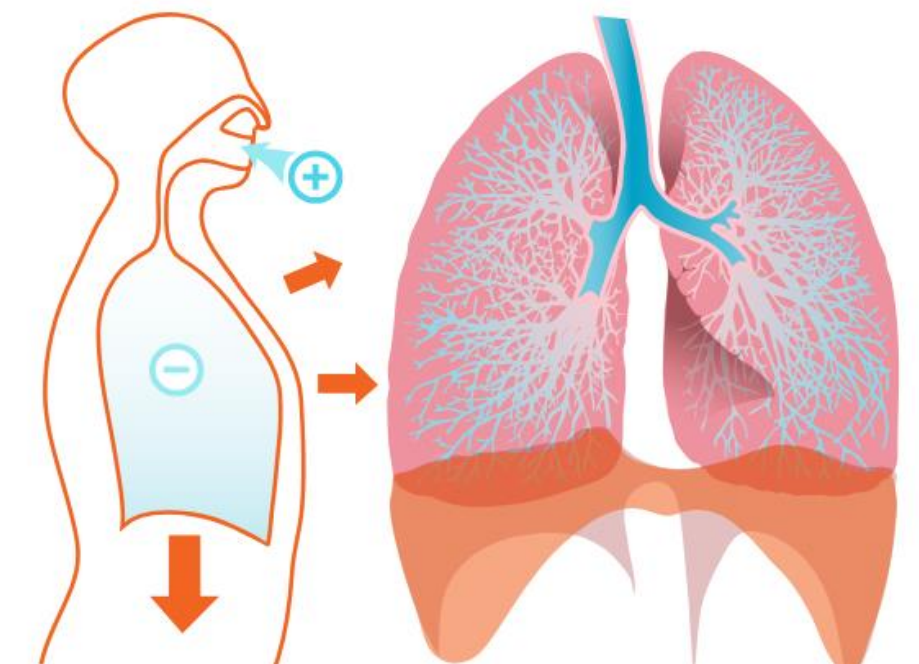
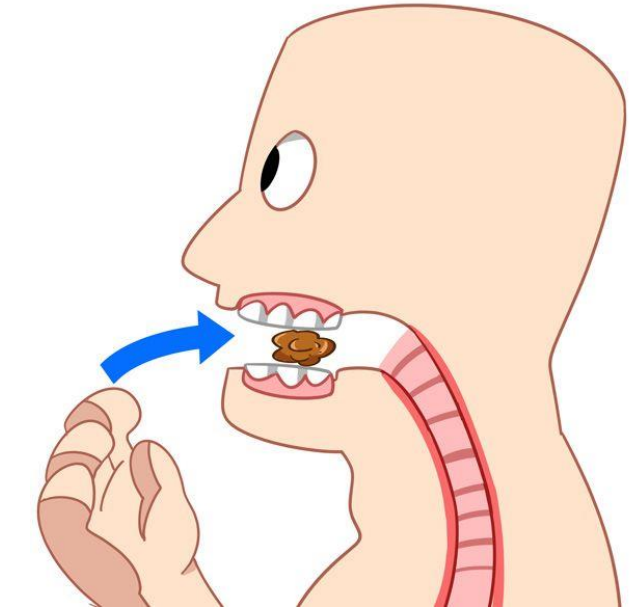




