

# Review on Tuberculosis and its Type

Miss. Shweta S. Kawade, Prof. Ritul Gangawane, Dr. Sanjay Ingale  
Dharmaraj Shaikshanik Pratishthan College of Pharmacy, Walki, Ahmednagar, India

**Abstract:** *The Mycobacterium tuberculosis complex of bacteria causes tuberculosis (TB), one of the oldest diseases known to man and a leading cause of death worldwide. As per the WHO, tuberculosis is the second leading cause of death in the world after HIV/AIDS, and it remains a major threat to human health. The poorer socioeconomic groups in society and the disadvantaged segments of the community have a very high prevalence of tuberculosis. The national aim of India's National Strategic Plan (2017–2025) is to eradicate tuberculosis by that year. It calls for a deeper comprehension and awareness of tuberculosis. History taxonomy, epidemiology, histology, immunology, pathogenesis, and clinical characteristics of extrapulmonary tuberculosis (EPTB) and pulmonary tuberculosis (PTB) have all been covered in this review article. comprehensive details about. Along with the diagnostic algorithm for PTB and EPTB, a great deal of information about diagnostic modalities has been explained. The recommended treatment regimens for drug-resistant, sensitive, and extensive tuberculosis have been compiled, along with the newer medications for multidrug-resistant tuberculosis.*

**Keywords:** Tuberculosis pathogenesis Immunology Tuberculosis diagnosis Tuberculosis treatment

## I. INTRODUCTION

Another name for tuberculosis is (TB). The word “tuberculosis” is a derivative of the Latin word "tubercula", which means "a small lump. Robert Koch made the discovery of TB in 1882. A bacterial illness that typically affects the lungs is tuberculosis. However, it can also target different bodily parts. Mycobacterium tuberculosis, the organism that causes tuberculosis, typically attacks the lungs. Mycobacterium tuberculosis, the organism that causes tuberculosis, typically attacks the lungs. People who have lung TB can transfer the disease through their coughs, sneezes, or spittle. A few bacteria must be inhaled for an individual to get an infection. The transfer of an organism, cough less. treatment for tuberculosis with antibiotics, such as isoniazid and rifabutin The Ten million people contract tuberculosis (TB) annually. TB is the leading infectious disease killer in the world, taking the lives of 1.5 million people year despite being a preventable and curable illness. TB is the primary cause of death for HIV-positive individuals and plays a significant role in the development of antibiotic resistance. Although TB is prevalent worldwide, the majority of cases occur in low- and middle- such M. tuberculosis, from one person to another is known as transmission. Categories TB illness in the lungs. extrapulmonary TB mild cases of tuberculosis, TB meningitis TB illness resistant to drugs TB. symptoms include loss, sweating at night, coughing (often blood-tinged), weariness, fever, sweats at night, weight loss, and chest pain The following are crucial steps you should take to stop your tuberculosis infection from infecting others: When you sneeze or cough, always cover your mouth and nose. Warm beverages have been shown to help some people income nations. Eight countries Bangladesh, China, India majority of persons who contract tuberculosis are in their prime working years. All age groups, though, are vulnerable. Lower- and middle-income nations account for more than 80% of illnesses and fatalities. WHO is closely collaborating with nations, partners, and civil society to increase the response against tuberculosis.

## HISTORY

Since ancient times, various civilizations have reported cases of tuberculosis or illnesses that resembled the disease. The Vedas contain the earliest known mention of TB, referring to it as Yakshma which means wasting disease. Literature in Greek, Chinese, and Arabic also describes TB-like illnesses. For the past 150 million years, mycobacteria have been present on Earth. Mummies from Peruvian pre-Columbian times and Egyptian pre-dynastic times both had typical tubercular vertebral lesions. A bone lesion discovered in a 500year old skull in Turkey provides the first tenuous evidence of tuberculosis in humans. The oldest strong evidence currently available is the detection of PCR sequencing

