

GLOBAL TUBERCULOSIS REPORT

EXECUTIVE
SUMMARY

20
19



World Health
Organization



An outreach worker from Operation ASHA makes a home visit to a TB patient in Delhi, India, to check if she is adhering to her treatment.

Andrew Aitchison/Getty Images

WHO/CDS/TB/2019.23

© World Health Organization 2019. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO licence.

Executive summary

Background

Tuberculosis (TB) is a communicable disease that is a major cause of ill health, one of the top 10 causes of death worldwide and the leading cause of death from a single infectious agent (ranking above HIV/AIDS). It is caused by the bacillus *Mycobacterium tuberculosis*, which is spread when people who are sick with TB expel bacteria into the air; for example, by coughing. It typically affects the lungs (pulmonary TB) but can also affect other sites (extrapulmonary TB). About a quarter of the world's population is infected with *M. tuberculosis* and thus at risk of developing TB disease.¹

With a timely diagnosis and treatment with first-line antibiotics for 6 months, most people who develop TB can be cured and onward transmission of infection curtailed. The number of TB cases occurring each year (and thus the number of TB-related deaths) can also be driven down by reducing the prevalence of health-related risk factors for TB (e.g. smoking, diabetes and HIV infection), providing preventive treatment to people with a latent TB infection, and taking multisectoral action on broader determinants of TB infection and disease (e.g. poverty, housing quality and undernutrition).

This report

The World Health Organization (WHO) has published a global TB report every year since 1997. Its purpose is to provide a comprehensive and up-to-date assessment of the TB epidemic, and of progress in the response to the epidemic, at global, regional and country levels, in the context of global commitments and strategies. The report is based primarily on data gathered by WHO in annual rounds of data collection, and databases maintained by other multilateral agencies. In 2019, data were reported by 202 countries and territories that account for more than 99% of the world's population and estimated number of TB cases.

Global commitments to end TB and multisectoral accountability

On 26 September 2018, the United Nations (UN) held its first-ever high-level meeting on TB, elevating discussion about the status of the TB epidemic and how to end it to the level of heads of state and government. It followed the first global ministerial conference on TB hosted by WHO and the Russian government in November 2017. The outcome was a political declaration agreed by all UN Member States, in which existing commitments to the

Sustainable Development Goals (SDGs) and WHO's End TB Strategy were reaffirmed, and new ones added.

SDG Target 3.3 includes ending the TB epidemic by 2030. The End TB Strategy defines milestones (for 2020 and 2025) and targets (for 2030 and 2035) for reductions in TB cases and deaths. The targets for 2030 are a 90% reduction in the number of TB deaths and an 80% reduction in the TB incidence rate (new cases per 100 000 population per year) compared with levels in 2015. The milestones for 2020 are a 35% reduction in the number of TB deaths and a 20% reduction in the TB incidence rate. The strategy also includes a 2020 milestone that no TB patients and their households face catastrophic costs as a result of TB disease.

The political declaration included four new global targets:

- treat 40 million people for TB disease in the 5-year period 2018–2022;
- reach at least 30 million people with TB preventive treatment for a latent TB infection in the 5-year period 2018–2022;
- mobilize at least US\$ 13 billion annually for universal access to TB diagnosis, treatment and care by 2022; and
- mobilize at least US\$ 2 billion annually for TB research.

The political declaration also requested the UN Secretary-General, with support from WHO, to provide a report in 2020 to the General Assembly on global and national progress, as the basis for a comprehensive review at a high-level meeting in 2023. The Director-General of WHO was requested to continue to develop a multisectoral accountability framework for TB (MAF-TB) and to ensure its timely implementation.

Status of the TB epidemic

Globally, an estimated 10.0 million (range, 9.0–11.1 million)² people fell ill with TB in 2018, a number that has been relatively stable in recent years. The burden of disease varies enormously among countries, from fewer than five to more than 500 new cases per 100 000 population per year, with the global average being around 130.

