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Tuberculosis

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Key facts

- A total of 1.25 million people died from tuberculosis (TB) in 2023 (including 161 000 people with HIV). Worldwide, TB has probably returned to being the world's leading cause of death from a single infectious agent, following three years in which it was replaced by coronavirus disease (COVID-19). It was also the leading killer of people with HIV and a major cause of deaths related to antimicrobial resistance.
- In 2023, an estimated 10.8 million people fell ill with TB worldwide, including 6.0 million men, 3.6 million women and 1.3 million children. TB is present in all countries and age groups. TB is curable and preventable.
- Multidrug-resistant TB (MDR-TB) remains a public health crisis and a health security threat. Only about 2 in 5 people with drug resistant TB accessed treatment in 2023.
- Global efforts to combat TB have saved an estimated 79 million lives since the year 2000.
- US\$ 22 billion is needed annually for TB prevention, diagnosis, treatment and care to achieve the global target by 2027 agreed at the 2023 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 caused by bacteria that most often affects the lungs. It spreads through the air when people with TB 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 free of 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 deaths from TB and protects children from serious forms of TB.

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

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

Symptoms

People with 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.

TB disease occurs when bacteria multiply in the body and affect different organs. TB symptoms may be mild for many months, so it is easy to spread TB to others without knowing it. Some people with TB disease do not have any symptoms.

Common symptoms of TB are:

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

The symptoms people get depend on which part of the body is affected by TB. While TB usually affects the lungs, it can also involve 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 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 workplace.**
- **TB preventive treatment (or TPT) prevents infection from becoming disease. If prescribed TPT, 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 facilities 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 diagnostic 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), interferon gamma release assay (IGRA) or newer antigen-based skin tests (TBST) 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 special antibiotics. Treatment is recommended for both TB infection and disease.

The most common antibiotics used are:

- **isoniazid**
- **rifampicin**
- **pyrazinamide**

- **ethambutol.**

To be effective, medications need to be taken daily for 4–6 months. It is dangerous to stop the medications early or without medical advice as it can prompt TB bacteria in the body to become resistant to the drugs.

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

Multidrug-resistant TB (MDR-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.

MDR-TB is a form of TB caused by bacteria that do not respond to isoniazid and rifampicin, the two most effective first-line TB drugs. MDR-TB is treatable and curable by using other drugs, which tend to be more expensive and toxic.

In some cases, extensively drug resistant TB or XDR-TB can develop. TB caused by bacteria that do not respond to the most effective drugs in MDR-TB treatment regimens can leave patients with very limited treatment options.

MDR-TB remains a public health crisis and a health security threat. Only about 2 in 5 people with multidrug resistant TB accessed treatment in 2023.

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

In 2022, new WHO guidelines prioritized a short 6-month all-oral regimen known as BPaLM/BPaL as a treatment of choice for eligible patients. Globally in 2023, 5646 people with MDR/RR-TB were reported to have been started treatment on the BPaLM/BPaL regimen, up from 1744 in 2022. 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. In 2023, about 161 000 people died of HIV-associated TB. The percentage of notified TB patients who had a documented HIV test result in 2023 was 80%, this was the same level as in 2022, but up from 76% in 2021. The WHO African Region has the highest burden of HIV-associated TB. Overall in 2023, only 56% 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

TB 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 2023, the largest number of new TB cases occurred in the WHO South-East Asia Region (45%), followed by the African Region (24%) and the Western Pacific Region (17%). 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, Democratic Republic of the Congo, India, Indonesia, Nigeria, Pakistan and the Philippines.

Globally, about 50% of people treated for TB and their households face total costs (direct medical expenditures, non-medical expenditures and indirect costs such as income losses) that are catastrophic (>20% of total household income), far from the WHO End TB Strategy target of zero. 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 2023, there were estimated 0.96 million new TB cases that were attributable to undernutrition, 0.75 million to alcohol use disorders, 0.70 million to smoking, 0.61 million to HIV infection, and 0.38 million to diabetes.

Investments to end TB

US\$ 22 billion are needed annually for TB prevention, diagnosis, treatment and care to achieve global targets by 2027 agreed on at the 2023 UN high level-TB meeting.

As in the past decade, most of the spending on TB services in 2023 (80%) was from domestic sources. In low- and middle-income countries, international donor funding remains crucial. From 2019 to 2023, there was a decline (of US\$ 1.2 billion) in available funding from domestic sources and a very slight increase (of US\$ 0.1 billion) in funding provided by international donors. Most of the reduction in domestic funding is largely explained by reductions in domestic funding trends in Brazil, the Russian Federation, India, China and South Africa (BRICS). Financing for TB research and innovation at US\$ 1.0 billion in 2022 also continues to fall far short of the global target of US\$ 5 billion per year, constrained by the overall level of investment.

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 2023 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.**
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- **Drug-resistant tuberculosis**
 - **WHO's work on tuberculosis**