Mode of transmission

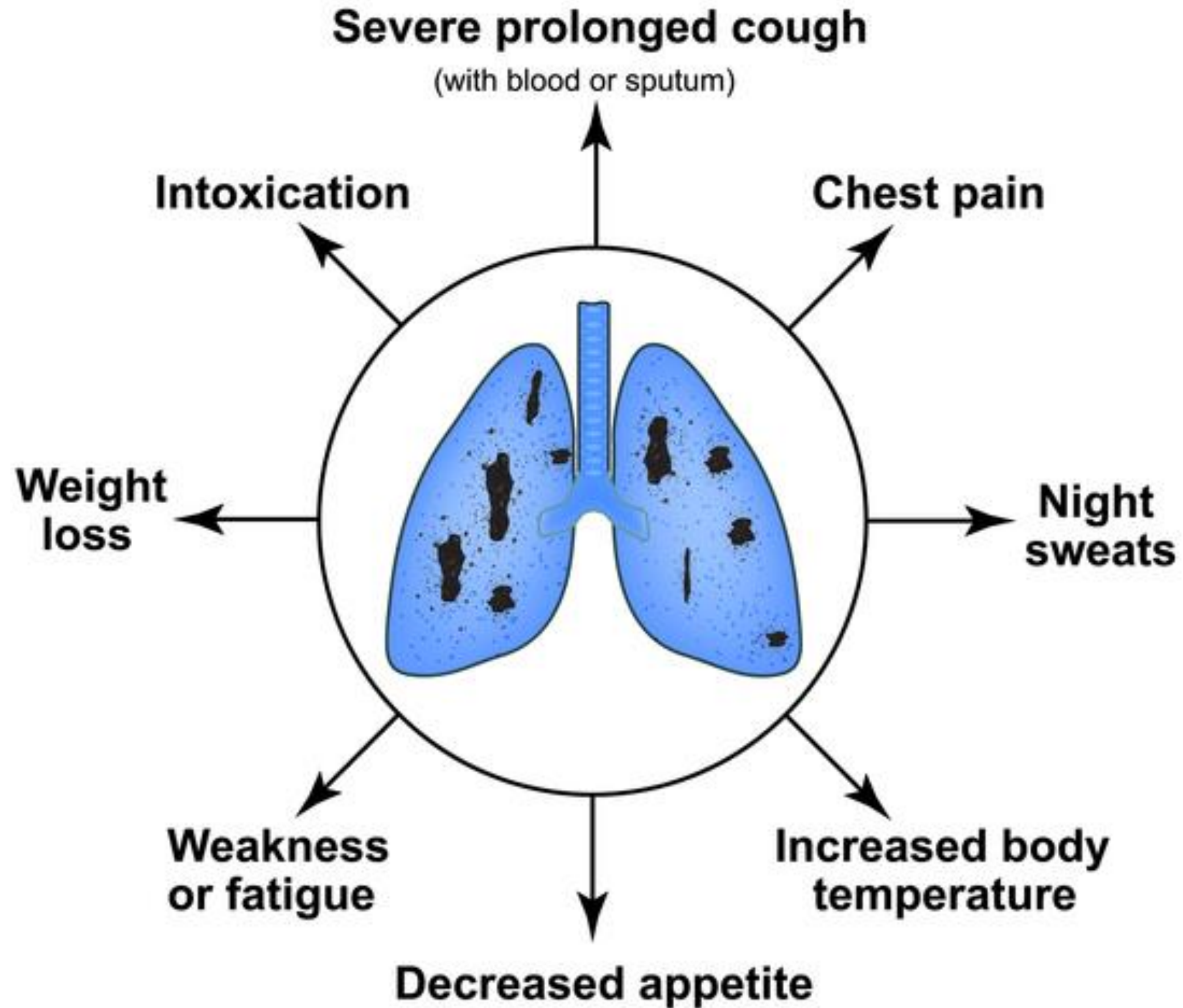


- **Inhalation** of active pulmonary TB
- **Ingestion** (non pasteurized milk from cows which is affected by mycobacterium bovis)
- **Inoculation** (handling of post mortem materials with TB)





SYMPTOMS OF TUBERCULOSIS





Types of TB



Primary TB

- Infection in an un-sensitized individual
- Source is Exogenous
- Spreads from one person to another person
- Primary TB affects lung, intestine and skin

Secondary TB

- Secondary TB is also known as latent TB, Reactivation TB and Post Primary TB
- It affects endogenously
- Spreads from the human host





Affect of TB on Lungs



- Majorly affects upper lobe or upper part of lower lobe
- Lesions seen in periphery of lungs

Gross Appearance:

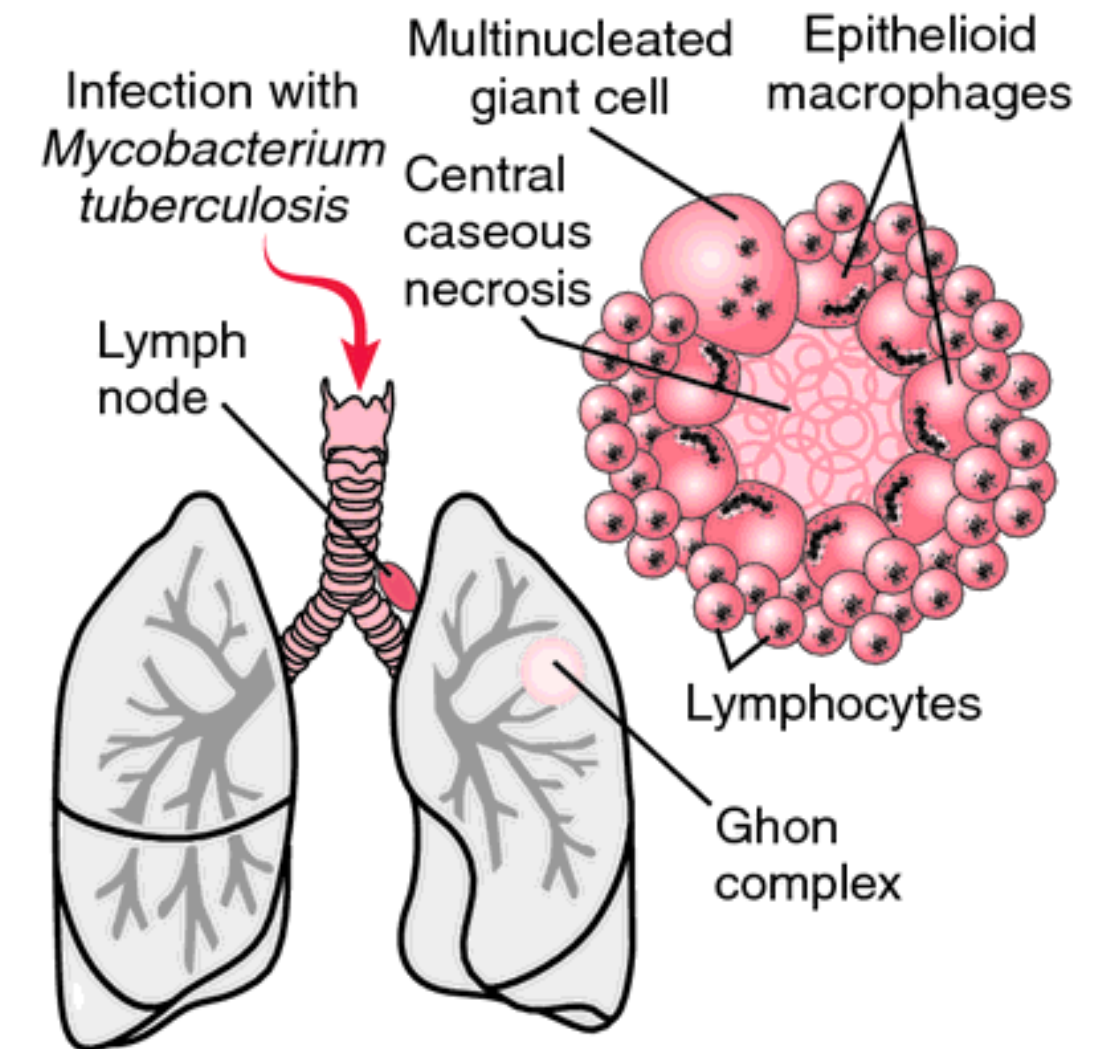
After 2 to 4 weeks of infection, grey white area with 1 to 1.5cm in sub-pleural parenchymal region appears

Sub-pleural parenchymal region with regional lymph node involvement is known as “**Ghon Focus**”

Microscopic Appearance: Granuloma in TB is called as “**Tubercle**”

Heals by fibrosis and calcification or enter into progressive primary TB

In secondary TB -→ Gaint cells and caseous necrosis appears



Early Infection	Early Primary Progressive (active)	Late Primary Progressive (active)	Latent
Immune system fights infection	Immune system does not control initial infection	Cough becomes productive	Mycobacteria persist in the body
Infection generally proceeds without signs or symptoms	Inflammation of tissue ensues	More signs and symptoms as disease progresses	No signs or symptoms occur
Patients may have fever, paratracheal lymphadenopathy, or dyspnea	Patients often have nonspecific signs or symptoms (e.g., fatigue, weight loss, fever)	Patients experience progressive weight loss, rales, anaemia	Patients do not feel sick
Infection may be only subclinical and may not advance to active disease	Non-productive cough develops	Findings on chest radiograph are normal	Patients are susceptible to reactivation of disease
	Diagnosis can be difficult: findings on chest radiographs may be normal and sputum smears may be negative for mycobacteria	Diagnosis is via cultures of sputum	Granulomatous lesions calcify and become fibrotic, become apparent on chest radiographs
			Infection can reappear when immunosuppression occurs