There were an estimated 1.2 million (range, 1.1–1.3 million) TB deaths among HIV-negative people in 2018 (a 27% reduction from 1.7 million in 2000), and an additional 251 000 deaths (range, 223 000–281 000)³ among HIV-positive people (a 60% reduction from 620 000 in 2000).

TB affects people of both sexes in all age groups but the highest burden is in men (aged ≥15 years), who accounted

for 57% of all TB cases in 2018. By comparison, women accounted for 32% and children (aged <15 years) for 11%. Among all TB cases, 8.6% were people living with HIV (PLHIV).

Geographically, most TB cases in 2018 were in the WHO regions of South-East Asia (44%), Africa (24%) and the Western Pacific (18%), with smaller percentages in the Eastern Mediterranean (8%), the Americas (3%) and Europe (3%). Eight countries accounted for two thirds of the global total: India (27%), China (9%), Indonesia (8%), the Philippines (6%), Pakistan (6%), Nigeria (4%), Bangladesh (4%) and South Africa (3%). These and 22 other countries in WHO's list of 30 high TB burden countries accounted for 87% of the world's cases.⁴

Drug-resistant TB continues to be a public health threat. In 2018, there were about half a million new cases⁵ of rifampicin-resistant TB (of which 78% had multidrug-resistant TB).⁶ The three countries with the largest share of the global burden were India (27%), China (14%) and the Russian Federation (9%). Globally, 3.4% of new TB cases and 18% of previously treated cases had multidrug-resistant TB or rifampicin-resistant TB (MDR/RR-TB), with the highest proportions (>50% in previously treated cases) in countries of the former Soviet Union.

Progress towards the 2020 milestones of the End TB Strategy

Currently, the world as a whole, most WHO regions and many high TB burden countries are not on track to reach the 2020 milestones of the End TB Strategy.

Globally, the average rate of decline in the TB incidence rate was 1.6% per year in the period 2000–2018, and 2.0% between 2017 and 2018. The cumulative reduction between 2015 and 2018 was only 6.3%, considerably short of the End TB Strategy milestone of a 20% reduction between 2015 and 2020. The global reduction in the total number of TB deaths⁷ between 2015 and 2018 was 11%, also less than one third of the way towards the End TB Strategy milestone of a 35% reduction by 2020.

The good news is that the WHO European Region is on track to achieve the 2020 milestones for reductions in cases and deaths. Between 2015 and 2018, the incidence rate fell 15% and the number of TB deaths fell by 24%. Incidence and deaths are also falling relatively fast in the WHO African Region (4.1% and 5.6%, respectively, per year), with cumulative reductions of 12% for incidence and 16% for deaths between 2015 and 2018. Seven high TB burden countries are on track to achieve the 2020 milestones: Kenya, Lesotho, Myanmar, the Russian Federation, South Africa, the United Republic of Tanzania and Zimbabwe.

From 2016 to 2019, 14 countries (including seven high TB burden countries) completed a national facility-based survey of costs faced by TB patients and their households. Best estimates of the percentage facing total costs that were catastrophic ranged from 27% to 83% for all forms of TB, and from 67% to 100% for drug-resistant TB. Survey results are being used to inform approaches to

financing, service delivery and social protection that will reduce these costs. A further 37 surveys are underway or planned in 2019–2020.

TB diagnosis and treatment

Achieving the UN high-level meeting target of treating 40 million people with TB between 2018 and 2022 requires treating about 7 million people in 2018 and about 8 million people in subsequent years. The targets were built on the WHO Flagship Initiative “Find. Treat. All. #EndTB”.

Based on case notification data reported to WHO, the target for 2018 was achieved. Globally, 7.0 million new cases of TB were notified in 2018 – an increase from 6.4 million in 2017 and a large increase from the 5.7–5.8 million notified annually in the period 2009–2012.

Most of the increase in global notifications of TB cases since 2013 is explained by trends in India and Indonesia, the two countries that rank first and third worldwide in terms of estimated incident cases per year.⁸ In India, notifications of new cases rose from 1.2 million to 2.0 million between 2013 and 2018 (+60%). In Indonesia, notifications rose from 331 703 in 2015 to 563 879 in 2018 (+70%), including an increase of 121 707 (+28%) between 2017 and 2018.

