GLOBAL TUBERCULOSIS REPORT

2015

20th edition

World Health Organization

Executive summary

Background

The year 2015 is a watershed moment in the battle against tuberculosis (TB). It marks the deadline for global TB targets set in the context of the Millennium Development Goals (MDGs), and is a year of transitions: from the MDGs to a new era of Sustainable Development Goals (SDGs), and from the Stop TB Strategy to the End TB Strategy. It is also two decades since WHO established a global TB monitoring system; since that time, 20 annual rounds of data collection have been completed.

Using data from 205 countries and territories, which account for more than 99% of the world's population, this global TB report documents advances in prevention, diagnosis and treatment of the disease. It also identifies areas where efforts can be strengthened.

Main findings and messages

The advances are major: TB mortality has fallen 47% since 1990, with nearly all of that improvement taking place since 2000, when the MDGs were set.

In all, effective diagnosis and treatment of TB saved an estimated 43 million lives between 2000 and 2014.

The MDG target to halt and reverse TB incidence has been achieved on a worldwide basis, in each of the six WHO regions and in 16 of the 22 high-burden countries that collectively account for 80% of TB cases. Globally, TB incidence has fallen by an average of 1.5% per year since 2000 and is now 18% lower than the level of 2000.

This year's report describes higher global totals for new TB cases than in previous years, but these reflect increased and improved national data rather than any increase in the spread of the disease.

Despite these advances and despite the fact that nearly all cases can be cured, TB remains one of the world's biggest threats.

In 2014, TB killed 1.5 million people (1.1 million HIV-negative and 0.4 million HIV-positive). The toll comprised 890 000 men, 480 000 women and 140 000 children.

TB now ranks alongside HIV as a leading cause of death worldwide. HIV's death toll in 2014 was estimated at 1.2 million, which included the 0.4 million TB deaths among HIV-positive people.[1]

Worldwide, 9.6 million people are estimated to have fallen ill with TB in 2014: 5.4 million men, 3.2 million women and 1.0 million children. Globally, 12% of the 9.6 million new TB cases in 2014 were HIV-positive.

To reduce this burden, detection and treatment gaps must be addressed, funding gaps closed and new tools developed.

In 2014, 6 million new cases of TB were reported to WHO, fewer than two-thirds (63%) of the 9.6 million people estimated to have fallen sick with the disease. This means that worldwide, 37% of new cases went undiagnosed or were not reported. The quality of care for people in the latter category is unknown.

Of the 480 000 cases of multidrug-resistant TB (MDR-TB) estimated to have occurred in 2014, only about a quarter of these – 123 000 – were detected and reported.

Although the number of HIV-positive TB patients on antiretroviral therapy (ART) improved in 2014 to 392 000 people (equivalent to 77% of notified TB patients known to be co-infected with HIV), this number was only one third of the estimated 1.2 million people living with HIV who developed TB in 2014. All HIV-positive TB cases are eligible for ART.

Funding gaps amounted to US$ 1.4 billion for implementation of existing interventions in 2015. The most recent estimate of the annual funding gap for research and development is similar, at about US$ 1.3 billion.

From 2016, the goal is to end the global TB epidemic by implementing the End TB Strategy. Adopted by the World Health Assembly in May 2014 and with targets linked to the newly adopted SDGs, the strategy serves as a blueprint for countries to reduce the number of TB deaths by 90% by 2030 (compared with 2015 levels), cut new cases by 80% and ensure that no family is burdened with catastrophic costs due to TB.

[1] The cause of TB deaths among HIV-positive people is classified as HIV in the *International classification of diseases* system.

