

Tuberculosis

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Key facts

- A total of 1.6 million people died from TB in 2021 (including 187 000 people with HIV). Worldwide, TB is the 13th leading cause of death and the second leading infectious killer after COVID-19 (above HIV and AIDS).
- In 2021, an estimated 10.6 million people fell ill with tuberculosis (TB) worldwide. Six million men, 3.4 million women and 1.2 million children. TB is present in all countries and age groups. But TB is curable and preventable.
- Multidrug-resistant TB (MDR-TB) remains a public health crisis and a health security threat. Only about 1 in 3 people with drug resistant TB accessed treatment in 2021.
- An estimated 74 million lives were saved through TB diagnosis and treatment between 2000 and 2021.
- US\$ 13 billion is needed annually for TB prevention, diagnosis, treatment and care to achieve the global target agreed at the 2018 UN high level-meeting on TB.
- Ending the TB epidemic by 2030 is among the health targets of the United Nations Sustainable Development Goals (SDGs).

Overview

Tuberculosis (TB) is an infectious disease that most often affects the lungs and is caused by a type of bacteria. It spreads through the air when infected people cough, sneeze or spit.

Tuberculosis is preventable and curable.

About a quarter of the global population is estimated to have been infected with TB bacteria. About 5–10% of people infected with TB will eventually get symptoms and develop TB disease.

Those who are infected but not (yet) ill with the disease cannot transmit it. TB disease is usually treated with antibiotics and can be fatal without treatment.

In certain countries, the Bacille Calmette-Guérin (BCG) vaccine is given to babies or small children to prevent TB. The vaccine prevents TB outside of the lungs but not in the lungs.

Symptoms

People with latent TB infection don't feel sick and aren't contagious. Only a small proportion of people who get infected with TB will get TB disease and symptoms. Babies and children are at higher risk.

Certain conditions can increase a person's risk for tuberculosis disease:

- diabetes (high blood sugar)
- weakened immune system (for example, HIV or AIDS)
- being malnourished
- tobacco use.

Unlike TB infection, when a person gets TB disease, they will have symptoms. These may be mild for many months, so it is easy to spread TB to others without knowing it.

Common symptoms of TB:

- prolonged cough (sometimes with blood)
- chest pain
- weakness
- fatigue
- weight loss
- fever
- night sweats.

The symptoms people get depend on where in the body TB becomes active. While TB usually affects the lungs, it also affects the kidneys, brain, spine and skin.

Prevention

Follow these steps to help prevent tuberculosis infection and spread:

- Seek medical attention if you have symptoms like prolonged cough, fever and unexplained weight loss as early treatment for TB can help stop the spread of disease and improve your chances of recovery.
- Get tested for TB infection if you are at increased risk, such as if you have HIV or are in contact with people who have TB in your household or your workplace.
- If prescribed treatment to prevent TB, complete the full course.
- If you have TB, practice good hygiene when coughing, including avoiding contact with other people and wearing a mask, covering your mouth and nose when coughing or sneezing, and disposing of sputum and used tissues properly.

Special measures like respirators and ventilation are important to reduce infection in healthcare and other institutions.

Diagnosis

WHO recommends the use of rapid molecular diagnostic tests as the initial diagnostic test in all persons with signs and symptoms of TB.

Rapid tests recommended by WHO include the Xpert MTB/RIF Ultra and Truenat assays. These tests have high diagnostic accuracy and will lead to major improvements in the early detection of TB and drug-resistant TB.

A tuberculin skin test (TST) or interferon-gamma release assay (IGRA) can be used to identify people with infection.

Diagnosing multidrug-resistant and other resistant forms of TB (see multidrug-resistant TB section below) as well as HIV-associated TB can be complex and expensive.

Tuberculosis is particularly difficult to diagnose in children.

Treatment

Tuberculosis disease is treated with antibiotics. Treatment is recommended for both TB infection and disease.

The most common antibiotics used are:

- isoniazid
- rifampin
- pyrazinamide
- ethambutol
- streptomycin.

To be effective, these medications need to be taken daily for 4–6 months. It is dangerous to stop the medications early or without medical advice. This can allow TB that is still alive to become resistant to the drugs.

Tuberculosis that doesn't respond to standard drugs is called drug-resistant TB and requires more toxic treatment with different medicines.

Multidrug-resistant TB

Drug resistance emerges when TB medicines are used inappropriately, through incorrect prescription by health care providers, poor quality drugs, or patients stopping treatment prematurely.

