Global tuberculosis report 2025

World Health Organization

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Contents

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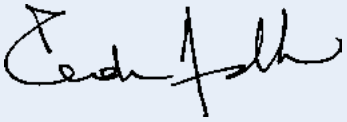
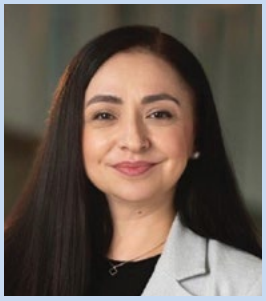
“This is a crucial period. Even as we must strive to meet the commitments from the second United Nations high-level meeting on TB, we have entered a new period of scarcity. WHO is committed to working with donors, partners and affected countries to mitigate the impact of funding cuts, find innovative solutions, and mobilize the political and financial commitments needed to End TB.





Dr Tereza Kasaeva
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WHO's Global tuberculosis report 2025 *shows that progress is possible, even in the face of persistent challenges. Coverage of TB prevention, diagnosis, and care continues to expand, powered by new WHO-recommended tools, from AI-driven screening and rapid diagnostics to shorter, more effective treatments to save lives. WHO is leading the charge, providing technical expertise and driving innovation, to ensure equitable access to these innovations for everyone, everywhere.*

Acknowledgements

The *Global tuberculosis report 2025* was produced by the WHO Department for HIV, Tuberculosis, Hepatitis and Sexually Transmitted Infections. The core report team included Taghreed Adam, Nimalan Arinaminpathy, Annabel Baddeley, Mathieu Bastard, Dennis Falzon, Katherine Floyd, Nebiat Gebreselassie, Avinash Kanchar, Irwin Law, Cecily Miller, Hazim Timimi, Yi Wang and Takuya Yamanaka. This team was led by Katherine Floyd. Overall oversight was provided by the Director of the Department for HIV, Tuberculosis, Hepatitis and Sexually Transmitted Infections, Tereza Kasaeva.

The data collection form was developed by Hazim Timimi, with inputs from staff from across the WHO Department for HIV, Tuberculosis, Hepatitis and Sexually Transmitted Infections. Hazim Timimi led and organized all aspects of data and code management, including the preparation and implementation of the web system used for the 2025 round of global tuberculosis (TB) data collection from 215 countries and areas.

Data were reviewed by the following staff at WHO headquarters: Annabel Baddeley, Mathieu Bastard, Annemieke Brands, Hannah Monica Dias, Dennis Falzon, Medea Gegia, Licé Gonzalez Angulo, Patricia Hall-Eidson, Monique Kamphuis, Avinash Kanchar, Alexei Korobitsyn, Marek Lalli, Cecily Miller, Carl-Michael Nathanson, Linh Nguyen, Gita Parwati, Debora Pedrazzoli, Samuel Schumacher, Lana Syed, Hazim Timimi, Sabine Verkuijl, Kerri Viney, Elena Vovc and Yi Wang. Data for the European Region were collected and validated jointly by the WHO Regional Office for Europe and the European Centre for Disease Prevention and Control (ECDC).

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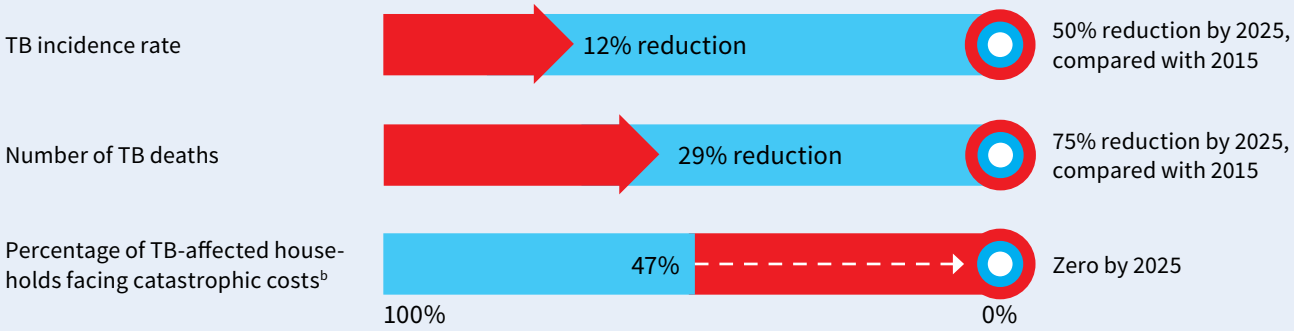
Siti Hafsah Abdul Halim, Asad Abdullahi, Shazelin Alipitchay, Renata Amos, Marvin Apas, Adilah Aziz, Nurul Badriyah, Ladong Belari, Luse Buinimasi, Risa Bukbuk, Kwok Chiu Chang, Wei Chen, Clément Couteaux, Alice Cuenca, Luis Desquitado, Maremie Diaz, Luong Dinh Van, Maria Alezandra Eguia, Mayleen Jack Ekiek, Meilina Farikha, Clement Filisetti, Angela Patolo Fineanganofo, Ludovic Floury, Gantungalag Ganbaatar, Dorj Gantsetseg, Lizzie Gorrell, Nor Azian binti Haji Hafneh, Chan Yuda Huot, Donekham Inthavong, Vongkham Inthavong, Audrey Jack, Henry Kako, Xaysomvang Keodavong, Martina Kifrawi, Jinsun Kim, Jieun Kim, Phonesavanh Kommanivanh, Oscilyna Kulatea, Win Mar Kyaw, Thi Hai Minh Le, Seung Eun Lee, Shuk Nor Maria Lee, Hyewon Lee, Liza Lopez, Brassicae Mabansag, Charisse Malbacias, Kevin Carter Marafi, Benhur Matalavea, Jane Matanaicak, Chima Mbakwem, Krisia Denise Misa, Serafi Moa, Suzana Mohd Hashim, Enkhnaran Myagmar, Deborah Hee Ling Ng, Binh Hoa Nguyen, Herolyn Nindil, Chanly Nou, National Tuberculosis Advisory Committee (Australia), Akihiro Ohkado, Connie Olikong, Tiffany Tiara Pakasi, Ilagina Pepeuga, Teau Puna, Bereka Reiher, Evonne Sablan, Vaimaila Salele, Eunjung Shin, Anousone Sisouvanh, Sulistyo Sulistyo, Senolyn Syne, Lai Bun Tai, Joseph Takai, Lia Tanabose, Annie Teannaki, Sivanna Tieng, Marou Tikataake, Vivian Toaniso, Ka In U, Kazuhiro Uchimura, Wareti Uriam, Du Xin, Yan Lin Zhao.

Abbreviations

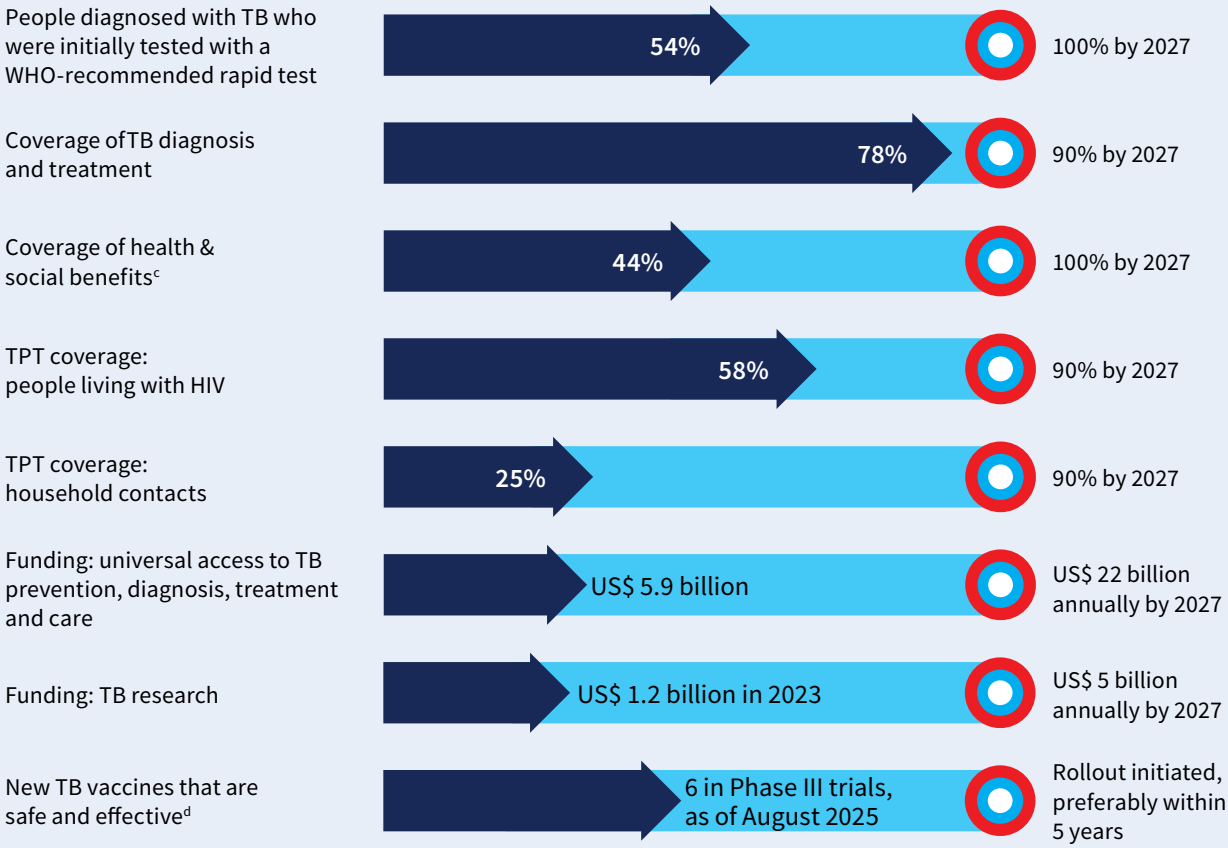
AIDS	acquired immune deficiency syndrome
ART	antiretroviral therapy
BCG	bacille Calmette-Guérin
BRICS	Brazil, the Russian Federation, India, China and South Africa
CSV	comma separated value
CI	confidence interval
COVID-19	coronavirus disease 2019
ECDC	European Centre for Disease Prevention and Control
GDP	gross domestic product
GHO	Global health observatory
HBC	high burden country
HIV	human immunodeficiency virus
IGRA	interferon-gamma release assay
IHME	Institute for Health Metrics and Evaluation
ILO	International Labour Organization
LF-LAM	lateral flow urine lipoarabinomannan assay
LMICs	low- and middle-income countries
MAF-TB	multisectoral accountability framework for TB
MDR-TB	multidrug-resistant TB
NTP	national TB programme
OECD	Organisation for Economic Co-operation and Development
PPP	purchasing power parity
PPPR	pandemic preparedness, prevention and response
RR-TB	rifampicin-resistant TB
SCI	service coverage index
SDG	Sustainable Development Goal
SHA	System of Health Accounts
TB	tuberculosis
TPT	tuberculosis preventive treatment
UHC	universal health coverage
UI	uncertainty interval
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNPD	UN Population Division
USAID	United States Agency for International Development
USG	government of the United States of America
VR	vital registration
WHO	World Health Organization
WRD	WHO recommended rapid diagnostic test
XDR-TB	extensively drug-resistant TB

Global TB milestones and targets: latest status[a] of progress

End TB Strategy, 2025 milestones



2023 UN high-level meeting on TB, targets



TPT, TB preventive treatment.

[a] This is the end of 2024 for all indicators unless otherwise stated.

[b] This indicator is not the same as the SDG indicator for catastrophic health expenditures. See **Box 3** for further explanation.

[c] The value is the percentage of the general population covered by at least one social protection benefit, with the value for each country weighted according to its share of global TB case notifications. The unweighted value is 52%.

[d] The length of the arrow represents 2 years (out of five) since the 2023 UN-high level meeting onTB.

1. Introduction

Tuberculosis (TB) is a preventable and usually curable disease. Nonetheless, more than 10 million people continue to fall ill with TB every year and more than 1 million die from the disease, making it the world's leading cause of death from a single infectious agent and among the top 10 causes of death worldwide. Urgent action is required to end the global TB epidemic by 2030, a goal that has been adopted by all Member States of the United Nations (UN) and the World Health Organization (WHO) *(1, 2)*.

TB is caused by the bacillus *Mycobacterium tuberculosis*, which is spread when people who are sick with TB expel bacteria into the air (e.g. by coughing). About a quarter of the global population is estimated to have been infected with TB *(3)*. Following infection, the risk of developing TB disease is highest in the first 2 years (approximately 5%), after which it is much lower *(4)*.[1] Some people will clear the infection *(5, 6)*. Of the total number of people who develop TB disease each year, about 90% are adults, with more cases among men than women. The disease typically affects the lungs (pulmonary TB) but can affect other sites as well.

Basic facts about TB are provided in **Annex 1**.

Without treatment, the death rate from TB disease is high (close to 50%) *(7)*. With the treatments currently recommended by WHO (a course of anti-TB drugs for 4–6 months), about 90% of people with TB can be cured. Regimens of 1–6 months are available to treat TB infection. Universal health coverage (UHC), which means that everyone can obtain the health services they need without suffering financial hardship, is necessary to ensure that all people who need treatment for TB disease or infection can access it. The number of people acquiring infection and developing disease (and, in turn, the number of deaths caused by TB) can also be reduced through multisectoral action to address broader determinants of TB, such as poverty, undernutrition, HIV infection, smoking and diabetes.

