

# The Global Impact of Tuberculosis and Drug-Resistant Treatment

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## DESCRIPTION

Tuberculosis (TB) is a contagious infectious disease caused by the *Mycobacterium tuberculosis*. It primarily affects the lungs but can also target other parts of the body. Despite being preventable and curable, TB remains a significant global health challenge. In this essay, we will delve into the key aspects of tuberculosis, including its causes, symptoms, transmission, diagnosis, treatment, and the efforts made to control its spread. By understanding the multifaceted nature of this disease, we can develop effective strategies to combat TB on both individual and global levels.

Tuberculosis (TB) remains a significant global health concern, despite medical advancements and increased awareness. It is a bacterial infection caused by *Mycobacterium tuberculosis*, primarily affecting the lungs but capable of spreading to other parts of the body. This disease has plagued humanity for centuries, and even today, it continues to affect millions of individuals worldwide. In this essay, we will explore the causes, symptoms, diagnosis, treatment, and prevention of tuberculosis, highlighting the challenges associated with combating this infectious disease.

## Causes and transmission

*Mycobacterium tuberculosis*, the bacteria responsible for TB, is transmitted through the air when an infected individual coughs, sneezes, or speaks. People with weakened immune systems are more susceptible to contracting the disease. Factors such as poverty, malnutrition, crowded living conditions, and inadequate healthcare systems contribute to its spread. Additionally, drug-resistant strains of TB have emerged due to incomplete or improper treatment regimens.

## Symptoms and diagnosis

The symptoms of tuberculosis can be dangerous and vary depending on the stage of the disease. Persistent cough, fatigue, weight loss, night sweats, and chest pain are common manifestations. However, TB can also affect other parts of the body, leading to symptoms in organs such as the kidneys, spine, and brain. Diagnosing TB involves a combination of clinical

assessment, imaging techniques, and laboratory tests, including sputum microscopy, nucleic acid amplification tests, and chest X-rays.

## Treatment and drug resistance

Treatment for tuberculosis typically involves a combination of antibiotics taken over a prolonged period, usually six to nine months. The most common drugs used are isoniazid, rifampin, ethambutol, and pyrazinamide. However, the emergence of drug-resistant strains, such as Multidrug-Resistant Tuberculosis (MDR-TB) and Extensively Drug-Resistant Tuberculosis (XDR-TB), poses a serious challenge to TB control efforts. Treating drug-resistant TB requires the use of second-line drugs, which are more expensive, have more side effects, and require longer treatment durations.

## Global impact and control efforts

Tuberculosis remains a significant global health burden, with an estimated 10 million new cases and 1.4 million deaths in 2020 alone. The disease disproportionately affects low- and middle-income countries, where socioeconomic factors contribute to its spread. To address this, the World Health Organization (WHO) has implemented the End TB Strategy, which aims to reduce TB incidence by 90% and mortality by 95% by 2035. This strategy emphasizes early diagnosis, prompt treatment initiation, and integrated patient-centered care. Moreover, efforts are underway to develop new vaccines, diagnostic tools, and more effective drugs to combat TB and its drug-resistant forms.

## Prevention and control

Preventing tuberculosis requires a multifaceted approach. Vaccination with the *Bacillus Calmette-Guérin* (BCG) vaccine is widely used in countries with a high burden of tuberculosis, although its effectiveness in preventing pulmonary tuberculosis in adults is limited. Encouraging healthy hygiene, ensuring proper ventilation in living spaces, and reducing overcrowding can also help minimize the transmission of the disease. Prompt detection and treatment of active cases are essential to prevent further spread.

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In addition, addressing the social determinants of tuberculosis, such as poverty, malnutrition, and lack of access to healthcare, is crucial in controlling the disease. Collaboration between healthcare systems, government agencies, and international organizations is necessary to develop comprehensive strategies for tuberculosis control and to provide affordable and accessible diagnostic tools and medications.

## CONCLUSION

In conclusion, tuberculosis remains a pressing public health issue, demanding both local and global attention. By investing in research, improving healthcare systems, and addressing social

determinants, we can work towards eliminating this preventable and curable disease, ensuring a healthier future for individuals and communities worldwide. Tuberculosis continues to pose a significant global health challenge, particularly in resource-limited settings. The disease affects millions of individuals each year, and drug-resistant strains further complicate treatment and control efforts. To effectively combat TB, a comprehensive approach is needed, encompassing early diagnosis, affordable and accessible treatment, improved healthcare infrastructure, and public awareness campaigns. Collaboration between governments, international organizations, healthcare providers, and researchers is crucial to reduce the burden of tuberculosis worldwide.