Additional highlights from the report

Disease burden and 2015 targets assessment

- The quantity and quality of data available to estimate TB disease burden continue to improve. These include direct measurements of mortality in 129 countries and final results from 18 national TB prevalence surveys completed since 2009, six of them in the past year (Ghana, Indonesia, Malawi, Sudan, Zambia and Zimbabwe).
- Revised estimates for Indonesia (1 million new cases per year, double the previous estimate) explain the upward revision to WHO's global estimates of incident cases compared with those published in 2014. Importantly, however, revisions also affect estimates for previous years and the trend in TB incidence globally as well as in Indonesia is still downward since around 2000.
- Of the 9.6 million new TB cases in 2014, 58% were in the South-East Asia and Western Pacific regions.
- The African Region had 28% of the world's cases in 2014, but the most severe burden relative to population: 281 cases for every 100 000 people, more than double the global average of 133.
- India, Indonesia and China had the largest number of cases: 23%, 10% and 10% of the global total, respectively.
- Globally, TB prevalence in 2015 was 42% lower than in 1990. The target of halving the rate compared with 1990 was achieved in three WHO regions – the Region of the Americas, the South-East Asia Region and the Western Pacific Region – and in nine high-burden countries (Brazil, Cambodia, China, Ethiopia, India, Myanmar, the Philippines, Uganda and Viet Nam).
- The target of halving the TB mortality rate by 2015 compared with 1990 was met in four WHO regions – the Region of the Americas, the Eastern Mediterranean Region, the South-East Asia Region and the Western Pacific Region – and in 11 high-burden countries (Brazil, Cambodia, China, Ethiopia, India, Myanmar, Pakistan, the Philippines, Uganda, Viet Nam and Zimbabwe).
- All three of the 2015 targets (for incidence, prevalence and mortality) were met in nine high-burden countries – Brazil, Cambodia, China, Ethiopia, India, Myanmar, the Philippines, Uganda and Viet Nam.

TB case notifications and treatment outcomes

- In the 20 years since WHO established a global reporting system in 1995, it has received reports of 78 million TB cases, 66 million of which were treated successfully.
- In 2014, that system measured a marked increase in global TB notifications for the first time since 2007. The annual total of new TB cases, which had been about 5.7 million until 2013, rose to slightly more than 6 million in 2014 (an increase of 6%). This was mostly due to a 29% increase in notifications in India, which followed the introduction of a policy of mandatory notification in May 2012, creation of a national web-based reporting system in June 2012 and intensified efforts to engage the private health sector. India accounted for 27% of global TB notifications in 2014.
- Globally, the treatment success rate for people newly diagnosed with TB was 86% in 2013, a level that has been sustained since 2005. Treatment success rates require improvement in the Region of the Americas and the European Region (75% in both regions in 2013).

Drug-resistant TB

- Globally, an estimated 3.3% of new TB cases and 20% of previously treated cases have MDR-TB, a level that has changed little in recent years.
- In 2014, an estimated 190 000 people died of MDR-TB.
- More TB patients were tested for drug resistance in 2014 than ever before. Worldwide, 58% of previously treated patients and 12% of new cases were tested, up from 17% and 8.5% respectively in 2013. This improvement is partly due to the adoption of rapid molecular tests.
- If all of the TB cases notified in 2014 had been tested for drug resistance, an estimated 300 000 would have been found to have MDR-TB, with more than half of them (54%) occurring in India, China and the Russian Federation.
- The number of cases detected (123 000) worldwide represented just 41% of this global estimate, and only 26% of the 480 000 incident cases of MDR-TB estimated to have occurred in 2014. Detection gaps were worst in the Western Pacific Region, where the number of cases detected was only 19% of the number of notified cases estimated to have MDR-TB (the figure for China was 11%).
- A total of 111 000 people started MDR-TB treatment in 2014, an increase of 14% compared with 2013.
- The ratio of patients enrolled in treatment to patients newly notified as having MDR-TB or rifampicin-resistant TB was 90% globally. The ratio was above 90% in 15 of the 27 high MDR-TB burden countries as well as in the European Region and the Region of the Americas.
- Globally, only 50% of MDR-TB patients were successfully treated. However, the 2015 treatment success target of ≥75% for MDR-TB patients was reached by 43 of the 127 countries and territories that reported outcomes for the 2012 cohort, including three high MDR-TB burden countries (Estonia, Ethiopia and Myanmar).
- Extensively drug-resistant TB (XDR-TB) had been reported by 105 countries by 2015. An estimated 9.7% of people with MDR-TB have XDR-TB.

Diagnostics and laboratory strengthening

- The use of the rapid test Xpert MTB/RIF® has expanded substantially since 2010, when WHO first recommended its use. In all, 4.8 million test cartridges were procured in 2014 by 116 low- and middle-income countries at concessional prices, up from 550 000 in 2011.
- By 2015, 69% of countries recommended using Xpert MTB/RIF as the initial diagnostic test for people at risk of

drug-resistant TB, and 60% recommended it as the initial diagnostic test for people living with HIV.