Despite increases in TB notifications, there is still a large gap between the number of new cases reported (7.0 million) and the estimated 10.0 million (range, 9.0–11.1 million) incident cases in 2018. This gap is due to a combination of underreporting of detected cases and underdiagnosis (i.e. people with TB do not access health care or are not diagnosed when they do).

Ten countries accounted for about 80% of the gap, with India (25%), Nigeria (12%), Indonesia (10%) and the Philippines (8%) accounting for more than half of the total.⁹ In these countries in particular, intensified efforts are required to improve reporting of detected TB cases and access to diagnosis and treatment.

As countries intensify efforts to improve TB diagnosis and treatment and close gaps between incidence and notifications, the proportion of notified cases that are bacteriologically confirmed needs to be monitored, to ensure that people are correctly diagnosed and started on the most effective treatment regimen as early as possible. The aim should be to increase the percentage of cases confirmed bacteriologically by scaling up the use of recommended diagnostics (e.g. rapid molecular tests) that are more sensitive than smear microscopy. In 2018, 55% of pulmonary cases were bacteriologically confirmed, a slight decrease from 56% in 2017. In high-income countries with widespread access to the most sensitive diagnostic tests, about 80% of pulmonary TB cases are bacteriologically confirmed.

The percentage of notified TB patients who had a documented HIV test result in 2018 was 64%, up from 60% in 2017. In the WHO African Region, where the burden of HIV-associated TB is highest, 87% of TB patients had a documented HIV test result. A total of 477 461 TB cases among HIV-positive people were reported, of which 86% were on antiretroviral therapy.

The latest treatment outcome data for new cases of TB show a global treatment success rate of 85% in 2017, an increase from 81% in 2016. The improvement was mainly due to progress in India.

Drug-resistant TB: diagnosis and treatment

The political declaration at the UN high-level meeting on TB included commitments to improve the coverage and quality of diagnosis, treatment and care for people with drug-resistant TB.

Detection of MDR/RR-TB requires bacteriological confirmation of TB and testing for drug resistance using rapid molecular tests, culture methods or sequencing technologies. Treatment requires a course of second-line drugs for at least 9 months and up to 20 months, supported by counselling and monitoring for adverse events.

There was some progress in testing, detection and treatment of MDR/RR-TB between 2017 and 2018. Globally in 2018, 51% of people with bacteriologically confirmed TB were tested for rifampicin resistance, up from 41% in 2017.¹⁰ Coverage of testing was 46% for new and 83% for previously treated TB patients. A global total of 186 772 cases of MDR/RR-TB were detected and notified in 2018, up from 160 684 in 2017, and 156 071 cases were enrolled in treatment, up from 139 114 in 2017.

Despite these improvements, the number of people enrolled in treatment in 2018 was equivalent to only one in three of the approximately half a million people who developed MDR/RR-TB in 2018. Closing this wide gap requires one or more of the following to be increased: detection of TB cases, the proportion of TB cases bacteriologically confirmed, coverage of testing for drug resistance among bacteriologically confirmed cases and coverage of treatment for those diagnosed with MDR/RR-TB.

Ten countries accounted for 75% of the global gap between treatment enrolments and the estimated number of new cases of MDR/RR-TB in 2018, and thus will have a strong influence on progress in closing this gap. Those 10 countries were China, India, Indonesia, Mozambique, Myanmar, Nigeria, Pakistan, the Philippines, the Russian Federation and Viet Nam. China and India alone accounted for 43% of the global gap.

The latest treatment outcome data for people with MDR/RR-TB show a global treatment success rate of 56%. Examples of high MDR-TB burden countries with better treatment success rates (>70%) are Bangladesh, Ethiopia, Kazakhstan and Myanmar.

TB prevention services

The main health care intervention available to reduce the risk of a latent TB infection progressing to active TB disease is TB preventive treatment.¹¹ Vaccination of children with the bacille Calmette–Guérin (BCG) vaccine can also confer protection, especially from severe forms of TB in children.