Some countries have already reduced their burden of TB disease to fewer than 10 cases and less than one death per 100 000 population per year. Research breakthroughs (e.g. a new vaccine) are needed to rapidly reduce the global number of cases and deaths each year to the levels already achieved in these low-burden countries.

Political commitment to ending the TB epidemic has stepped up in recent years. The UN has held two high-level meetings on TB: the first in 2018 *(8)* and the second in 2023. The political declaration at the 2023 meeting reaffirmed existing commitments and targets set in the UN Sustainable Development Goals (SDGs) and the WHO End TB Strategy, and included new ones for the period 2023–2030 *(9)*. A third UN high-level meeting on TB is scheduled for 2028.

WHO has published a global TB report every year since 1997. Its main purpose is to provide a comprehensive and up-to-date assessment of the status of the TB epidemic and progress in the response at global, regional and national levels, in the context of global TB commitments, strategies and targets.

As with previous global TB reports, this 2025 edition is based primarily on data gathered by WHO from national ministries of health in annual rounds of data collection. In 2025, 184 countries and areas (out of 215) with more than 99% of the world's population and TB cases reported data (**Annex 2**), including all high TB burden countries (**Annex 3**). Data from the WHO mortality database and Global Health Observatory (GHO) as well as databases maintained by other UN agencies and the World Bank are also used.

The report has three components: a short "core" report that focuses on the main findings and messages (this document); webpages that provide more detailed and digitized information, including a large number (>100) of interactive graphics;[2] and an app that contains country, regional and global profiles. This format ensures that all content is readily available in relatively small and "bite-sized" chunks, facilitating access, navigation, reading and use. All data and estimates can be downloaded from WHO's online global TB database *(10)*.

The top findings and messages of the 2025 report are highlighted in **Box 1**.

[1] For people with a long-established infection, empirical data suggest an annual risk of about 10–20 per 100 000 individuals.

[2] There are 16 webpages organized according to six "standard" topics: TB disease burden; TB diagnosis and treatment; TB prevention and screening; TB financing; UHC and TB determinants; and TB research. There are also webpages on four "featured topics". These are the third (2023) national TB prevalence survey in Cambodia; the impact of cuts to international donor funding in 2025 on TB services; TB and gender; and the expansion of treatment for TB infection in China.

Box 1. Top findings and messages in the 2025 report

TB remains a major global public health problem and progress in reducing the burden of disease falls far short of 2030 targets in most parts of the world. Nonetheless, after setbacks during the COVID-19 pandemic, most indicators are moving in the right direction and there are regional and country success stories. Changes in the funding landscape threaten this progress.

Globally in 2024, an estimated 10.7 million people (95% uncertainty interval [UI]: 9.9–11.5 million) fell ill with TB (incident cases) and 1.23 million died from the disease (95% UI: 1.13–1.33 million).[a] The TB incidence rate (new cases per 100 000 population per year) was 131 (95% UI: 122–141) and the case fatality rate was 11.5%.

TB is one of the top 10 causes of death worldwide and the leading cause of death from a single infectious agent.

Most of the people who develop TB disease each year are in 30 high TB burden countries: they accounted for 87% of the global total in 2024. The top eight (67% of the worldwide total) were India (25%), Indonesia (10%), the Philippines (6.8%), China (6.5%), Pakistan (6.3%), Nigeria (4.8%), the Democratic Republic of the Congo (3.9%) and Bangladesh (3.6%).

In 2024, 54% of people who developed TB were men, 35% were women and 11% were children.

Globally, the absolute number of people falling ill with TB decreased in 2024 for the first time since 2020, following 3 consecutive years of increases (2021–2023) due to COVID-related disruptions to TB diagnosis and treatment. The total of 10.7 million was a small (1%) reduction from 10.8 million in 2023, but still above the level of 2020 (10.3 million).

There was a larger (1.7%) global decline in the TB incidence rate between 2023 and 2024; at 131 per 100 000 population in 2024, this was back to the level of 2020. The net reduction from 2015 to 2024 was 12%, far from the End TB Strategy milestone of a 50% reduction by 2025 and the target of an 80% reduction by 2030.

Globally, the number of deaths caused by TB also fell in 2024. The total of 1.23 million was a 3% reduction compared with 1.27 million in 2023. The net reduction from 2015 to 2024 is more impressive, at 29%, but still far from the End TB Strategy milestone of a 75% reduction by 2025 and the target of a 90% reduction by 2030.

Much better progress in reducing the burden of TB disease has been made in some regions and countries. Between 2015 and 2024, the WHO African Region achieved a 28% reduction in the TB incidence rate and a 46% reduction in the number of TB deaths. The WHO European Region achieved reductions of 39% and 49%, respectively. 101 countries achieved reductions of at least 20% in the TB incidence rate and 65 achieved reductions of at least 35% in the number of TB deaths.[b]

Further reductions in the burden of TB disease require improvements in the coverage of TB diagnostic, treatment and preventive interventions; action on broader determinants that drive new infections or increase the risk of developing disease once infected; and technological breakthroughs, such as a new TB vaccine. All depend on adequate funding.

Globally, 8.3 million people were reported as newly diagnosed with TB in 2024 – a small increase from 8.2 million in 2023 and 78% (95% UI: 72–84%) of the estimated number of incident cases. Of these, 54% were initially tested with a rapid test, up from 48% in 2023.

A total of 164 545 people were treated for rifampicin-resistant[c] TB (RR-TB) in 2024. This was 42% of the approximately 390 000 people who developed RR-TB in 2024, almost the same as in 2023.

The treatment success rate for drug-susceptible TB remains high, at 88%, and has improved to 71% for RR-TB. From 2000–2024, treatment of people with TB is estimated to have averted 83 million deaths.

Globally, 5.3 million people at high risk of developing TB disease were provided with TB preventive treatment (TPT) in 2024: 3.5 million close contacts of people diagnosed with TB and 1.8 million people living with HIV. TPT coverage was 58% among people living with HIV (up from 56% in 2023) and 25% among household contacts (up from 20% in 2023).

One of the barriers to accessing TB diagnosis and treatment is the costs faced by people with TB and their households; about 50% face costs that exceed 20% of annual household income. Reducing this economic burden requires faster progress towards UHC and better levels of social protection.

In most high TB burden countries, less than 50% of the general population has access to at least one social protection benefit and values for the UHC service coverage index (SCI) are in the range 40–60 (out of 100).

Key drivers of the TB incidence rate at country level include income per capita and the prevalence of undernutrition, HIV infection, diabetes, smoking and alcohol use disorders.

There are 18 TB vaccines in clinical development, including six in Phase 3 trials.

Funding for the TB response remains grossly inadequate and has been stagnating. Funding for provision of TB prevention, diagnosis and treatment amounted to US$ 5.9 billion in 2024, and funding for TB research was US$ 1.2 billion in 2023.[d] These figures are 27% and 24%, respectively, of the global targets of US$ 22 billion and US$ 5 billion annually by 2027.

Cuts to international donor funding from 2025 onwards threaten overall funding for the TB response in many countries.

Achieving the goal of ending the global TB epidemic, to which all WHO and UN Member States have committed, requires further intensification of efforts. Following cuts in international donor funding in 2025, political commitment and domestic funding in high TB burden countries are more important than ever.

[a] This included 1.08 million among HIV-negative people and 150 000 among people with HIV (officially classified as deaths from HIV/AIDS).

[b] These reductions correspond to the 2020 milestones of the End TB Strategy (**Box 2**).

[c] Rifampicin is the most powerful first-line anti-TB drug.

[d] The source of this figure is the latest report on funding for TB research published by Treatment Action Group.

2. Global TB commitments, strategy and targets

In 2014 and 2015, all WHO and UN Member States committed to ending the TB epidemic, through their adoption of WHO's End TB Strategy (**Box 2**) and the UN SDGs *(1, 2, 11)*. The strategy included milestones (for 2020 and 2025) and targets (for 2030 and 2035) for large reductions in the TB incidence rate (new cases per 100 000 population per year), the absolute number of deaths caused by TB, and costs faced by people with TB and their households.

Key requirements to reach the milestones and targets were defined within the three pillars of the End TB Strategy (**Box 2**). They included provision of TB prevention, diagnostic and treatment services within the context of progress towards UHC and social protection; multisectoral action to address broader social and economic determinants of TB that drive new infections or increase the risk of developing disease once infected; and technological breakthroughs, such as a new TB vaccine.

The third target of the End TB Strategy is that no TB-affected households face costs that are catastrophic.[1] This target was set in recognition of the fact that removal of financial and economic barriers to accessing TB diagnosis and treatment is a prerequisite for achieving the milestones and targets for reductions in TB incidence and TB mortality. "Catastrophic" is defined as total costs (direct medical expenditures, direct non-medical expenditures and indirect costs such as income losses) that exceed 20% of annual household income.

Further details about the rationale for the milestones and targets and how they were defined are available elsewhere *(12)*.

Within the SDG monitoring framework (2016–2030), the indicator being used to monitor progress towards ending the TB epidemic is the TB incidence rate.

A global ministerial conference on TB was held in 2017, the outcome of which was the Moscow Declaration *(13)*. This was followed less than a year later by the first-ever UN high-level meeting on TB, at which commitments to the SDGs and End TB Strategy were reaffirmed and new ones added *(8)*. Global targets for mobilization of funding and provision of treatment were established for the first time, covering the period 2018–2022. Assessment of the extent to which these targets were achieved was part of WHO's *Global tuberculosis report 2023 (14)*.

A second UN high-level meeting was held in 2023. The political declaration *(9)* included new commitments and targets for the period 2023–2030 (**Table 1**, **Table 2**). The targets are for the coverage of rapid diagnostic testing,

TABLE 1

Global targets set in 2023 at the second UN high-level meeting on TB

INDICATOR	GLOBAL TARGET
Coverage of rapid diagnostic testing for TB (the annual number of people diagnosed with TB who were initially tested using a WHO-recommended rapid diagnostic test, as a percentage of the number of people diagnosed with TB in the same year)	100% by 2027
Coverage of TB diagnosis and treatment (the annual number of people provided with quality-assured TB diagnosis and treatment, as a percentage of the estimated number of people who developed TB disease in the same year)	90% by 2027 (equivalent to up to 45 million people globally in the 5-year period 2023–2027)
Coverage of health and social benefits package for people with TB	100% by 2027
Coverage of TPT (the annual number of people at high risk of developing TB disease who were provided with TPT, as a percentage of the estimated number of people eligible for treatment in the same year)	90% by 2027 (equivalent to up to 45 million people globally in the 5-year period 2023–2027: up to 30 million household contacts of people with TB and up to 15 million people living with HIV)
Annual funding for universal access to quality prevention, diagnosis, treatment and care for TB	US$ 22 billion by 2027, US$ 35 billion by 2030
Annual funding for TB research	US$ 5 billion by 2027
Availability of new TB vaccines that are safe and effective	Rollout initiated, preferably within 5 years

[1] This indicator is not the same as the SDG indicator for catastrophic health expenditures (see **Box 3**).

TB treatment, health and social benefits for people with TB, and TPT; funding for the delivery of TB-related health services and TB research; and the availability of new TB vaccines that are safe and effective. The funding targets were informed by the Stop TB Partnership's *Global Plan to End TB, 2023–2030 (15)*.

Box 2. The End TB Strategy at a glance

VISION	**A WORLD FREE OF TB — zero deaths, disease and suffering due to TB**			
GOAL	**END THE GLOBAL TB EPIDEMIC**			
INDICATORS	MILESTONES		TARGETS	
	2020	2025	2030	2035
Percentage reduction in the absolute number of TB deaths[a] (compared with 2015 baseline)	35%	75%	90%	95%
Percentage reduction in the TB incidence rate (compared with 2015 baseline)	20%	50%	80%	90%
Percentage of TB-affected households facing catastrophic total costs due to TB[b] (level in 2015 unknown)	0%	0%	0%	0%

PRINCIPLES

1. Government stewardship and accountability, with monitoring and evaluation
2. Strong coalition with civil society organizations and communities
3. Protection and promotion of human rights, ethics and equity
4. Adaptation of the strategy and targets at country level, with global collaboration

PILLARS AND COMPONENTS

1. INTEGRATED, PATIENT-CENTRED CARE AND PREVENTION

A. Early diagnosis of TB including universal drug-susceptibility testing, and systematic screening of contacts and high-risk groups
B. Treatment of all people with TB including drug-resistant TB, and patient support
C. Collaborative TB/HIV activities, and management of comorbidities
D. Preventive treatment of persons at high risk, and vaccination against TB

2. BOLD POLICIES AND SUPPORTIVE SYSTEMS

E. Political commitment with adequate resources for TB care and prevention
F. Engagement of communities, civil society organizations, and public and private care providers
G. Universal health coverage policy, and regulatory frameworks for case notification, vital registration, quality and rational use of medicines, and infection control
H. Social protection, poverty alleviation and actions on other determinants of TB

3. INTENSIFIED RESEARCH AND INNOVATION

I. Discovery, development and rapid uptake of new tools, interventions and strategies
J. Research to optimize implementation and impact, and promote innovations

[a] This indicator is for the combined total of TB deaths in HIV-negative and HIV-positive people. Deaths from TB among people with HIV are officially classified as deaths caused by HIV/AIDS, with TB as a contributory cause.
[b] This indicator is not the same as the SDG indicator for catastrophic health expenditures. See **Box 3** for further explanation.

