

# TUBERCULOSIS



**Centurion**  
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*Shaping Lives...*  
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## **INTRODUCTION:**

Tuberculosis (TB) is a bacterial infection caused by *Mycobacterium tuberculosis*, which primarily affects the lungs, but can also affect other parts of the body such as the kidneys, spine, and brain. It spreads through the air when an infected person coughs, sneezes, or talks.

## **CLASSIFICATION/ETIOLOGY/CAUSES:**

- **Bacteria:** *Mycobacterium tuberculosis*.
- **Weakened immune system:** People with a weakened immune system, such as those living with HIV, malnutrition, or diabetes, are more susceptible to TB infection.
- **Close contact with someone with active TB:** TB is contagious and can spread through close contact with an infected person, particularly in crowded or poorly ventilated areas.
- **Living or working in high-risk settings:** People who live or work in crowded, poorly ventilated places, such as prisons, refugee camps, and homeless shelters, have a higher risk of contracting TB.
- **Traveling or living in areas with high TB prevalence:** TB is more common in certain regions, such as sub-Saharan Africa, India, China, and Southeast Asia.
- **Substance abuse:** Substance abuse, particularly injecting drugs, can weaken the immune system and increase the risk of TB infection.

## **PATHOPHYSIOLOGY:**

- Mycobacterium tuberculosis bacteria enters the body through the airways, then they can reach the lungs and cause an infection.
- Once the bacteria reach the alveoli, they are engulfed by immune cells called macrophages.
- In most cases, the macrophages are able to kill the bacteria, but in some cases, the bacteria can survive and multiply within the macrophages, leading to the formation of a small cluster of bacteria called a granuloma.
- The granuloma can remain in dormant condition for years, and the person does not show any symptoms of the disease. This is called latent TB.
- However, in some cases, the bacteria can become active again and cause TB disease.
- This can happen when the immune system is weakened, and the bacteria are able to break out of the granuloma and start multiplying again. The bacteria can then spread to other parts of the body, including the kidneys, spine, and brain.

## **CLINICAL MANIFESTATION:**

- **Persistent cough:** A cough that lasts for more than two weeks and may produce phlegm or blood.
- **Chest pain:** Pain or discomfort in the chest, particularly when coughing or breathing deeply.
- **Fatigue:** A general feeling of tiredness or weakness.

- **Fever:** A low-grade fever that persists for several weeks.
- **Night sweats:** Drenching sweats that occur during sleep.
- **Loss of appetite:** A decrease in appetite that can lead to weight loss.
- **Shortness of breath:** Difficulty breathing, particularly during physical activity.
- **Swollen lymph nodes:** Swelling of the lymph nodes, particularly in the neck or armpit.

## **DIAGNOSIS:**

- **Family history & Medical history**
- **Physical examination:** The healthcare provider will check for signs of TB.
- **Blood tests:** Blood tests may be done to check for signs of infection, such as elevated white blood cell count.
- **Chest X-ray:** A chest X-ray can help detect any abnormalities in the lungs that may be caused by TB.
- **Sputum tests:** Sputum tests involve collecting a sample of sputum (mucus coughed up from the lungs) and examining it under a microscope to look for the presence of TB bacteria. These tests may need to be repeated several times to confirm the diagnosis.

- **Molecular tests:** Molecular tests, such as the GeneXpert MTB/RIF test, are highly sensitive and can detect TB bacteria and resistance to the antibiotic rifampicin in a few hours.

### **PHARMACOLOGICAL MANAGERMENTS:**

- Isoniazid
- Rifampin
- Ethambutol
- Pyrazinamide

### **NON PHARMACOLOGICAL MANAGERMENTS:**

- **Vaccination:** BCG vaccine is a widely used vaccine that can prevent severe forms of TB in children. It is commonly given to infants in countries with high TB rates.
- **Avoid close contact:** People with active TB can spread the bacteria through the air when they cough or sneeze. So, it is important to avoid close contact with anyone who has TB.
- **Cover the mouth and nose:** When a person with TB coughs or sneezes, they release the bacteria into the air. So, they should cover their mouth and nose when coughing or sneezing.
- **Proper ventilation:** TB bacteria thrive in closed, crowded environments with poor air circulation. Proper ventilation can help prevent the spread of TB.

- **Good hygiene:** Regular hand washing and proper disposal of used tissues can help prevent the spread of TB.
- **Testing and treatment:** Early detection and treatment of TB can prevent the spread of the infection. People who are at high risk of developing TB, such as those with HIV, should get tested regularly.
- **Treatment of latent TB infection:** People who have been infected with TB but do not have active TB disease may develop the disease in the future. Treating latent TB infection can prevent the development of active TB disease.