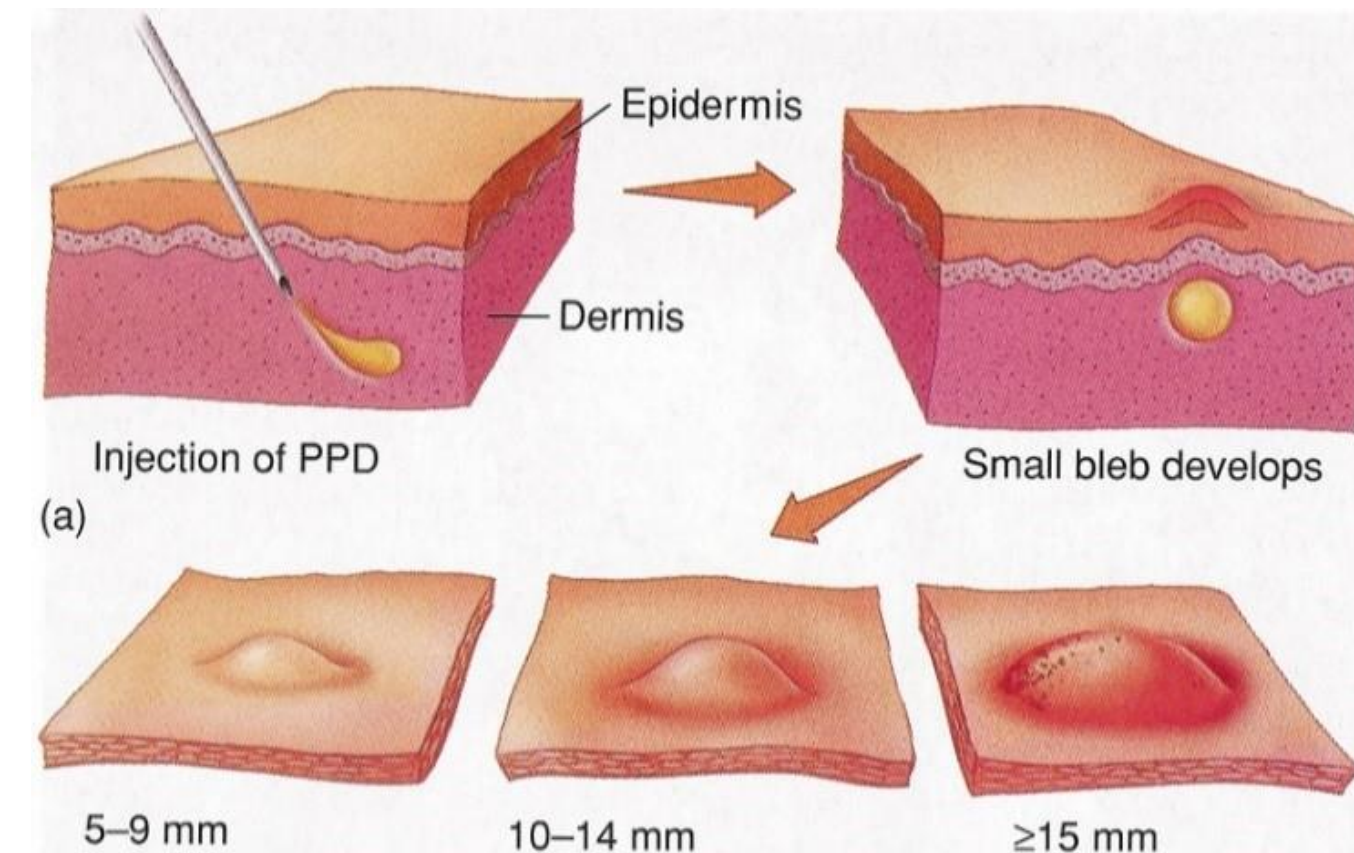


Diagnosis of TB



Tuberculin skin test

- The **Mantoux test** is a tool for screening for tuberculosis (TB) and for tuberculosis diagnosis
- It is one of the major **tuberculin skin tests** used around the world
- Inject **0.1ml of 5 units of purified protein derivative (P.P.D.) intra-dermally (intra-cutaneously)** and the reaction is read and interpreted after 24 hours to 72 hours.
- A TB skin test is positive when the area of skin reaction is measured with a tape or ruler and is found to be **more than 15 mm in diameter.**





Diagnosis & Treatment of TB



- Blood Test for TB to find the Mycobacterium Tuberculosis
- Chest X-ray

Treatment of TB

Short-term hospital stay

For active TB – Antibiotics will be provided for 6 to 9 months (isoniazid, rifampin, pyrazinamide, and ethambutol)

For Latent TB – Antibiotics often given in 3 to 9 months course (isoniazid, rifapentine, and rifampin)





Prophylaxis



- **BCG, or bacille Calmette-Guerin**, is a vaccine for **tuberculosis (TB) disease**.
- It is recommended that new born receive the BCG vaccine as soon as they are discharged from the hospital.
- If for some reason, they miss the BCG vaccination, they can be given the BCG injection **anytime up to 5 years of age**.





Complications



- If TB of the lung is not treated early or if treatment isn't followed, long-lasting (permanent) lung damage can result.
- TB can also cause infection of the bones, spine, brain and spinal cord, lymph glands, and other parts of the body.
- **Uncontrolled TB can lead to death.**
- TB remains one of the leading infectious causes of death worldwide.



Assessment



- What vaccine is preferred to prevent TB?
- What is the pathological change occurs in TB?
- What are the medications preferred for TB?



Thank You



References:

Text book of Pathology – Harsh Mohan

Concise text book of Pathology – Ganga S Pilli