WHO guidance issued in 2018 recommends TB preventive treatment for PLHIV, household contacts of bacterio-

logically confirmed pulmonary TB cases and clinical risk groups (e.g. those receiving dialysis). The breakdown of the target to reach 30 million people with TB preventive treatment in the 5-year period 2018–2022 set at the UN high-level meeting on TB was 6 million PLHIV and 24 million household contacts (4 million children aged under 5 years, and 20 million other household contacts).

Globally in 2018, 65 countries reported initiating TB preventive treatment for 1.8 million PLHIV (61% in South Africa), up from just under 1 million in 2017. The 2018 number suggests that the target of 6 million in the period 2018–2022 can be achieved. In the 16 high TB or TB/HIV burden countries that reported providing treatment, coverage ranged from 10% of PLHIV newly enrolled in care in Indonesia to 97% in the Russian Federation. Overall, in 66 countries for which it could be calculated, coverage was 49%.

The number of household contacts initiated on TB preventive treatment in 2018 was much smaller: 349 487 children aged under 5 years (a 20% increase from 292 182 in 2017), equivalent to 27% of the 1.3 million estimated to be eligible; and 79 195 people in other age groups (a 30% decrease from 103 344 in 2017). Substantial scale-up will be needed to reach the targets set at the UN high-level meeting.

In 2018, 153 countries reported providing BCG vaccination as a standard part of childhood immunization programmes, of which 113 reported coverage of ≥90%.

Financing for TB prevention, diagnosis and treatment

Funding for the provision of TB prevention, diagnostic and treatment services has doubled since 2006 but still falls far short of what is needed.

In 119 low- and middle-income countries that reported data (and accounted for 97% of reported TB cases globally), funding reached US\$ 6.8 billion in 2019, up from US\$ 6.4 billion in 2018 and US\$ 3.5 billion in 2006. However, the amount in 2019 is US\$ 3.3 billion less than the US\$ 10.1 billion estimated to be required in the Stop TB Partnership's *Global Plan to End TB 2018–2022*, and only just over half of the global target of at least US\$ 13 billion per year by 2022 that was agreed at the UN high-level meeting on TB.

As in previous years, most of the funding (87%) available in 2019 is from domestic sources. This aggregate figure is strongly influenced by the BRICS group of countries (Brazil, Russian Federation, India, China and South Africa). The BRICS countries account for 53% of the available funding in 2019, and 95% of their funding is from domestic sources. In India, domestic funding quadrupled between 2016 and 2019.

In other low- and middle-income countries, international donor funding remains crucial, accounting for 38% of the funding available in the 25 high TB burden countries outside BRICS and 49% of the funding available in low-income countries.

International donor funding amounts to US\$ 0.9 bil-

lion in 2019, with 73% of that amount coming from the Global Fund to Fight AIDS, Tuberculosis and Malaria (the Global Fund). This total is far below the annual requirement of US\$ 2.7 billion estimated in the Global Plan. The largest bilateral donor is the US government, which provides almost 50% of total international donor funding for TB, when combined with funds channelled through and allocated by the Global Fund.

Universal health coverage, multisectoral action and social determinants

The End TB Strategy milestones for 2020 and 2025 can only be achieved if TB diagnosis, treatment and prevention services are provided within the context of progress towards universal health coverage (UHC), and if there is multisectoral action to address the broader determinants that influence TB epidemics and their socioeconomic impact.

UHC means that everyone can obtain the health services they need without suffering financial hardship. SDG Target 3.8 is to achieve UHC by 2030; the two indicators to monitor progress are a UHC service coverage index (SCI), and the percentage of the population experiencing household expenditures on health care that are large in relation to household expenditures or income.

The SCI increased steadily between 2000 and 2017, from a global value of 45 (out of 100) in 2000 to 66 in 2017. The SCI in the 30 high TB burden countries (with 87% of global TB cases) was mostly in the range 40–60, showing that much remains to be done to achieve UHC in these settings. Higher values in Brazil (79), China (79) and Thailand (80) are encouraging.