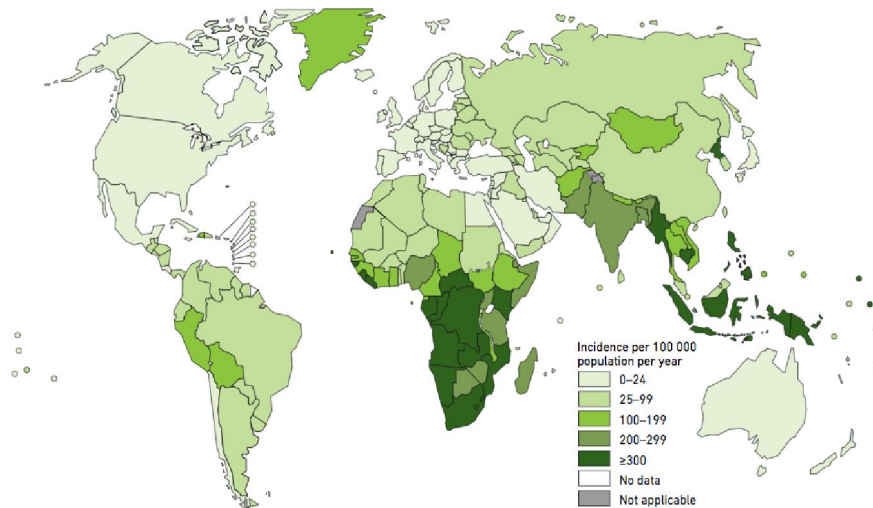
in a Neolithic infant and women from a 9000-year old settlement in the Eastern Mediterranean. Galen (131e201) had the first inkling that tuberculosis might spread. Girolamo Fracastorius (1483–1553) demonstrated that certain diseases might be spread by "particles" through direct or indirect human contact, but it took several decades before this was established.

Military TB was initially described by Thomas Willis (1621–1675). Large cultures of the Bacillus were used to extract the protein tuberculin, which Calmette first employed in a technique known as "tuberculinization," which was unsuccessful in treating tuberculosis. Additionally, the intradermal skin test—which Charles Mantoux devised and utilized to diagnose tuberculosis was performed using tuberculin. Subsequently, this intradermal skin test was given the Mantoux test name in honor of Charles Mantoux. 15 In his notion of "contagious living fluid," Benjamin Marten (1690–1752) proposed that "wonderfully minute living creatures" are the source of tuberculosis. It was Jean. s. The term "tuberculosis" was coined in 1834 by Johann Lukas Schonlein. It comes from the Latin word "tubercula," which means "a small lump" that is present in all types of the disease. 15 Robert Koch said at the Berlin Society of Physiology conference on March 24, 1882, that he had identified the causative agent of pulmonary tuberculosis (TB) and had given it the name "tuberkel virus" in his article, which was published two weeks later. Robert Koch won the 1905 Nobel Prize in medicine for his first and second creative decisions, which involved staining tuberculosis bacilli and cultivating them on solidified cow or sheep serum. By subculturing Mycobacterium Sw, Leon Charles Albert Calmette (1863–1933) and Camille Guerin (1872–1961) created a TB vaccine.

**EPIDOMYLY**

One of the world's worst diseases is still tuberculosis (TB). According to estimates from the World Health Organization (WHO), there are over 10 million new cases of tuberculosis (TB) annually, and the illness claims the lives of over 2 million people[1]. Ninety-five percent of instances of tuberculosis (TB) happen in underdeveloped nations, where there are insufficient resources to guarantee appropriate treatment and where HIV infection may be widespread. Mycobacterium tuberculosis (Mtb) infection affects an estimated 19% to 43% of the world's population; 22 nations account for 80% of cases worldwide. 10% of the estimated 500,000 cases of multidrug-resistant tuberculosis (TB) globally are thought to be caused by strains of the disease that are very drug-resistant. Under-Saharan Africa is home to around 2.7 million cases of tuberculosis each year. The AIDS epidemic, which is mostly impacting this section of the world, is the reason for the sharp increase in this number. Asia reports over 6.3 million cases of TB annually. In Eastern Europe, there are more than 250,000 instances reported annually. In France, there are roughly 5,000 new cases per year and about 900 deaths per year, with Guyana, Mayotte and Île-de-France being the regions most afflicted in terms of reporting rates