TABLE 2

Highlights of commitments and requests at the second UN high-level meeting on TB in 2023

a) Commitments

TOPIC OR THEME	COMMITMENT
Provide comprehensive care to all people with TB	Strengthen the provision of comprehensive care for all people with TB, with particular attention to people who are vulnerable or in vulnerable situations (e.g. people with HIV, people with TB-associated disabilities, older people, migrants, refugees, internally displaced people, and pregnant and lactating women), using specific models of care such as nutritional, mental health and psychosocial support, social protection, rehabilitation and palliative care
	Scale-up comprehensive efforts to close longstanding gaps in the prevention, diagnosis, treatment and care of children
Address the crisis of drug-resistant TB	Work towards the achievement of universal, equitable and affordable access to WHO-recommended diagnostics and drug susceptibility tests, and all-oral shorter-duration treatment regimens for people with drug-resistant TB, complemented by monitoring and management of side-effects, together with care and support to improve treatment outcomes
Build on interlinkages across the global health agendas of TB, UHC and PPPR, to strengthen the TB response	Establish TB services as essential elements of national and global strategies to advance UHC, address antimicrobial resistance and strengthen PPPR
	Integrate systematic screening, prevention, treatment and care of TB, and related health conditions, within primary health care, including community-based health services
	Invest in public health infrastructure and the health workforce
Address TB during health and humanitarian emergencies	Safeguard TB services as essential health services during humanitarian and health emergencies
Strengthen the engagement of civil society and communities affected by TB	Intensify national efforts to create enabling legal and social policy frameworks to combat inequalities, and to eliminate all forms of TB-related stigma, discrimination and other human rights barriers and violations
	Strengthen the meaningful engagement of parliaments, civil society, and TB-affected local communities, including young people and women, in all aspects of the TB response, to ensure equitable and people-centred access to TB services, with increased and sustained investments, especially in community initiatives
Enable and strengthen TB research	Create an enabling environment for TB research and innovation across Member States and partners
	Strengthen research capacity and collaboration through TB research platforms and networks across the public and private sectors, academia and civil society
	Accelerate the research, development and roll-out of safe, effective, affordable and accessible vaccines, preferably within the next 5 years, including through leveraging global collaboration mechanisms and WHO initiatives such as the accelerator council for new TB vaccines
Promote access to affordable medicines	Promote equitable access to affordable, safe, effective and quality medicines, such as generics, vaccines, diagnostics and health technologies, including through the Stop TB Partnership/Global Drug Facility, to ensure availability and access to quality-assured and affordable commodities recommended by WHO
Strengthen multisectoral accountability	Support the WHO multisectoral accountability framework for TB by strengthening high-level multisectoral accountability and review mechanisms, in line with national contexts, defining the roles and responsibilities of relevant sectors and stakeholders with the meaningful engagement of people and communities affected by TB
	Develop and implement ambitious, costed national TB strategic plans or health strategies with a multisectoral approach

b) Requests

TOPIC OR THEME	REQUEST
Role of WHO	WHO is requested to continue providing global leadership to support Member States to build a resilient response to TB as an integral part of the UHC agenda, and to also address the drivers and determinants of the epidemic, including in the context of health and humanitarian emergencies, with multisectoral engagement, the provision of normative guidance and technical support, and through monitoring, reporting and review of progress, and by advancing the TB research and innovation agenda
Report and review progress	The UN Secretary-General, with the support of WHO, is requested to report, as part of his annual SDG report, on the global effort to end TB
	The UN Secretary-General, with the support of WHO, is requested to present a report to the UN General Assembly in 2027, on the progress achieved towards realizing the commitments made in the 2023 political declaration on TB
	Heads of state and government are requested to undertake a comprehensive review of progress at a UN high-level meeting on TB in 2028

HIV: human immunodeficiency virus; PPPR: pandemic preparedness, prevention and response; SDG: Sustainable Development Goal; UHC: universal health coverage; UN: United Nations; WHO: World Health Organization.

3. Main findings and messages

The main findings and messages cover (in order) the following topics:

- estimates of TB disease burden,[1] including the number of people falling ill with TB (incident cases) and drug-resistant TB, the number of deaths caused by TB, progress towards End TB Strategy milestones and targets for reductions in TB incidence and mortality, and data required to strengthen estimation of TB disease burden in the years up to 2030;
- TB diagnosis and treatment, including case notifications of people newly diagnosed with TB, diagnostic testing for TB, knowledge of HIV status among people newly diagnosed with TB, the coverage of TB diagnosis and treatment, provision of antiretroviral therapy (ART) to people diagnosed with TB who are living with HIV, and treatment success rates;
- diagnosis and treatment of people with drug-resistant TB;
- TB prevention and screening, with particular attention to TPT;
- funding for TB services;
- UHC and results from national surveys of costs faced by TB-affected households;
- multisectoral action and accountability, with particular attention to social protection, determinants of TB and the WHO multisectoral accountability framework for TB (MAF-TB); and
- TB research, with particular attention to the latest status of the pipelines for new TB diagnostics, drugs and vaccines.

For most of these topics, estimates and data are for the period 2010–2024.

New content compared with previous editions of the report includes:

- assessment of the impact of 2025 cuts to international donor funding on TB services using data reported to WHO in 2025, with particular attention to countries that reported receiving grants from the Global Fund and bilateral funding from the United States Agency for International Development (USAID) in 2024;
- results from the third (2023) national TB prevalence survey in Cambodia, which show impressive reductions in TB disease burden since the first survey in 2002;
- assessment of the coverage of social protection using data published by the International Labour Organization (ILO), with particular attention to high TB burden countries;
- a listing of countries estimated to have reached the first milestones of the End TB Strategy for reductions in TB incidence and mortality between 2020 and 2024; and
- a categorization of all countries according to their estimated level of TB incidence in 2024, and a corresponding list of countries that have changed category (up or down) since 2015 (the baseline year of the End TB Strategy).

It is also important to highlight that during the World Health Assembly in May 2025, Indonesia was reassigned to the WHO Western Pacific Region, having previously been part of the South-East Asia Region.[2] In all analyses of trends for WHO regions, Indonesia is included in the WHO Western Pacific Region for the whole of the time series.

Number of people developing TB

Falling globally, COVID-related increases reversed

Globally, the number of people falling ill with TB (incident cases) decreased in 2024 for the first time since 2020, following 3 consecutive years of increases (2021–2023) due to COVID-related disruptions to TB diagnosis and treatment (**Fig. 1**).[3,4] The total of 10.7 million (95% UI: 9.9–11.5 million) in 2024 was a small (1%) reduction from 10.8 million (95% UI: 10.0–11.6 million) in 2023. It remained above the level of 10.3 million (95% UI: 9.6–11.0 million) in 2020.

[1] Updates to methods used to produce estimates of TB disease burden for this report are summarized in **Annex 4**.

[2] In accordance with resolution WHA78.25 (2025), which was adopted on 27 May 2025.

[3] Country or region-specific models have been used to produce estimates of TB incidence and mortality during the period 2020–2024, for the subset of countries that experienced considerable disruptions to TB diagnosis and treatment in 2020 or 2021 (defined as TB case notifications that fell by 10% or more in either 2020 or 2021). Reductions in notifications were assumed to reflect reductions in access to diagnosis and treatment (and some level of underreporting), causing an increase in the number of people with undiagnosed TB and in turn both an increase in the number of deaths from TB and increased transmission of infection. With a lag time, increases in transmission result in an increase in the number of people developing TB disease (i.e. TB incidence). Further details are provided elsewhere *(14, 16, 17)*.

[4] The major contributors to the global increase between 2020 and 2023 were (in order of the absolute size of their contribution) Indonesia, the Philippines and Myanmar.

FIG. 1

Global trends in the estimated number of incident TB cases (left) and the incidence rate (right), 2010–2024

The horizontal dashed line shows the 2025 milestone of the End TB Strategy, which is a 50% reduction in the TB incidence rate between 2015 and 2025. Shaded areas represent 95% uncertainty intervals.

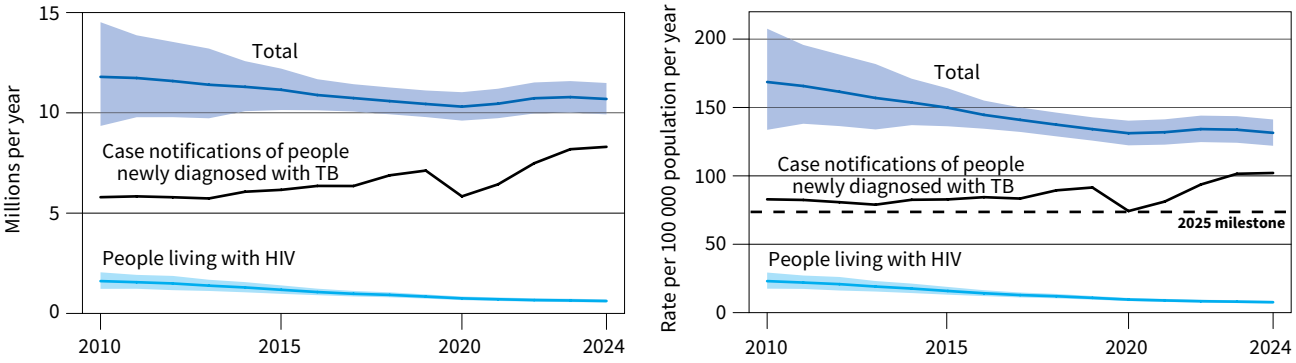
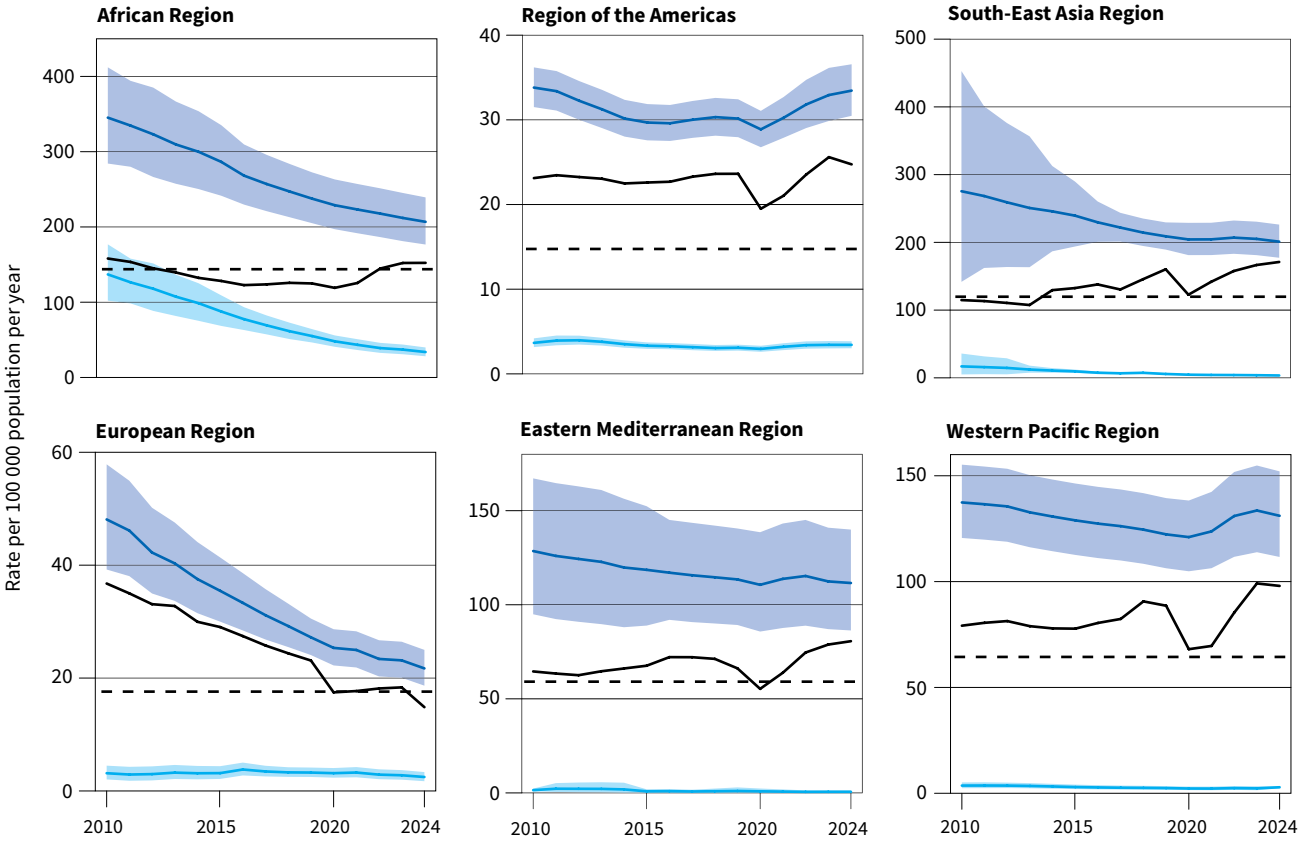


FIG. 2

Trends in estimated TB incidence rates by WHO region, 2010–2024

The overall TB incidence rate is shown in **blue** and the incidence rate among people living with HIV is shown in **light blue**. The **black** solid lines show case notifications of people newly diagnosed with TB, for comparison with estimates of the overall incidence rate. Shaded areas represent 95% uncertainty intervals. The horizontal dashed line shows the 2025 milestone of the End TB Strategy, which is a 50% reduction in the TB incidence rate between 2015 and 2025. Indonesia is included in the WHO Western Pacific Region for the whole time series.