In 2015, at least 930 million people or 12.7% of the world's population faced catastrophic expenditures on health care (defined as 10% or more of annual household expenditure or income), up from 9.4% in 2010.

In 2018, an estimated 2.3 million TB cases were attributable to undernourishment, 0.9 million to smoking (of which 0.8 million were among men), 0.8 million to alcohol abuse, 0.8 million to HIV infection and 0.4 million to diabetes.

Following the request to the WHO Director-General at the UN high-level meeting, a MAF-TB was released in May 2019. Countries are being supported to adapt and use the framework.

TB research and development

The SDG and End TB Strategy targets set for 2030 cannot be met without intensified research and development. Technological breakthroughs are needed by 2025, so that the annual decline in the global TB incidence rate can be accelerated to an average of 17% per year. Priorities include a vaccine to lower the risk of infection, a vaccine or new drug treatment to cut the risk of TB disease in the 1.7 billion people already latently infected, rapid diagnostics for use at the point of care, and simpler, shorter drug regimens for treating TB disease.

The diagnostic pipeline appears robust in terms of the

number of tests, but no new technology emerged in 2019. As of August 2019, there were 23 drugs, various combination regimens and 14 vaccine candidates in clinical trials. Recently, the M72/AS01E vaccine candidate was found to be protective against TB disease in a Phase IIb trial among individuals with evidence of latent TB infection. If the findings are confirmed in a Phase III trial, this vaccine could transform global TB prevention efforts.

The latest data published by Treatment Action Group showed funding of US\$ 772 million for TB research and development in 2017, much less than the target of at least US\$ 2 billion per year set at the UN high-level meeting on TB.

Conclusion

Leaders of all UN Member States have committed to “ending the global TB epidemic” by 2030, backed up by concrete milestones and targets.

Progress is being made. Global indicators for reductions in TB cases and deaths, improved access to TB prevention and care and increased financing are moving in the right direction. One WHO region and seven high TB burden countries are on track to reach 2020 milestones for reductions in TB cases and deaths.

Nonetheless, the pace of progress worldwide and in most regions and countries is not yet fast enough. In the next 3 years, annual financing for TB prevention and care and for TB research needs to approximately double, access to TB care and preventive treatment needs to expand, substantial costs faced by TB patients and their households must be mitigated and multisectoral action on the broader determinants of the TB epidemic needs to intensify.

The UN Secretary-General's report to the General Assembly in 2020, to be prepared with WHO support, will provide the next opportunity to assess progress towards agreed TB targets and milestones.

¹ The lifetime risk is about 5–10%.

² Here and elsewhere, “range” refers to the 95% uncertainty interval.

³ When an HIV-positive person dies from TB disease, the underlying cause is coded as HIV in the International Classification of Diseases system.

⁴ The other 22 countries are Angola, Brazil, Cambodia, Central African Republic, the Congo, the Democratic People's Republic of Korea, the Democratic Republic of the Congo, Ethiopia, Kenya, Lesotho, Liberia, Mozambique, Myanmar, Namibia, Papua New Guinea, the Russian Federation, Sierra Leone, Thailand, the United Republic of Tanzania, Viet Nam, Zambia and Zimbabwe.

⁵ The 95% uncertainty interval is 420 000–560 000.

⁶ Defined as resistance to rifampicin and isoniazid.

⁷ Including TB deaths among both HIV-negative and HIV-positive people.