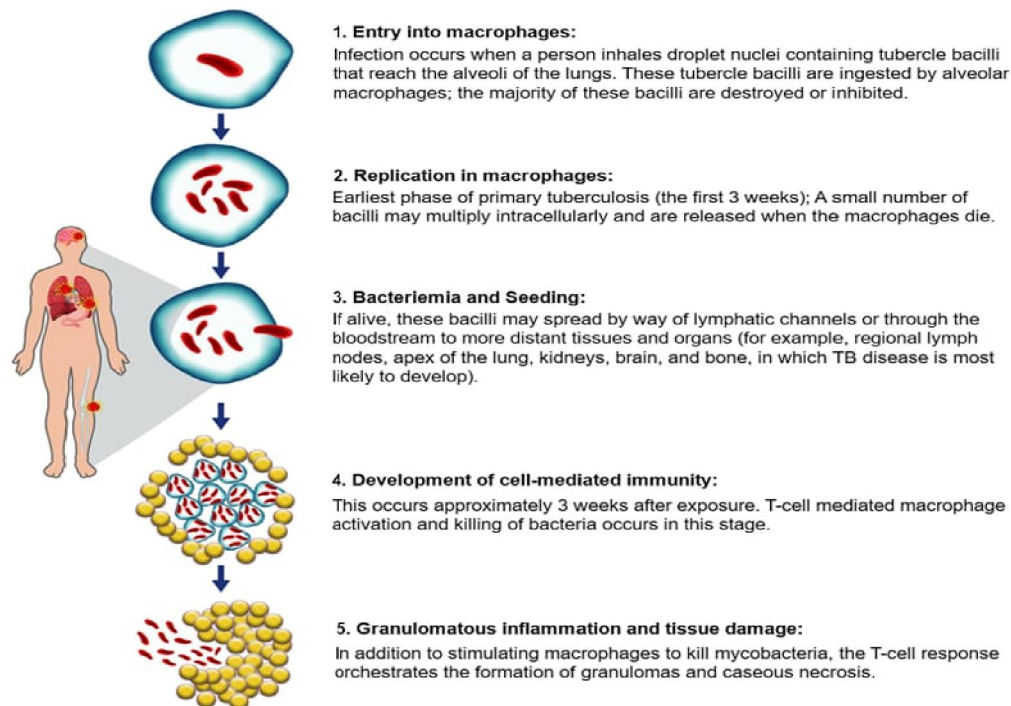
**Estimated TB incidence rates, 2017**



### PATHOGENESIS OF TB

(TB), a chronic, granulomatous disease. Though it can affect any organ or tissue in the body, it generally affects the lungs. The emergence of cell-mediated immunity is important to the pathophysiology of tuberculosis in an immunocompetent person who has never been exposed to the disease. As a result, the organism gains resistance and tissue hypersensitivity to tubercular

In many cases, the stage 5 response (discussed above) stops the infection before serious illness or tissue damage manifests (Latent TB Infection). The infection advances to stage 5 in other patients with immunological deficiencies brought on by aging or immunosuppression, and the continued immune response causes caseation necrosis (Active TB Disease). Further information on the evolution of the tuberculosis epidemic may be found in the figure on the preceding slide. antigens develops. The pathologic characteristics of tuberculosis, including cavitation and caseating granulomas, stem from the host immune response's damaging tissue hypersensitivity.



### TYPES OF TUBERCULOSIS

#### Pulmonary TB

Pulmonary TB affects the lungs. The lungs are the primary site of TB in up to 87 in 100 Trusted Source cases. Pulmonary TB may be latent or active, and around 10 in 100 people develop symptoms. Around one-third of people may develop respiratory symptoms with pulmonary TB, but prolonged fever is the most common symptom.

#### Extrapulmonary TB

Extrapulmonary TB affects organs and tissues outside of the lungs. Extrapulmonary TB accounts for around 15 in 100 of all TB cases.

People with a weakened immune system may develop extrapulmonary TB, such as people with HIV.

TB lymphadenitis

TB lymphadenitis affects the lymph nodes and is the most common form of extrapulmonary TB. Symptoms of TB lymphadenitis include:

enlarged lymph nodes, which may appear as painless lumps on both sides of the head and neck

>fever

>night sweats

>fatigue

Skeletal TB

Skeletal TB is a type of TB that has spread to the bones. Around 10% of extrapulmonary TB cases are skeletal TB. The most commonly affected area for skeletal TB is the thoracic spine, which is the middle section of the spine.