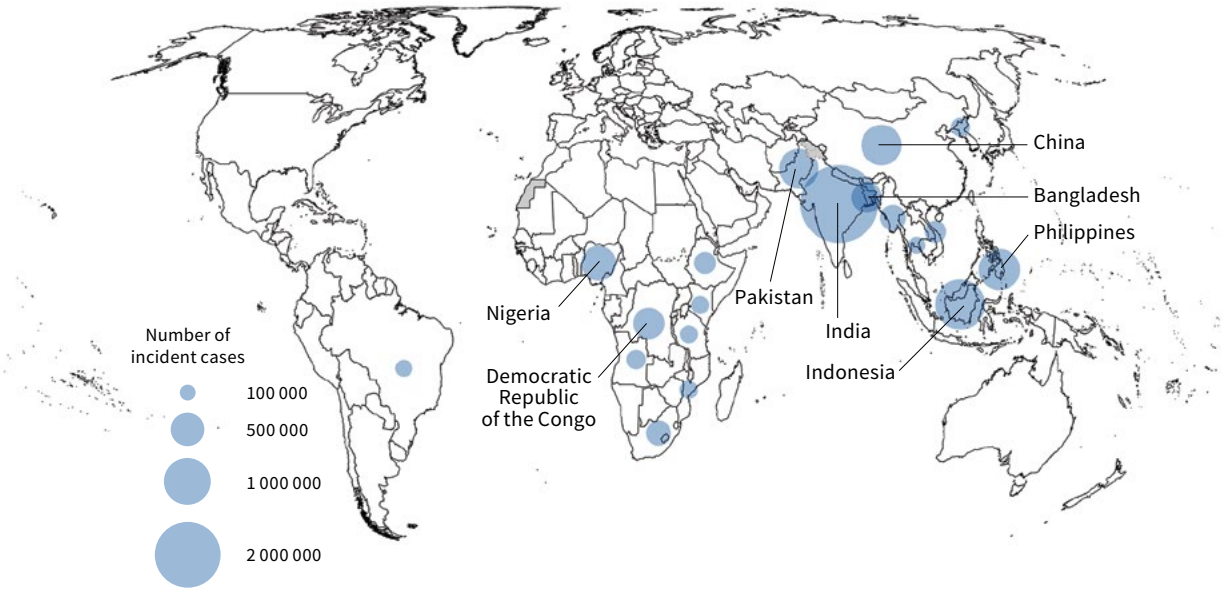
There was a larger decline (1.7%) in the global TB incidence rate (new cases per 100 000 population per year)[1] between 2023 and 2024 (**Fig. 1**, right panel). At 131 per 100 000 population (95% UI: 122–141) in 2024, this was back to the level of 2020.

At regional level, trends in TB incidence rates vary (**Fig. 2**). In 2024, an upward trend in 2020–2023 was reversed in the WHO Western Pacific Region. The rate

[1] The report uses the latest population estimates published by the UN Population Division (see **Annex 2**).

FIG. 3

Estimated number of incident TB cases for countries with at least 100 000 incident cases, 2024[a]

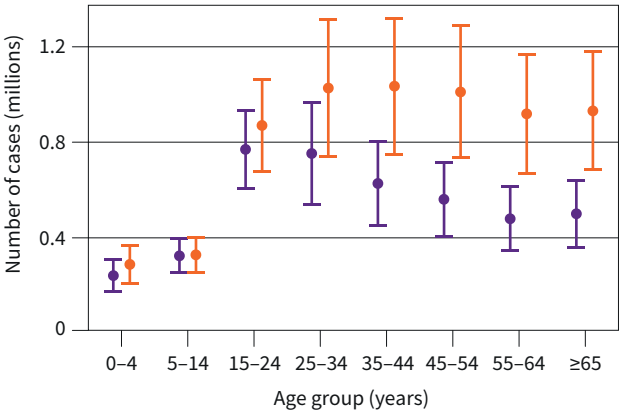


[a] The labels show the eight countries that accounted for two thirds of the global number of people estimated to have developed TB in 2024.

FIG. 4

Global estimates of TB incidence (absolute numbers) disaggregated by age group and sex (female in purple; male in orange), 2024

Dots and error bars show best estimates and 95% uncertainty intervals, respectively.



decreased for a second consecutive year in the WHO Eastern Mediterranean and South-East Asia regions, reinforcing the 2023 reversal of a 2020–2022 COVID-related upward trend. In the WHO European Region, the TB incidence rate has been falling since 2022. In the WHO African Region, the decline in the TB incidence rate that has been sustained for many years continued in 2024.[1] The most concerning trend was in the WHO Region of the Americas, where the incidence rate increased for the fourth consecutive year, reflecting the estimated impact of shortfalls in TB case detection in 2020 and a still incomplete recovery in 2024.

Geographically, most people who developed TB in 2024 were in the WHO regions of South-East Asia (34%), the Western Pacific (27%) and Africa (25%),[2] with smaller proportions in the Eastern Mediterranean (8.6%), the Americas (3.3%) and Europe (1.9%).[3] The 30 high TB burden countries[4] accounted for 87% of all estimated incident cases worldwide, with eight of these countries (**Fig. 3**) accounting for two thirds (67%) of the global total: India (25%), Indonesia (10%), the Philippines (6.8%), China (6.5%), Pakistan (6.3%), Nigeria (4.8%), the Democratic Republic of the Congo (3.9%) and Bangladesh (3.6%). The top five countries accounted for 55% of the global total.

TB can affect anyone, regardless of age or sex (**Fig. 4**). The highest incidence is in adult men (aged ≥15 years[5]), with an estimated 5.8 million cases (95% UI: 4.2–7.4 million) in 2024, equivalent to 54% of the estimated total. There were an estimated 3.7 million cases (95% UI: 2.7–4.7 million) among adult women (aged ≥15 years), equivalent to 35% of the estimated total; and 1.2 mil-

[1] In terms of TB case notifications, disruptions to TB diagnosis and treatment during the COVID-19 pandemic were negligible in the WHO African Region.

[2] Regional shares for the WHO South-East Asia and Western Pacific regions differ from those published in previous reports, following the reassignment of Indonesia to the WHO Western Pacific Region (see above).

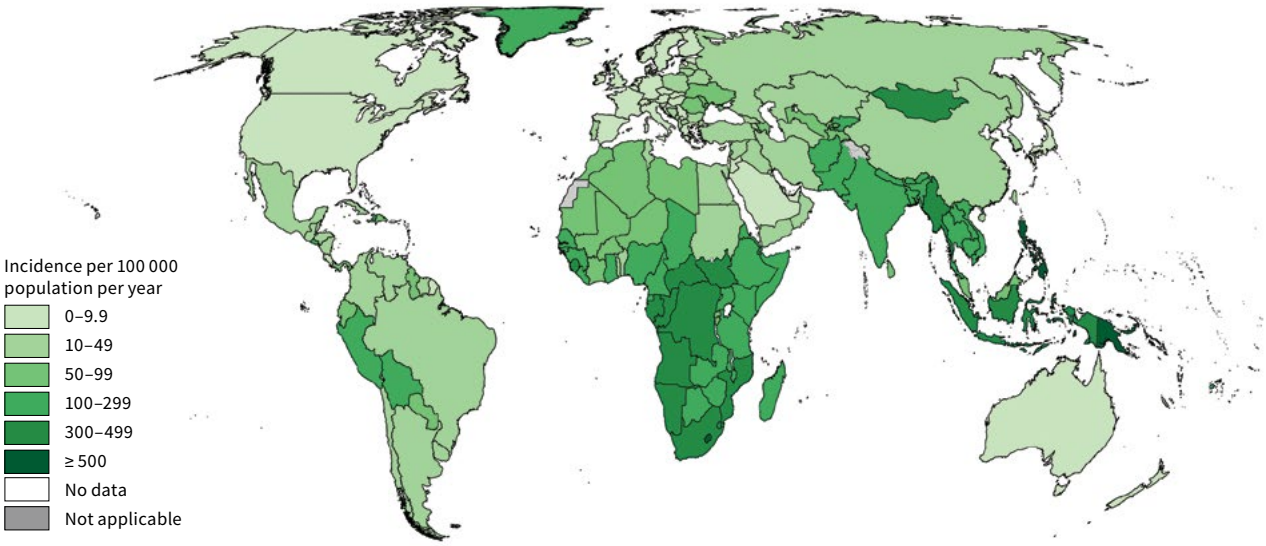
[3] Regional percentages do not sum to 100 because of rounding.

[4] See **Annex 3**.

[5] The age groups for which WHO collects TB case notification data and produces estimates of disease burden are 0–4, 5–14, 15–24, 25–34, 35–44, 45–54, 55–64 and ≥65 years.

FIG. 5

Estimated TB incidence rates at country level, 2024



lion cases (95% UI: 0.9–1.5 million) among children and young adolescents (aged <15 years), equivalent to 11% of the estimated total. The higher share of TB cases among men is consistent with evidence from national TB prevalence surveys, which show that the burden of TB disease is higher among men than women *(18)*.

Among all incident cases of TB in 2024, 5.8% were people living with HIV, a decrease from 6.1% in 2023. This proportion has been steadily declining for many years, following a peak at 17% in 2000. The proportion of people with a new episode of TB (incident cases) who were living with HIV was highest in countries in the WHO African Region, exceeding 50% in parts of southern Africa.

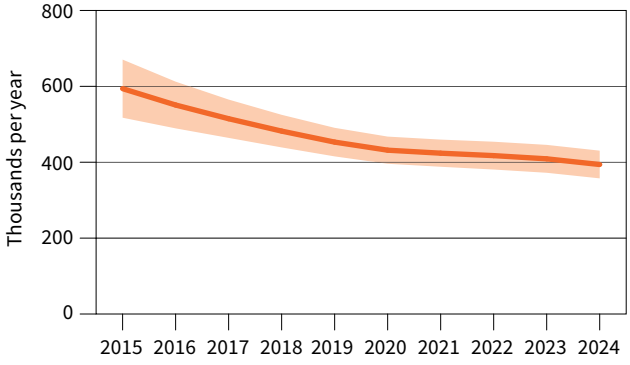
The severity of national TB epidemics – in terms of the number of incident (new) TB cases per 100 000 population per year – varies widely among countries, from less than 10 to more than 500 (**Fig. 5**). In 2024, 62 countries had a low incidence of TB (<10 new cases per 100 000 population per year). Most of these countries were in the WHO Region of the Americas and the European Region, with the remainder in the Eastern Mediterranean and Western Pacific regions. The highest rates were mainly found in countries in the WHO African Region, where 12 countries had a rate of more than 300. Most of the 30 high TB burden countries had a rate of 150–400, but three had a rate of more than 500: Lesotho, Papua New Guinea and the Philippines. In the 10-year period 2015–2024, 61 countries moved between the incidence rate categories shown in **Fig. 5**; 52 progressed to a lower category and nine moved to a higher category.[1]

[1] Further details are provided in **Annex 3** (see **Table A3.3**).

FIG. 6

Global trend in the estimated number of people who developed MDR/RR-TB (incident cases), 2015–2024

The shaded area represents the 95% uncertainty interval.



Number of people developing drug-resistant TB

Falling globally since 2015

Drug-resistant TB continues to be a public health threat. Resistance to rifampicin – the most effective first-line anti-TB drug – is of greatest concern. TB that is resistant to rifampicin and isoniazid is defined as multidrug-resistant TB (MDR-TB). Both MDR-TB and rifampicin-resistant TB (RR-TB) require treatment with second-line drugs.

Globally, the estimated annual number of people who developed MDR-TB or RR-TB (MDR/RR-TB) has been falling since 2015 (**Fig. 6**). The estimated number in 2024 was 390 000 (95% UI: 360 000–430 000). In 2024,

FIG. 7

Global trend in the estimated percentage of people with TB who had MDR/RR-TB, 2015–2024

The shaded area represents the 95% uncertainty interval.