Multidrug-resistant tuberculosis (MDR-TB) is a form of TB caused by bacteria that do not respond to isoniazid and rifampicin, the 2 most effective first-line TB drugs. MDR-TB is treatable and curable by using second-line drugs. However, second-line treatment options require extensive medicines that are expensive and toxic.

In some cases, more extensive drug resistance can develop. TB caused by bacteria that do not respond to the most effective second-line TB drugs can leave patients with very limited treatment options.

MDR-TB remains a public health crisis and a health security threat. Only about 1 in 3 people with drug resistant TB accessed treatment in 2021.

In accordance with WHO guidelines, detection of MDR/RR-TB requires bacteriological confirmation of TB and testing for drug resistance using rapid molecular tests or culture methods.

In 2022, new WHO guidelines prioritize a 6-month regimen – the BPaLM/BPaL – as a treatment of choice for eligible patients. The shorter duration, lower pill burden and high efficacy of this novel regimen can help ease the burden on health systems and save precious resources to further expand the diagnostic and treatment coverage for all individuals in need. In the past, MDR-TB treatment used to last for at least 9 months and up to 20 months. WHO recommends expanded access to all-oral regimens.

TB and HIV

People living with HIV are 16 (uncertainty interval 14–18) times more likely to fall ill with TB disease than people without HIV. TB is the leading cause of death among people with HIV.

HIV and TB form a lethal combination, each speeding the other's progress. Without proper treatment, 45% of HIV-negative people with TB on average and nearly all HIV-positive people with TB will die. In 2021, about 187 000 people died of HIV-associated TB. The percentage of notified TB patients who had a documented HIV test result in 2021 was only 76%, up from 73% in 2020. The WHO African Region has the highest burden of HIV-associated TB. Overall in 2021, only 46% of TB patients known to be living with HIV were on antiretroviral therapy (ART).

WHO recommends a 12-component approach of collaborative TB-HIV activities, including actions for prevention and treatment of infection and disease, to reduce deaths.

Impact

Tuberculosis mostly affects adults in their most productive years. However, all age groups are at risk. Over 80% of cases and deaths are in low- and middle-income countries.

TB occurs in every part of the world. In 2021, the largest number of new TB cases occurred in WHO's South-East Asian Region (46%), followed by the African Region (23%) and the Western Pacific (18%). Around 87% of new TB cases occurred in the 30 high TB burden countries, with more than two thirds of the global total in Bangladesh, China, the Democratic Republic of the Congo, India, Indonesia, Nigeria, Pakistan, and the Philippines.

Globally, close to 1 in 2 TB-affected households face costs higher than 20% of their household income, according to latest national TB patient cost survey data.

Those with compromised immune systems, such as people living with HIV, undernutrition or diabetes, or people who use tobacco, have a higher risk of falling ill. Globally in 2021, there were 2.2 million new TB cases that were attributable to undernutrition, 740 000 new TB cases worldwide were attributable to alcohol use disorder and 690 000 were attributable to smoking.

Investments to end TB

US\$ 13 billion are needed annually for TB prevention, diagnosis, treatment and care to achieve global targets agreed on at the UN high level-TB meeting.

As in the past decade, most of the spending on TB services in 2021 (79%) was from domestic sources. In low- and middle-income countries, international donor funding remains crucial. The main source is the Global Fund to Fight AIDS, Tuberculosis and Malaria (the Global Fund). The United States Government is the largest contributor of funding to the Global Fund and also the largest bilateral donor. For research and development, according to the Treatment Action Group, only US\$ 0.9 billion were available in 2021 of the US\$ 2 billion required per year to accelerate the development of new tools. At least an extra US\$ 1.1 billion per year is needed to accelerate the development of new tools.

WHO response

WHO is working closely with countries, partners and civil society in scaling up the TB response. Six core functions are being pursued by WHO to contribute to achieving the targets of the UN high-level meeting political declaration, Sustainable Development Goals, End TB Strategy and WHO strategic priorities:

- providing global leadership to end TB through strategy development, political and multisectoral engagement, strengthening review and accountability, advocacy, and partnerships, including with civil society;
- shaping the TB research and innovation agenda and stimulating the generation, translation and dissemination of knowledge;
- setting norms and standards on TB prevention and care and promoting and facilitating their implementation;
- developing and promoting ethical and evidence-based policy options for TB prevention and care;
- ensuring the provision of specialized technical support to Member States and partners jointly with WHO regional and country offices, catalysing change, and building sustainable capacity; and
- monitoring and reporting on the status of the TB epidemic and progress in financing and implementation of the response at global, regional and country levels.