

A Note on Tuberculosis and *Mycobacterium*

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EDITORIAL NOTE

Infectious disease “Tuberculosis (TB)” is a disease that mostly caused by the *Mycobacterium Tuberculosis* (MTB) bacteria. Tuberculosis affects the lungs in most cases, but it can also affect other regions of the body. The majority of tuberculosis infections are untreated, and such is known as latent tuberculosis. Around 10% of latent infections advance to active illness, which kills around half of individuals who are infected if left untreated. Chronic cough with bloody mucus, fever, night sweats, and weight loss are all common symptoms of active tuberculosis. Because of the weight loss associated with the disease, it was previously referred to as consumption.

Patients with active tuberculosis in their lungs can transmit the disease through the air by coughing, spitting, speaking, or sneezing. People with latent tuberculosis do not transmit the disease on to others. People with HIV/AIDS and smokers are more likely to get active infection. Chest X-rays, as well as microscopic examination and culture of bodily fluids, are used to diagnose active tuberculosis. The Tuberculin Skin Test (TST) or blood tests are used to diagnose latent tuberculosis.

Tuberculosis can affect any region of the body, although the lungs are the most prevalent site of infection, this kind of infection is known as pulmonary tuberculosis. Tuberculosis that originates outside of the lungs is known as extra-pulmonary tuberculosis; however it can coexist with pulmonary tuberculosis. Fever, chills, night sweats, loss of appetite, weight loss, and exhaustion are all common indications and symptoms. Nail clubbing is also a possibility.

Mycobacterium Tuberculosis (MTB), a tiny aerobic non-motile bacillus, is the major cause of tuberculosis. Many of this pathogen's unusual clinical traits are due to its high fat content.

It divides every 16 to 20 hours, which is a very sluggish rate when compared to other bacteria, which divide in less an hour. Mycobacteria contain a lipid bilayer in their outer membrane. Because of its high lipid and mycolic acid content, MTB either stains extremely faintly "Gram-positive" or does not retain dye when stained with a Gram stain. MTB is resistant to weak disinfectants and can persist for weeks in a dry environment. M. tuberculosis can only develop in the cells of a host organism in nature, although it can be cultivated in the laboratory. Under a microscope, scientists may identify MTB using histological stains on expectorated samples of phlegm, which is also known as sputum. MTB is categorized as an acid-fast bacillus because it retains specific stains even after being treated with an acidic solution.

M. Tuberculosis Complex (MTBC) contains *M. bovis*, *M. africanum*, *M. canetti*, and *M. microti*, four more TB-causing mycobacteria. *M. bovis* was previously a common cause of tuberculosis, but the advent of pasteurized milk has virtually completely eradicated the disease as a public health issue in developed countries. *M. canetti* is a rare disease that appears to be restricted to the Horn of Africa, with a few occurrence among African emigrants. *M. microti* is also uncommon, occurring virtually exclusively in immunocompromised individuals; however its frequency may be greatly overestimated.

Antibiotics are used to kill the germs that cause tuberculosis. Due to the unique shape and chemical composition of the mycobacterial cell wall, which prevents medications from entering and renders many antibiotics ineffective, successful TB treatment is difficult. To limit the chance of the bacteria developing antibiotic resistance, active tuberculosis is best treated with a mix of medicines.

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