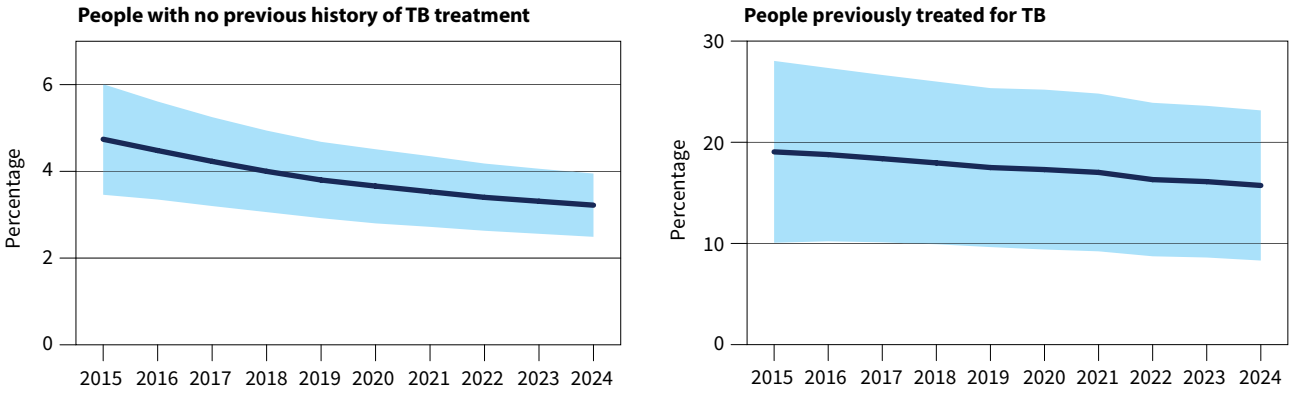
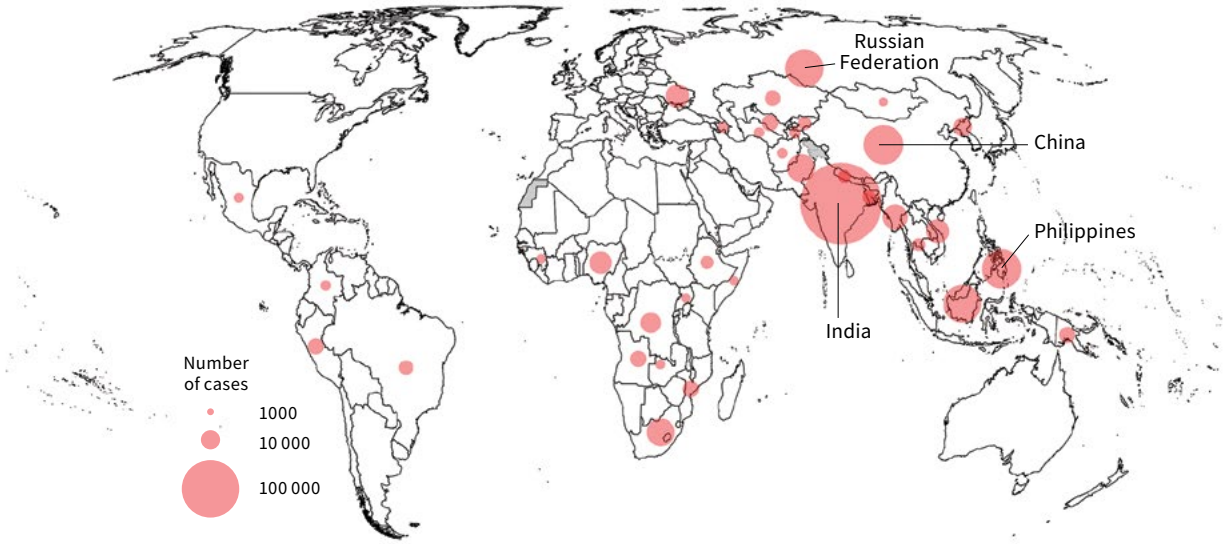


FIG. 8

Estimated number of people who developed MDR/RR-TB (incident cases) for countries with at least 1000 incident cases, 2024[a]



[a] The labels show the four countries that accounted for more than half of the global number of people estimated to have developed MDR/RR-TB in 2024.

the estimated proportion of people with a first episode of TB (new cases) who had MDR/RR-TB was 3.2% (95% UI: 2.5–3.9%), a decrease from 4.7% (95% UI: 3.5–6.0%) in 2015 (**Fig. 7**). The estimated proportion among people with a previous history of TB treatment was much higher, at 16% (95% UI: 8.3–23%) in 2024 (**Fig. 7**). This was down from 19% (95% UI: 10–28%) in 2015.

Four countries accounted for more than half of the global number of people estimated to have developed MDR/RR-TB in 2024: India (32%), China (7.1%), the Philippines (7.1%) and the Russian Federation (6.7%) (**Fig. 8**).

The highest proportions of people with TB who had MDR/RR-TB (>50% of previously treated cases in 2023) were found in Eastern Europe and Central Asia.[1]

[1] Further details are provided in the report webpages (section 1.3).

Deaths caused by TB

Continued global fall in 2024 after 2020–2021 increases

The estimated global number of deaths caused by TB fell for a third consecutive year in 2024, continuing the reversal of increases that occurred during the worst period of COVID-related disruptions to TB diagnosis and treatment in 2020 and 2021 (**Fig. 9**).[2]

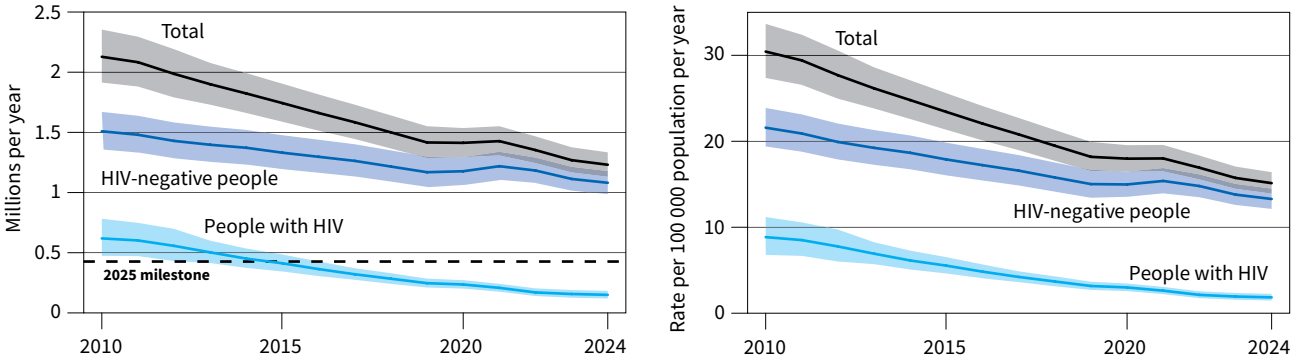
Globally in 2024, TB caused an estimated 1.23 million

[2] People with TB who remain undiagnosed and untreated have a higher risk of death than those started on treatment. The impact of disruptions to TB diagnosis and treatment is more immediate for TB mortality and more delayed for TB incidence. Similarly, the impact of recoveries in access to TB diagnosis and treatment is more immediate for TB mortality and more delayed for TB incidence.

FIG. 9

Global trends in the estimated number of deaths caused by TB (left) and the TB mortality rate (right),[a] 2010–2024

The horizontal dashed line shows the 2025 milestone of the End TB Strategy, which is a 75% reduction in the total number of TB deaths between 2015 and 2025. Shaded areas represent 95% uncertainty intervals.



[a] Deaths from TB among people with HIV are officially classified as deaths caused by HIV/AIDS in the International Classification of Diseases, with TB as a contributory cause.

deaths (95% UI: 1.13–1.33 million), including 1.08 million among HIV-negative people (95% UI: 0.99–1.18 million) and 150 000 among people with HIV (95% UI: 120 000–183 000).[1] This total was down from 1.27 million (95% UI: 1.17–1.38 million) in 2023, 1.42 million (95% UI: 1.29–1.55 million) in 2019 (pre-pandemic) and a 42% reduction from 2.13 million (95% UI: 1.91–2.35 million) in 2010. The case fatality rate was 11.5%.[2]

Global trends in the number of deaths caused by TB differ by HIV status (**Fig. 9**, **Fig. 10**). Deaths from TB among HIV-negative people have driven the overall trend, with year-on-year reductions up to 2019 followed by increases in 2020 and 2021,[3] and then declines from 2022 to 2024. Deaths from TB among people with HIV have been declining for many years and by 2024 had fallen 76% compared with 2010.

The latest year for which WHO has published estimates of global deaths by cause is 2021 (**Fig. 11**). In that year, TB was the 10th leading cause of death worldwide and the second leading cause of death from a single infectious agent, after COVID-19. In the WHO African and South-East Asia regions, TB was the fourth and fifth leading cause of death, respectively.[4]

In 2024, a total of 70 000 deaths from COVID-19 were officially reported to WHO *(19)*. This number does not account for late reporting or underreporting,[5] but is nevertheless far below the estimated number of deaths from TB.

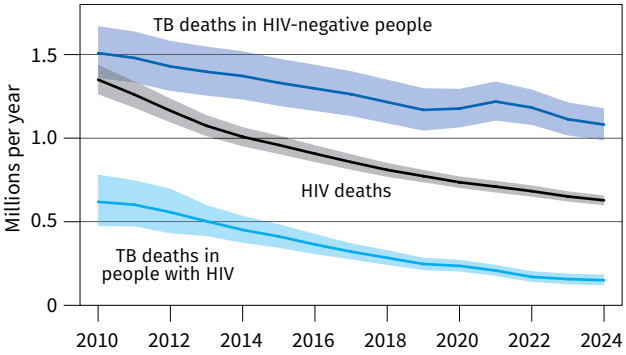
The global number of deaths officially classified as caused by TB in 2024 was almost double the 630 000 (95% UI: 600 000–660 000) caused by HIV/AIDS *(20)*.

Regional trends in the number of TB deaths vary (**Fig. 12**). The pattern of reductions up to 2019, followed by increases during the COVID-19 pandemic and

FIG. 10

Global trends in the estimated number of deaths caused by TB and HIV (in millions), 2010–2024[a,b]

Shaded areas represent 95% uncertainty intervals.



[a] For HIV/AIDS, the latest estimates of the number of deaths in 2024 that have been published by UNAIDS are available at http://www.unaids.org/en/ (accessed 31 July 2025). For TB, the estimates for 2024 are those published in this report.

[b] Deaths from TB among people with HIV are officially classified as deaths caused by HIV/AIDS in the International Classification of Diseases, with TB as a contributory cause.

[1] Deaths from TB among people with HIV are officially classified as deaths from HIV/AIDS. Therefore, a clear distinction between deaths among HIV-negative people and those among people with HIV is made in **Fig. 9**, **Fig. 10** and **Fig. 11**.

[2] This is approximated as the number of deaths in 2024 divided by the number of incident cases in 2024.

[3] The estimated number of deaths caused by TB among HIV-negative people was 1.18 million (95% UI: 1.06–1.30 million) in 2020 and 1.22 million (95% UI: 1.11–1.34 million) in 2021.

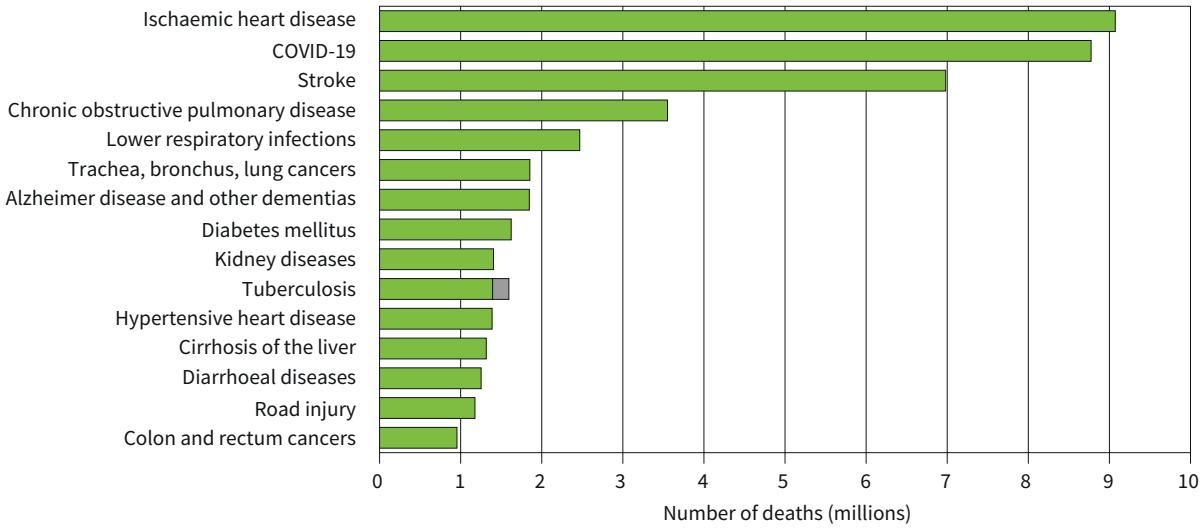
[4] Here, estimates for the WHO South-East Asia Region include Indonesia.

[5] Data for 2024 were reported by 106 countries and areas – about half the number that reported in previous years.

FIG. 11

Top 15 causes of death worldwide in 2021[a,b]

Deaths from TB among people with HIV are shown in grey.