## SYMPTOMS

When tuberculosis (TB) germs survive and multiply in the lungs, it is called a TB infection. A TB infection may be in one of three stages. Symptoms are different in each stage.

Primary TB infection. The first stage is called the primary infection. Immune system cells find and capture the germs. The immune system may completely destroy the germs. But some captured germs may still survive and multiply.

Most people don't have symptoms during a primary infection. Some people may get flu-like symptoms, such as:

Low fever.

Tiredness.

Cough.

Treatment

If you have a latent TB infection, your health care provider may begin drug treatments. This is especially true for people with HIV/AIDS or other factors that increase the risk of active TB disease. Most latent TB infections are treated for three or four months.

Active TB disease may be treated for four, six or nine months. Specialists in TB treatment will determine which drugs are best for you.

You will have regular appointments to see if you're improving and to watch for side effects.

## II. CONCLUSION

It's been more than 100 years since the discovery of tubercle bacilli and the words of Robert Koch are still true, "amidst the persistently great variety in the ways and means of combating tuberculosis, it is yet necessary to ask what measures do indeed best satisfy the scientific requirements"<sup>71</sup>

Tuberculosis continues to challenge physicians, pathologists and microbiologists in every possible way and dilemma persists till today in early diagnosis and treatment of every form of it. WHO END TB

## REFERENCES

- [1]. World Health Organization. c1948. Tuberculosis fact sheet. In: Geneva (Switzerland): WHO global TB programme, 2014 Oct. Available from: <http://www.who.int/mediacentre/factsheets/fs104/en/>. (Accessed on May 5, 2019)
- [2]. Comas I. The past and future of tuberculosis research. *PLoS Pathog* 2009;5(10):e1000600. Available from: 1000600. (Accessed on May 5, 2019)
- [3]. Goldman L. Tuberculosis: disease overview. In: Goldman L, Schafer AI editors. *Goldman's Cecil medicine: expert consult premium edition*. 24th ed. St. Louis (MO): Saunders Elsevier 2011.
- [4]. Berry MPR. System approaches to studying the immune response in tuberculosis. *Curr* 2013;25(5):579-587
- [5]. Cruz-Knight W and Blake-Gumbs L. Tuberculosis: an overview. *Prime Care*. 2013;40(3):743-756.
- [6]. De Martino M and Galli L. Reflections on the immunology of tuberculosis: will we ever unravel the skein. *BMC Infect Dis*. 2014;14(Suppl. 1):S1.
- [7]. Sia IG. The current concept in the management of tuberculosis. *Mayo Clin Proc*. 2011;86(4): 348-361.
- [8]. Thillai M. Interferon-gamma release assays for tuberculosis: current and future applications. *Expert Rev Respir Med*. 2014;8(1):67-78.

- [9]. Diel R. Predictive value of interferon-g release assays and tuberculin skin testing for progression from latent TB infection to disease state: a meta-analysis. *Chest*. 2012;142(1):63-75.
- [10]. Loudon RG and Spohn SK. Cough frequency and infectivity in patients with pulmonary tuberculosis. *Am Rev Respir Dis*. 1969;99:109-111.
- [11]. Tostmann A, Kik SV and Kalisvaart NA. Tuberculosis transmission by patients with smear-negative pulmonary tuberculosis in a large cohort in the Netherlands. *Clin Infect Dis*. 2008;47: 1135-1142.
- [12]. American Thoracic Society. Centers for Disease Control and Prevention (CDC). Infectious Diseases Society of America. Treatment of tuberculosis [published correction appears in *MMWR Recomm Rep*. 2005;53(51):1203.
- [13]. American Thoracic Society. Targeted tuberculin testing and treatment of latent tuberculosis infection. *MMWR Recomm Rep*. 2000;49(RR-6):01-51.
- [14]. Leitch AG. The chemotherapy of tuberculosis - from the past to the future. *Respiratory Medicine*. 1995;89:463-469.
- [15]. Collazos J. Why disease due to *Mycobacterium tuberculosis* is less common than expected in HIV-positive patients in Edinburgh, *Medicine*. 1995;89:495-497. *Respiratory*