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TUBERCULOSIS

According to the WHO (World Health Organization), TB is a contagious infectious disease caused by a bacterium called mycobacterium tuberculosis. There are three types of TB the first is affecting the lungs (i.e. Pulmonary) the second is a disease which affects the organs (lymph nodes, and the brain, and the other is called Latent TB infection which the bacteria remains in the body of a person without causing any illness , but apart from that it can also involve other parts of the body, e.g., brain, spine, or kidneys.

The symptoms that prove for tuberculosis in an organism are persistent coughing (lasting more than 2 to 3 weeks), chest pain, fever and night sweats, weight loss and feeling fatigue or loss of appetite, coughing up blood.

WHO states that TB is one of the leading infectious killers worldwide, especially in the WHO African region which reports the highest mortality rates for both HIV-negative (25 per 100,000) and HIV-positive individuals (8.5 per 100,000). Globally, over half of all new TB deaths occur in five countries: India, Indonesia, China, the Philippines, and Pakistan.

Obviously, many diseases are caused by poor diet and lifestyle choices, and it is sometimes caused by the physical environment, i.e., crowded conditions in residence, pollution, dampness, and harmful products. Nowadays, technology and screening help to determine the diseases earlier.

Inasmuch as tuberculosis involves several approaches, each providing different insights. Approaches such as Case Notification data, which is the most common method relying on reported cases from healthcare facilities. This data tracks incidence, prevalence, and treatment outcomes. Another approach is using community-based surveys directly to measure the burden of TB disease in a population including undiagnosed cases. Approaches towards TB can also involve using morbidity and mortality data to track TB related deaths and diseased which helps assess the severity of the epidemic and the effectiveness of control programs such as vaccinations and to organized awareness campaign to alert people to be careful of interacting of infected persons and how they can be contact the Healthcare Centre if the is any symptoms of TB quickly.

More approaches can consist of monitoring the emergence and spread of drug-resistant TB, such as using sputum smear microscopy methods to look for TB bacteria under a microscope which is a quick, cheap, widely used, and easy method. Culture tests are also used to check the growth of mycobacterium from samples; however, this method is slow. Molecular tests, e.g., GeneXpert MTB/RIF, detect TB DNA and drug resistance quickly within hours. Chest X-rays help to determine the abnormalities of the lung consistent with TB. Immunological tests, often used alongside tests, are not alone for diagnosis. There are distinct categories to measure and monitor TB diseases, and these are Tuberculin Skin Test (TST), Sputum Smear Microscope which looks / determining the TB bacteria under a microscope, to check the Mycobacterium growth from the samples i.e., Culture Test.

Moreover, the Healthcare Centers provides prevalence and incidence of TB cases report to the national surveillance systems (monitoring TB in population. And managed globally (worldwide) with the support from the World Health Organization (WHO). Meanwhile, the UK data show that the tuberculosis incidence rate in the year 2023 increased by 10.0% compared with 2022. Also, the UK born population, the number of TB rates increased (6%), and it was the first increase rate notice in this group since 2013. The prevalence shows a higher rate in the current reporting

period of 2001 to 2024. The number of TB cases remained below the WHO threshold of 12 per 100,000 population for a country with low incidence

Increases in these approaches like faster molecular tests have aided in TB cases declining globally from 2025 though it is a slight decline as number of deaths decreased from 1.27m to 1.23m which is roughly about a 3% decline however this global TB burden can be described as the “unequal” burden as continents like Europe and Africa show a strong progress with TB cases since 2015 (Africa has seen a massive 28% drop in incidence and 46% drop in deaths since 2015) although regions like Southeast Asia still suffer from a high burden as it accounts for nearly 45% of all global cases; India alone has 25% of the world's TB.

But overall, more people are completing treatments as the WHO states that the “success rate” of treatments have reached historically prominent levels, for example Standard TB (Drug-Susceptible): The success rate is currently 88%. This has remained consistently high, meaning 9 out of 10 people who start the standard 6-month treatment to finish it.

As TB cases overall globally decreased this means prevention was a significant factor in decreasing its cases as factually faster Prevention has been developed: Preventive courses that used to take 6–9 months have been shortened to 1–3 months, making it much more likely that people will actually finish the course.

The expansion of Tuberculosis Preventive Treatment (TPT) is the most significant shift in global health strategy since the 2030 "End TB" goals were set. Historically, we only treated people who were already sick; now, the strategy is to "clean the reservoir" by treating people who are infected but not yet ill. Also, instead of waiting for people to show up at clinics, health workers are now proactively going to the "front lines" e.g., TB remains the leading cause of death for people with HIV. As of 2026, WHO guidelines have mandated that TB prevention be fully integrated into routine HIV care. In many high-burden countries, if you are treated for HIV, you are automatically screened and started on TPT if you do not have an active disease.

"TB spreads through air (coughing) so one untreated person can infect many people."

Tuberculosis — The case of misuse/incomplete treatment can lead to multidrug-resistant TB (MDR-TB), which is much harder and more expensive to treat, and this can cause mortality rates in the community to increase. People having TB may be avoided or excluded due to fear of infection. The affected person's long treatment period of 6 months gives roles and caregiving, and it also causes more financial hardships to the family who are already in dire financial difficulties. Also, children with TB or affected households may miss school because of infection. Those who educate about the diseases may/cannot be able to go to work/cannot work for extended periods.

The family with tuberculosis person who has been diagnosed, treatment and hospitalization can strain both families and public health systems. High rates are also another factor in this community and can lower overall workforce output. Moreover, outbreak management: to manage and control TB outbreaks needs public health personnel efforts to coordinate. Frequent coordinated public health efforts, to organize campaigns, educate people and to create awareness of the disease and provide vaccines like BCG. In as much as it is infectious via transmission, without proper control it can persist for generations of community, and it is a disease which is more common in overcrowded, poor (low-income) areas and worsening health disparities. The public fear of outbreaks can cause anxiety, depression, and mistrust in communities. When it is taken for those who have been diagnosed, it can stop transmission, prevent drug resistance, and save lives (lower TB mortality). Screening, vaccination, education) are the key factors to preventing and preventing spreading in communities.

In conclusion, despite some limitations, the described measurement methods can be used together to evaluate tuberculosis infection, disease, and mortality in incidence and prevalence as well as to track progress toward tuberculosis control target also the symptoms and the prevention of spreading of the disease and the treatment taken. Though TB is a major death

cause in the UK these preventive methods towards TB have overall decreased the mortality rate globally and in the UK according to WHO (the World Health Organization).

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