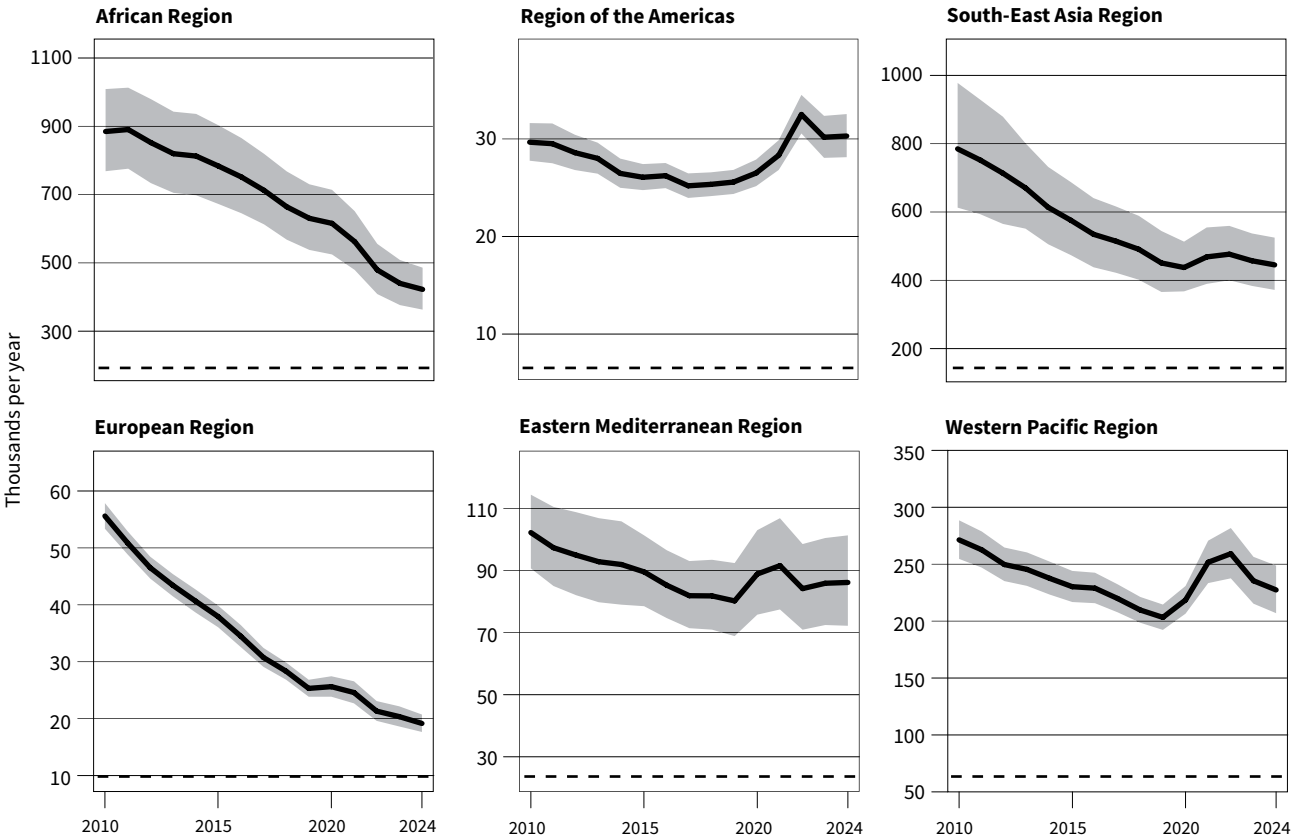
[a] This is the latest year for which estimates for all causes are currently available. See WHO estimates, available at https://www.who.int/data/gho/data/themes/mortality-and-global-health-estimates/ghe-leading-causes-of-death.

[b] Deaths from TB among people with HIV are officially classified as deaths caused by HIV/AIDS in the International Classification of Diseases, with TB as a contributory cause.

FIG. 12

Trends in the estimated absolute number of TB deaths (HIV-negative people and people with HIV[a]) by WHO region, 2010–2024

Shaded areas represent 95% uncertainty intervals. The horizontal dashed line shows the 2025 milestone of the End TB Strategy, which is a 75% reduction in the total number of deaths caused by TB between 2015 and 2025. Indonesia is included in the WHO Western Pacific Region for the whole time series.



[a] Deaths from TB among people with HIV are officially classified as deaths caused by HIV/AIDS in the International Classification of Diseases, with TB as a contributory cause.

then the resumption of declines starting in either 2022 or 2023, is evident in the WHO European, South-East Asia and Western Pacific regions. In the WHO Eastern Mediterranean Region, an increase in 2020 and 2021 was followed by a decline in 2022 and then by a small increase between 2022 and 2024. In the WHO Region of the Americas, the estimated number of deaths caused by TB peaked in 2022, declined in 2023 and stabilized in 2024. In the WHO African Region, the estimated number of deaths caused by TB has fallen year on year since 2011.

Patterns in the 30 high TB burden countries vary, but most had a declining or flat trend between 2023 and 2024.[1]

In 2024, 69% of the global number of deaths caused by TB among HIV-negative people occurred in the WHO African and South-East Asia regions; India alone accounted for 28% of deaths globally. The WHO African and South-East Asia regions accounted for 71% of the combined total number of deaths caused by TB among people with and without HIV; India accounted for 25% of such deaths.

Of the global number of deaths caused by TB among HIV-negative people in 2024, an estimated 537 000 (95% UI: 368 000–705 000) were adult men (aged ≥15 years), equivalent to 50% of the total; 372 000 (95% UI: 243 000–502 000) were adult women (aged ≥15 years), equivalent to 34% of the total; and 172 000 (95% UI: 107 000–236 000) were children and young adolescents (aged <15 years), equivalent to 16% of the total.

Of the global deaths from TB among people with HIV, an estimated 78 000 (95% UI: 39 000–116 000) were adult men (51.9% of the total), 70 000 (95% UI: 26 000–113 000) were adult women (46.6% of the total) and 2300 (95% UI: 1600–2900) were children and young adolescents (1.5% of the total).

Progress towards milestones and targets for reducing TB disease burden

Mostly off track, some success stories

The first End TB Strategy milestones for reductions in TB disease burden were a 35% reduction in the total number of deaths caused by TB (including those among people with HIV[2]) and a 20% reduction in the TB incidence rate by 2020, compared with levels in 2015; the second milestones, for 2025, were a 75% reduction in deaths from TB and a 50% reduction in the TB incidence rate (**Box 2**). The 2030 targets are an 80% reduction in the TB incidence rate and a 90% reduction in the number of TB deaths, compared with 2015.

The 2025 milestones are far away globally and in most parts of the world, with reversals of progress during the COVID-19 pandemic making them much harder to achieve. Nonetheless, large reductions in TB incidence and mortality have been achieved in some regions and countries.

Globally, the net reduction in the TB incidence rate from 2015 to 2024 was 12% – about one quarter of the way to the End TB Strategy milestone of a 50% reduction by 2025 (**Fig. 1**, right panel).

At the level of WHO regions, progress in reducing the TB incidence rate since 2015 varies considerably (**Fig. 2**). Two WHO regions have made substantial progress: the European Region, with a net reduction of 39% by 2024; and the African Region, with a reduction of 28%.[3] There were smaller net declines in two other WHO regions: South-East Asia (16%) and the Eastern Mediterranean (5.9%). In the two other WHO regions, there were net increases of 1.7% in the Western Pacific and 13% in the Region of the Americas.[4]

Progress in reducing the TB incidence rate at country level is highly variable (**Fig. 13**). By 2024, a total of 101 countries, mostly in the WHO African and European regions, had achieved estimated reductions of at least 20% since 2015, thus reaching or surpassing the first (2020) milestone of the End TB Strategy, albeit with a delay of up to 4 years (**Table 3**).[5] A total of 30 countries are estimated to have achieved reductions of at least 50% between 2015 and 2024, surpassing the 2025 milestone of the End TB Strategy. At the other extreme, there are 37 countries where the TB incidence rate in 2024 was estimated to be more than 5% higher than in 2015. Many of these countries are in the WHO Region of the Americas, but they also include three high TB burden countries in Asia: Indonesia, Myanmar and the Philippines.

Globally, the net reduction in the total number of deaths caused by TB between 2015 and 2024 was 29% (**Fig. 9**, left panel), still far from the 2025 milestone of a 75% reduction.

At the level of WHO regions, as with reductions in TB incidence rates, progress in achieving reductions in the number of deaths caused by TB since 2015 varies (**Fig. 12**). Two WHO regions have made substantial progress: the European Region, with a net reduction of 49% by 2024; and the African Region, with a reduction of 46%.[6] Following major reversals of progress during the COVID-19 pandemic, the net decline by 2024 compared with 2015 was 23% in the WHO South-East Asia Region,

[1] Time series for each of the 30 high TB burden countries are displayed in graphics provided on the report webpages and in the report app.

[2] Officially classified as deaths from HIV/AIDS, with TB as a contributory cause.

[3] These are the only regions to have surpassed the first milestone of the End TB Strategy.

[4] Estimates of changes in TB incidence and mortality since 2015 in the WHO South-East Asia and Western Pacific regions differ from those published in previous reports, following the reassignment of Indonesia to the Western Pacific Region (see above).

[5] The analysis here is restricted to countries (excluding "areas").

[6] These are the only regions to have surpassed the first milestone of the End TB Strategy.

FIG. 13

Change (%) in the estimated TB incidence rate (new cases per 100 000 population per year) at country level, 2024 compared with 2015

The first milestone of the End TB Strategy was a 20% reduction by 2020, compared with 2015; the second milestone is a 50% reduction by 2025, compared with 2015. The last two categories (decrease 20–49%, and decrease ≥50%) distinguish the countries that have made the most progress towards the second milestone of the End TB Strategy.

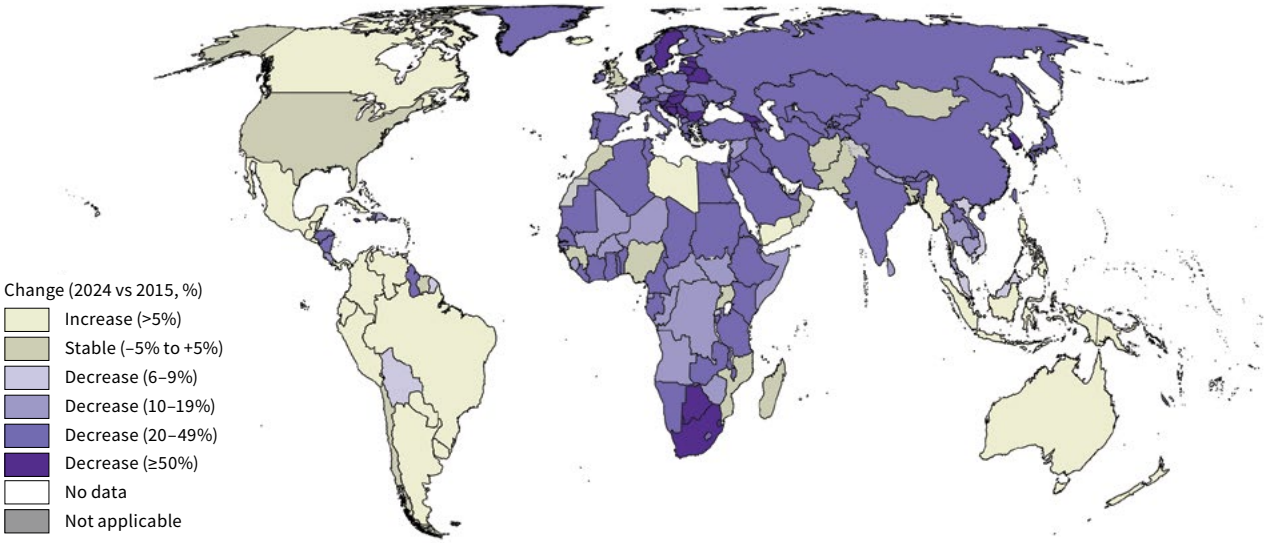
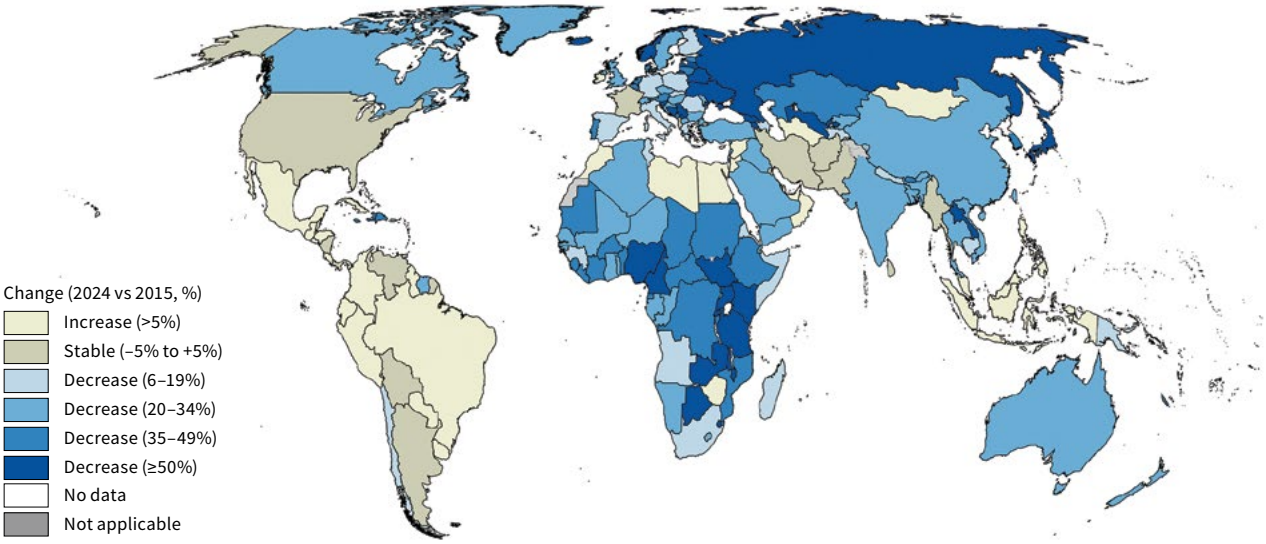


FIG. 14

Change (%) in the estimated number of deaths caused by TB among HIV-negative people and people with HIV at country level, 2024 compared with 2015

The first milestone of the End TB Strategy was a 35% reduction by 2020, compared with 2015; the second milestone is a 75% reduction by 2025, compared with 2015. The last two categories (decrease 35–49%, and decrease ≥50%) distinguish the countries that have made the most progress towards the second milestone of the End TB Strategy.