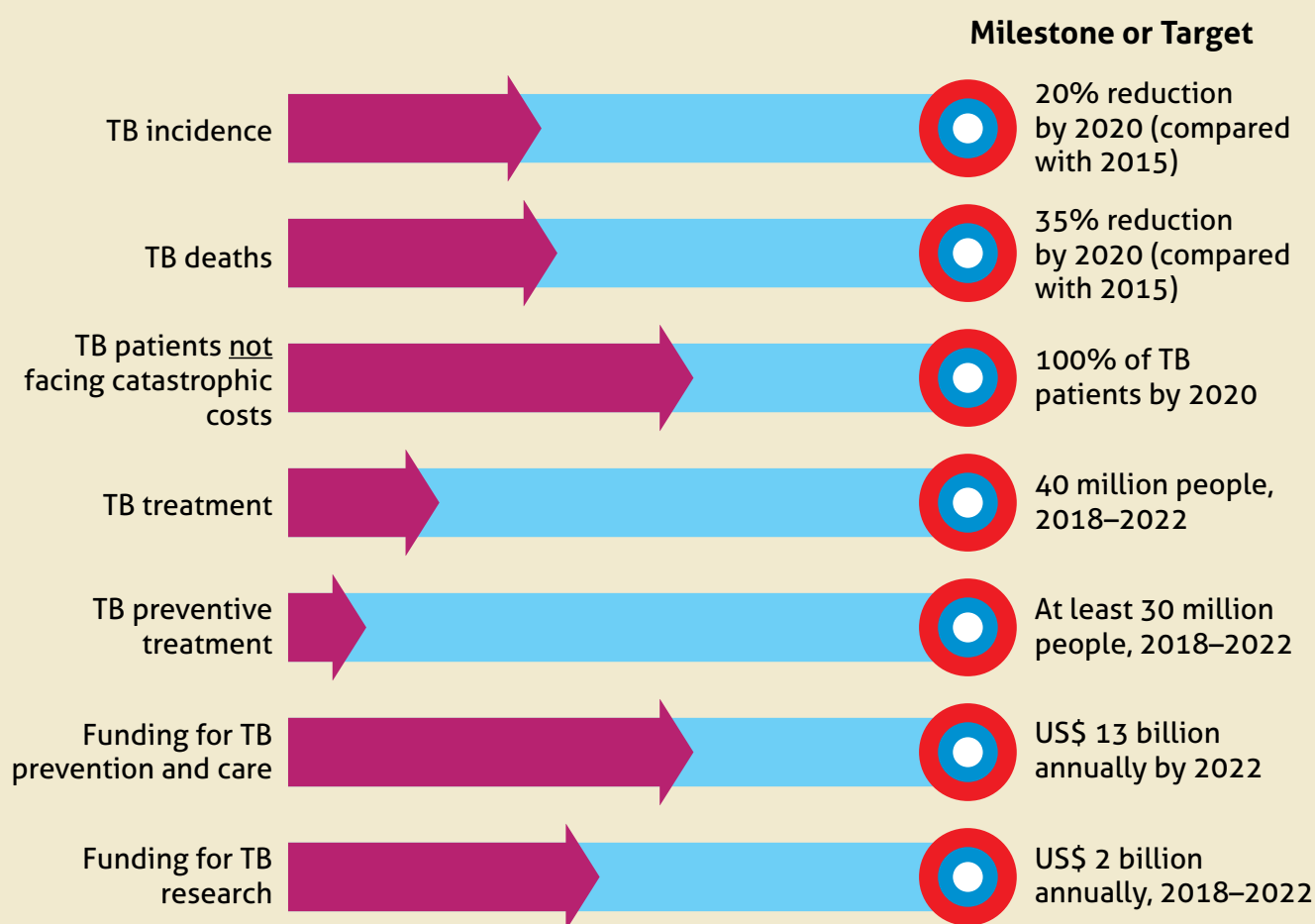
⁸ Other countries with large relative increases in 2016–2018 are shown in Fig. 4.2 of the main report.

⁹ The other six countries are shown in Fig. 4.20 of the main report.

¹⁰ The numbers cited refer to pulmonary cases.

¹¹ The four drug regimens currently recommended by WHO are explained in Chapter 5 of the main report.

Progress towards End TB Strategy milestones for 2020 and the four global targets set in the political declaration at the UN high-level meeting on TB: latest status^a



^a End of 2018 except for funding for TB prevention and care (2019) and funding for TB research (2017).



WWW.WHO.INT/TB/DATA