Addressing the co-epidemics of TB and HIV

- In 2014, an estimated 1.2 million (12%) of the 9.6 million people who developed TB worldwide were HIV-positive. The African Region accounted for 74% of these cases.
- The number of people dying from HIV-associated TB peaked at 570 000 in 2004 and had fallen to 390 000 in 2014 (a 32% decrease).
- Globally, 51% of notified TB patients had a documented HIV test result in 2014, a small increase from 49% in 2013. The figure was highest in the African Region, at 79%.
- The number of people living with HIV who were treated with isoniazid preventive therapy reached 933 000 in 2014, an increase of about 60% compared with 2013. A large proportion of these people (59%) were in South Africa.

Financing

- The funding required for a full response to the global TB epidemic in low- and middle-income countries is estimated at US$ 8 billion per year in 2015, excluding research and development. Projections made in 2013 suggested that, by 2015, about US$ 6 billion could be mobilized from domestic sources, leaving a balance of US$ 2 billion needed from international donors.
- Based on self-reporting by countries, funding for TB prevention, diagnosis and treatment reached US$ 6.6 billion in 2015, up from US$ 6.2 billion in 2014 and more than double the level of 2006 (US$ 3.2 billion).
- Overall, 87% (US$ 5.8 billion) of the US$ 6.6 billion available in 2015 is from domestic sources.
- International donor funding reported by countries to WHO has increased since 2006, reaching US$ 0.8 billion in 2015.
- The total amount of international donor funding recorded in the creditor reporting system of the Organization for Economic Cooperation and Development (OECD) is higher: the latest data show total contributions of US$ 1 billion in 2013. Of this amount, 77% was from the Global Fund. The largest country donor was the government of the United States of America, which contributed about one third of the TB funding channelled via the Global Fund as well as bilateral funds of US$ 362 million for TB and TB/HIV in 2013.[1]
- Domestic funding accounts for more than 90% of the total funding in 2015 in three country groups: Brazil, the Russian Federation, India, China and South Africa (BRICS); upper-middle-income countries; and regions outside Africa and Asia.
- International donor funding dominates in the group of 17 high-burden countries outside BRICS (72% of the total funding available in 2015) and in low-income countries (81% of the total funding available in 2015).
- The cost per patient treated for drug-susceptible TB in 2014 ranged from US$ 100–500 in most countries with a high burden of TB. The cost per patient treated for MDR-TB was typically US$ 5000–10 000.

Research and development

- In the diagnostics pipeline, tests based on molecular technologies are the most advanced.
- A diagnostic platform called the GeneXpert Omni® is in development. It is intended for point-of-care testing for TB and rifampicin-resistant TB using Xpert MTB/RIF cartridges. The device is expected to be smaller, lighter and less expensive than currently available platforms for point-of-care nucleic acid detection and will come with a built-in, 4-hour battery. WHO expects to evaluate the platform in 2016.
- A next-generation cartridge called Xpert Ultra® is also in development. It is intended to replace the Xpert MTB/RIF cartridge and could potentially replace conventional culture as the primary diagnostic tool for TB.
- Eight new or repurposed anti-TB drugs are in advanced phases of clinical development. For the first time in six years, an anti-TB drug candidate (TBA-354) is in Phase I testing.
- Several new TB treatment regimens for drug-susceptible and/or drug-resistant TB are being tested in Phase II or Phase III trials; at least two more trials are scheduled to start towards the end of 2015 or in early 2016.
- WHO has issued interim guidance on the use of bedaquiline (in 2013) and delamanid (in 2014).
- By the end of 2014, 43 countries reported having used bedaquiline to treat patients as part of efforts to expand access to treatment for MDR-TB.
- Recent observational studies of the effectiveness of short treatment regimens for MDR-TB in Niger and Cameroon found that a 12-month regimen was effective and well-tolerated in patients not previously exposed to second-line drugs. At least 16 countries in Africa and Asia have introduced shorter regimens as part of trials or observational studies under operational research conditions, and WHO will reassess current guidance on their use in 2016.
- Fifteen vaccine candidates are in clinical trials. Their emphasis has shifted from children to adolescents and adults.
- New diagnostics, drugs and vaccines will be needed to achieve the targets set in the End TB Strategy.

[1] Not all of these bilateral funds are captured in the OECD database. For example, this does not record flows of funds between OECD countries, and funding for TB/HIV may be coded as funding for HIV.