3.8% in the Eastern Mediterranean Region and 1.2% in the Western Pacific Region. In the WHO Region of the Americas, the estimated number of deaths caused by TB in 2024 was much higher than in 2015 (+16%). Nonetheless, the absolute number of deaths in 2024 remained small (about 30 000) while the TB mortality rate was comparable to that in the WHO European Region and much lower than in the other four WHO regions.[1]

Progress in reducing the number of deaths caused by TB at country level is highly variable (**Fig. 14**). By 2024, a total of 65 countries had achieved net reductions of at least 35% since 2015, thus reaching or surpassing the first (2020) milestone of the End TB Strategy, albeit with a delay of up to 4 years (**Table 3**). These countries are mostly in the WHO African and European regions. Several high TB burden countries in the WHO African Region have achieved reductions of 50% or more (e.g. Kenya, Nigeria, Uganda, the United Republic of Tanzania and Zambia). In the WHO European Region, one of the global TB watchlist countries (the Russian Federation) has achieved a reduction of 61%.[2] At the other extreme, there are 45 countries where the number of deaths caused by TB in 2024 was more than 5% above the level of 2015, most noticeably in the WHO Region of the Americas.

A total of 49 countries reached both of the first milestones of the End TB Strategy between 2020 and 2024 (**Table 3**).

Estimation of TB disease burden

Repeat surveys and strengthened surveillance needed for 2030 targets assessment

Data sources used to produce estimates of TB incidence in the period 2010–2024 include results from population-based surveys of the prevalence of TB disease (used for 29 countries that account for about two thirds of global TB incidence), results from national TB inventory studies (used for 10 countries that collectively account for about 18% of global TB incidence),[3] mortality data (used for 1 country that accounts for 1.0% of global TB incidence), case notification data (available for all countries) and values of the UHC SCI (available for almost all countries).[4] For 26 countries with the biggest absolute reductions in TB notifications during the COVID-19 pandemic that were a clear departure from historic trends, estimates of TB incidence in 2020–2024 were based on these data sources in combination with country or region-specific dynamic models *(14, 16, 17)*.[5]

The main data source used to produce estimates of TB mortality in the period 2010–2024 is cause-of-death data from national or sample vital registration (VR) systems. These data are available for 123 countries that account for 55% of the global number of deaths caused by TB among HIV-negative people.[6]

In the years leading up to the 2030 target year of the End TB Strategy and SDG deadline, repeat national TB prevalence surveys, national TB inventory studies, up-to-date cause-of-death data from national or sample VR systems of high quality and coverage and improvements in the quality and coverage of TB notification data are needed to strengthen burden estimation, with the goal of ensuring that assessment of progress made between the baseline year of 2015 and the target year of 2030 is as robust as possible. WHO is coordinating global efforts to achieve this goal, under the umbrella of the WHO Global Task Force on TB Impact Measurement *(21, 22)*.

There are two excellent examples of recent studies to measure TB disease burden. The first example is a repeat national TB inventory study that was completed in Indonesia in 2023. This showed a big reduction in the level of underreporting of people newly diagnosed with TB compared with the first study in 2017, and produced estimates of TB incidence for 2023 that were consistent with existing model-based estimates *(23)*.

The second example is a national TB prevalence survey that was implemented in Cambodia in 2023. Cambodia is the first country to complete three national TB prevalence surveys in the 21st century (after previous surveys in 2002 and 2011) and the first to complete a survey after the COVID-19 pandemic. The three surveys show reductions in TB prevalence of about 50% per decade between 2002 and 2023 (**Fig. 15**).[7]

As of September 2025, national TB inventory studies were in the planning stage in Mongolia, the Philippines, South Africa and Viet Nam. Twelve countries were actively interested in implementing a repeat national

[1] The TB mortality rate among HIV-negative people in the WHO Region of the Americas was 2.1 per 100 000 population in 2024, compared with 25 in the African Region, 1.6 in the European Region, 10 in the Eastern Mediterranean Region, 24 in the South-East Asia Region and 9.5 in the Western Pacific Region.

[2] Alongside the list of 30 high TB burden countries for 2021–2025, WHO established a global TB watchlist (**Annex 3**). The watchlist comprises the three countries that transitioned out of the previous list for 2016–2020: Cambodia, the Russian Federation and Zimbabwe.

[3] These measure the level of underreporting of people diagnosed with TB in official TB case notification data; if certain conditions are met, capture–recapture methods can be used to estimate TB incidence.

[4] Further details about the data sources and analytical methods used to produce estimates of TB incidence are provided in the report webpages (section 1.1) and a technical appendix.

[5] These methods were explained in more detail in the 2022 and 2023 editions of this report *(14, 17)*; see, in particular, Box 3 in the 2022 report and Box 4 of the 2023 report.

[6] Further details about the data sources and analytical methods used to produce estimates of TB mortality are provided in the report webpages (section 1.2) and a technical appendix.

[7] The 2023–2024 national TB prevalence survey in Cambodia is one of the featured topics of the report webpages; the topic describes, illustrates and discusses the main survey results and lessons learned.

TABLE 3

Countries that reached the first End TB Strategy milestones for reductions in TB incidence and mortality between 2020 and 2024, by WHO region.

The first milestones were a 20% reduction in the TB incidence rate and a 35% reduction in the number of TB deaths, compared with levels in 2015; the milestones were initially set for 2020 (Box 2). The year in which the milestone was reached is shown.

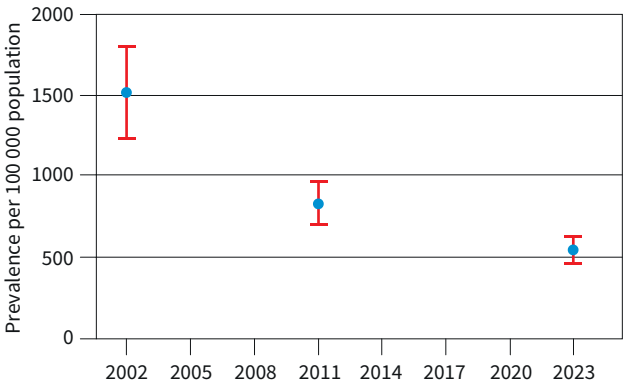
COUNTRY	INCIDENCE	MORTALITY
AFRICAN REGION		
Total number of countries	**27**	**26**
Algeria	2020	
Benin	2020	2022
Botswana	2020	2022
Burkina Faso		2024
Burundi	2020	2022
Cabo Verde	2020	
Cameroon	2020	2022
Central African Republic*		2022
Chad	2022	2023
Comoros	2021	2024
Côte d'Ivoire	2020	2021
Democratic Republic of the Congo*		2022
Equatorial Guinea		2022
Eritrea	2020	
Eswatini	2020	2020
Ethiopia*	2020	2024
Gabon*	2022	
Gambia	2024	
Ghana	2024	
Kenya*	2020	2020
Lesotho*	2020	
Liberia*	2022	2020
Malawi	2020	2020
Mauritania	2020	2022
Mozambique*		2020
Namibia*	2020	
Nigeria*		2022
Rwanda		2022
São Tomé and Principe	2020	2020
Senegal	2024	
Sierra Leone*		2023
South Africa*	2020	
South Sudan		2020
Togo	2020	
Uganda*		2021
United Republic of Tanzania*	2020	2020
Zambia*	2021	2021
REGION OF THE AMERICAS		
Total number of countries	**11**	**7**
Antigua and Barbuda	2020	2021
Dominica	2020	2020
Dominican Republic		2020
Grenada	2020	2020
Guyana	2020	
Haiti	2020	2023
Honduras	2020	
Jamaica	2020	2020
Nicaragua	2020	
Saint Kitts and Nevis	2020	
Saint Lucia	2020	2020
Saint Vincent and the Grenadines	2020	
EASTERN MEDITERRANEAN REGION		
Total number of countries	**11**	**1**
Bahrain	2020	
Djibouti	2020	
Egypt	2023	
Iran (Islamic Republic of)	2020	
Iraq	2020	
Jordan	2021	
Kuwait	2020	
Saudi Arabia	2020	
Sudan	2020	2020
Tunisia	2022	
United Arab Emirates	2021	

COUNTRY	INCIDENCE	MORTALITY
EUROPEAN REGION		
Total number of countries	**40**	**21**
Armenia	2020	2020
Austria	2020	2020
Azerbaijan	2020	
Belarus	2020	2020
Belgium	2023	2020
Bosnia and Herzegovina	2020	2020
Bulgaria	2020	
Croatia	2020	
Denmark	2020	2020
Estonia	2020	2020
Finland	2020	
Georgia	2020	2020
Germany	2020	
Greece	2021	
Hungary	2020	
Iceland		2020
Ireland	2020	
Israel	2020	
Italy	2020	
Kazakhstan	2020	2023
Kyrgyzstan	2020	
Latvia	2020	2020
Lithuania	2020	2020
Montenegro		2024
Netherlands (Kingdom of the)		2020
North Macedonia	2020	
Norway	2020	2022
Poland	2020	
Portugal	2020	2024
Republic of Moldova	2020	
Romania	2020	
Russian Federation*	2020	2020
Serbia	2020	2020
Slovakia	2020	
Slovenia	2020	2020
Spain	2020	
Sweden	2020	
Switzerland	2020	
Tajikistan	2020	
Türkiye	2020	
Turkmenistan	2020	
Ukraine	2020	2020
Uzbekistan	2021	2020
SOUTH-EAST ASIA REGION		
Total number of countries	**3**	**1**
Bhutan	2020	2021
India*	2024	
Maldives	2020	
WESTERN PACIFIC REGION		
Total number of countries	**9**	**9**
China*	2024	
Japan	2020	2023
Lao People's Democratic Republic	2021	2020
Marshall Islands		2024
Palau	2020	2020
Republic of Korea	2020	2020
Samoa	2020	2020
Singapore		2020
Solomon Islands	2020	
Tonga	2020	2020
Vanuatu	2020	2020

*Countries in WHO's list of 30 high TB burden countries, and three global TB watchlist countries (Annex 3).

FIG. 15

Prevalence of bacteriologically confirmed pulmonary TB among people aged ≥15 years in Cambodia, as measured[a] in three national TB prevalence surveys: 2002, 2011, 2023

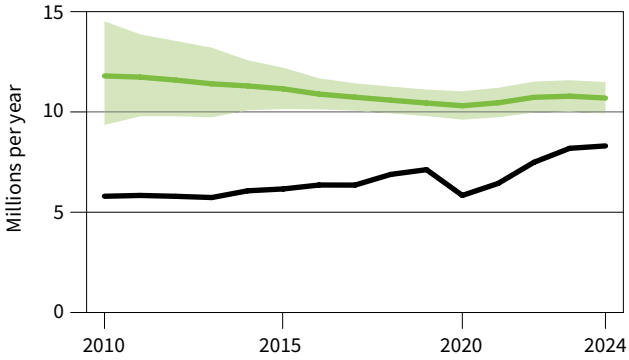


[a] Estimates are based on the case definitions used in each survey.

FIG. 16

Global trend in case notifications of people newly diagnosed with TB (black) and the estimated number of incident TB cases (green), 2010–2024

The shaded area represents the 95% uncertainty interval.



TB prevalence survey: Ethiopia, Ghana, Malawi, Nigeria, Uganda, the United Republic of Tanzania, Zambia and Zimbabwe in Africa; and Bangladesh, Indonesia, Pakistan and Thailand in Asia.[1] In Nigeria, an innovative approach to survey design and implementation is in the advanced stages of development. This involves leveraging existing staff, laboratory infrastructure and other resources that have already been established for large-scale community and health-facility-based active case-finding, and nesting 1–2 subnational surveys within the national survey.

As part of the follow-up to the September 2024 meeting of the WHO Global Task Force on TB Impact Measurement *(22)*, a global priority list for national TB prevalence surveys in the years up to 2030 is in development, based on consultations with Member States and partner agencies.

TB case notifications

Small increase globally

Globally in 2024, 8.3 million people were newly diagnosed with TB and officially notified as a TB case, similar to the level of 8.2 million in 2023 and 17% higher than the pre-pandemic level of 7.1 million in 2019 (**Fig. 16**). Explanations for the high numbers of TB case notifications in 3 consecutive years (2022–2024) include a strong post-COVID recovery in the provision of and access to TB diagnosis and treatment, a backlog of people with TB whose diagnosis was delayed by the pandemic and a rise in the overall number of people developing TB disease (**Fig. 1**) due to increased transmission resulting from diagnostic delays. They follow serious COVID-related disruptions to TB-related health services in 2020 and 2021, when the reported numbers of people newly diagnosed with TB fell considerably below pre-pandemic levels, to 5.8 million in 2020 and 6.4 million in 2021.

At the level of WHO regions, recent trends (since the pre-pandemic year of 2019) in TB case notifications vary (**Fig. 17**).

The pattern in the WHO Eastern Mediterranean and South-East Asia regions was similar to the global trend, with a big reduction in 2020 followed by year-on-year increases from 2021–2024 (the South-East Asia Region drove the global trend). In the WHO Region of the Americas, the European Region and the Western Pacific Region, notifications also fell sharply in 2020 and increased from 2021 to 2023, but then fell in 2024. The WHO African Region was the striking exception to these trends; notifications fell only slightly in 2020 and subsequently increased, particularly between 2021 and 2023, before levelling off in 2024. In 2024, the reported number of people newly diagnosed with TB in the WHO African Region was 38% above the level of 2019.

In most of the 30 high TB burden countries, case notifications fell in 2020 and have subsequently recovered to the pre-pandemic (2019) level or beyond. The exceptions to this general pattern are three countries where notifications increased throughout the period 2019–2024 (the Central African Republic, the Democratic Republic of the Congo and Nigeria), two countries where a long-term historic decline pre-2020 continued largely uninterrupted (China and the Democratic People's Republic of Korea) and Ethiopia, where a relatively consistent decline for several years has been reversed since 2021 (possibly reflecting active case-finding efforts).[2]

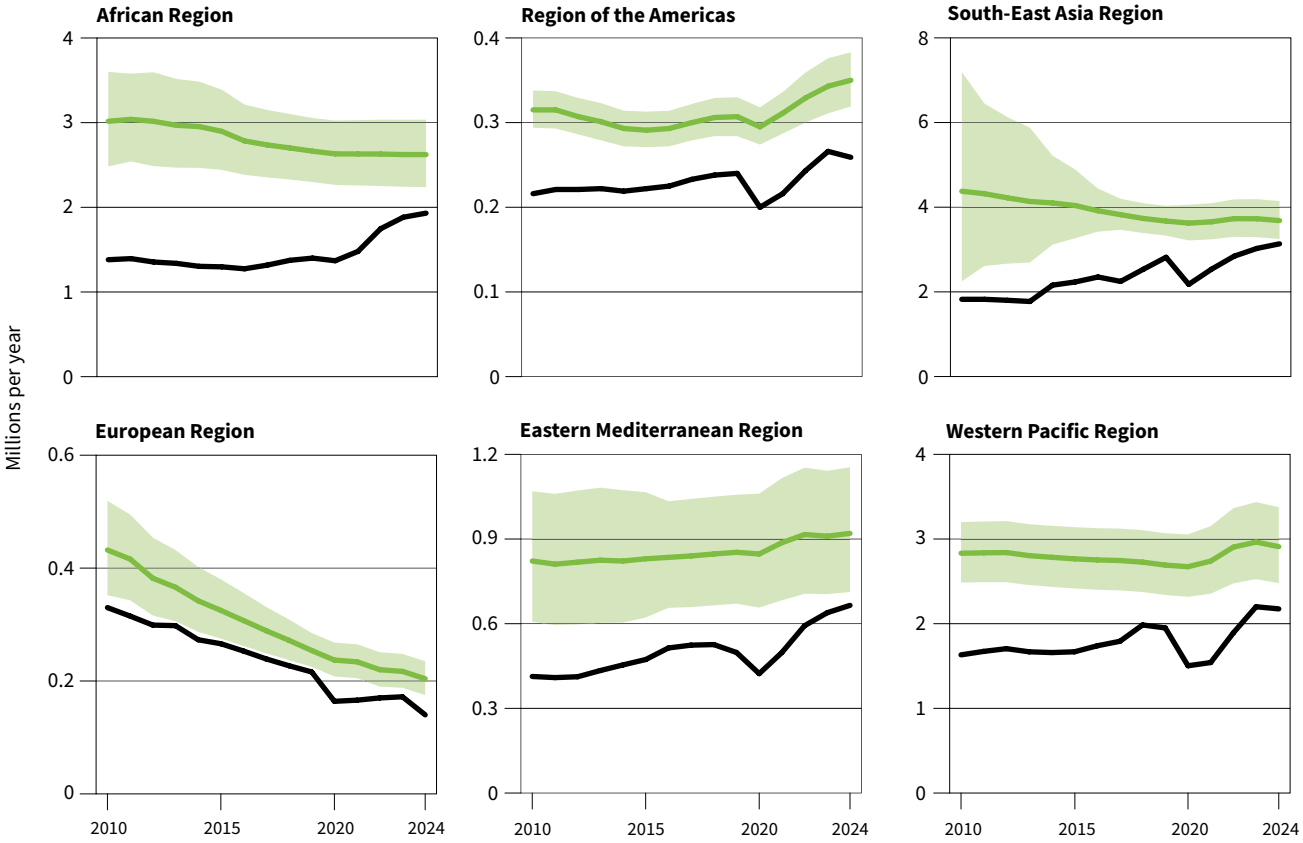
[1] Further details are provided in the report webpages (section 1.4).

[2] Further details are provided in the report webpages (section 2.1).

FIG. 17

Trends in the number of people newly diagnosed with TB and officially notified as a TB case (black) and the estimated number of incident TB cases (green) by WHO region, 2010–2024

Shaded areas represent 95% uncertainty intervals. Indonesia is included in the WHO Western Pacific Region for the whole time series.



Diagnostic testing for TB

Coverage of rapid testing improving but much more needed

An essential step in the pathway of TB care is rapid and accurate diagnostic testing. Since 2011, rapid molecular tests have transformed the TB diagnostic landscape, which previously relied upon more traditional microscopy and culture methods.

People diagnosed with TB using WHO-recommended rapid diagnostic tests (WRDs) *(24)*, lateral flow urine lipoarabinomannan (LF-LAM) assays, sputum smear microscopy or culture are defined as "bacteriologically confirmed" cases of TB *(25)*. The microbiological detection of TB is critical because it allows people to be correctly diagnosed and ensures that the most effective treatment regimen (depending on the pattern of drug resistance) can be selected as early as possible.

The use of rapid tests is growing but remains much too limited and falls far short of the target of 100% coverage by 2027 (**Fig. 18**, **Table 1**).

Globally in 2024, a WRD was used as the initial diagnostic test for 54% (4.5 million) of the 8.3 million people newly diagnosed with TB, an improvement from 48% (3.9/8.2 million) in 2023 and 47% (3.5/7.5 million) in 2022.

There was substantial variation in the coverage of rapid testing among regions and countries in 2024 (**Fig. 18**, **Fig. 19**).

Among WHO regions, the best level of coverage was achieved in the European Region (77%) and the Western Pacific Region (70%); the lowest coverage was in the South-East Asia Region (41%).

At country level, 69 countries achieved coverage levels of at least 80% in 2024. This included seven high TB burden countries: the Central African Republic, China, Mongolia, Mozambique, Namibia, Uganda and Zambia. Among the 49 countries in one of the three global lists of high-burden countries (for TB, HIV-associated TB and MDR/RR-TB),[1] 37 reported that a WRD had been used as the initial test for more than half of people newly diagnosed with TB in 2024 – up from 31 in 2023. Coverage of rapid testing was less than 20% in 21 countries.

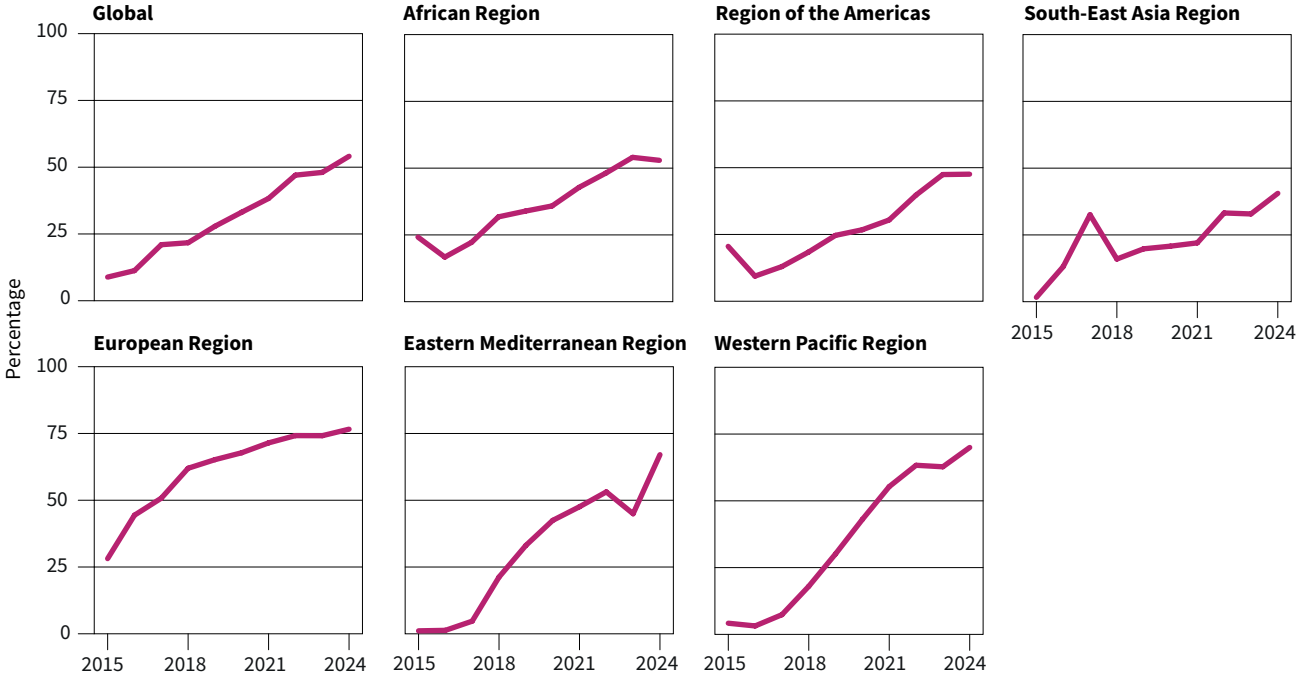
A major influence on the coverage of rapid testing is the proportion of TB diagnostic sites with access to WRDs. In 2024, only eight of the 30 high TB burden countries reported that more than 50% of their TB diagnostic

[1] See **Annex 3**.

FIG. 18

Percentage of people newly diagnosed with TB who were initially tested with a WHO-recommended rapid diagnostic test (WRD), globally and for WHO regions, 2015–2024[a]

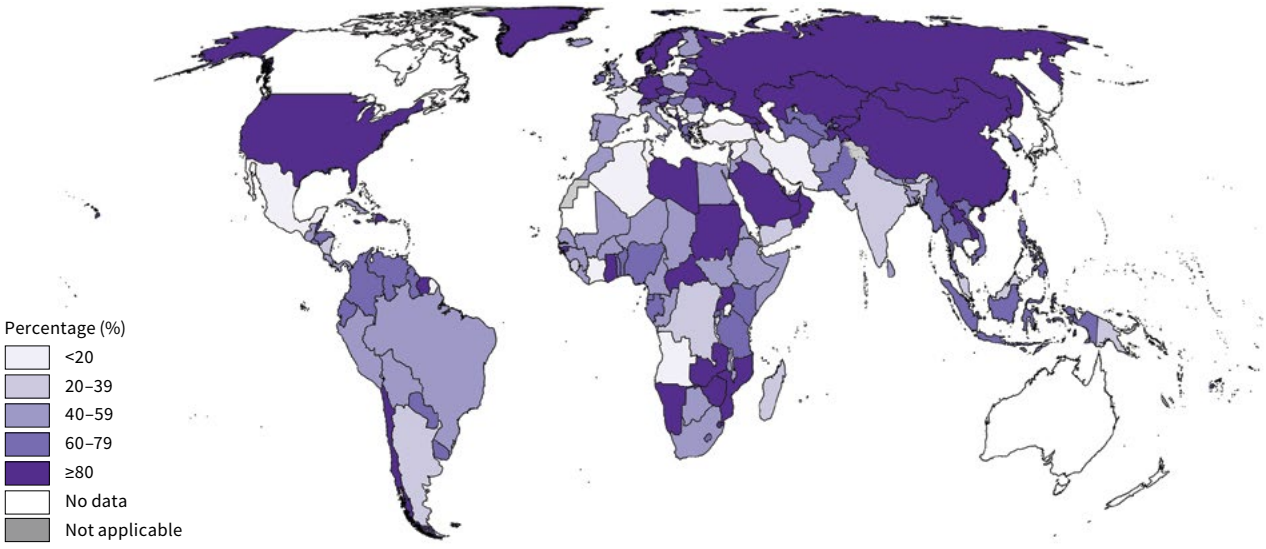
Indonesia is included in the WHO Western Pacific Region for the whole time series.



[a] Data are for notified cases.

FIG. 19

Percentage of people newly diagnosed with TB who were initially tested with a WHO-recommended rapid diagnostic test (WRD) at country level,[a] 2024

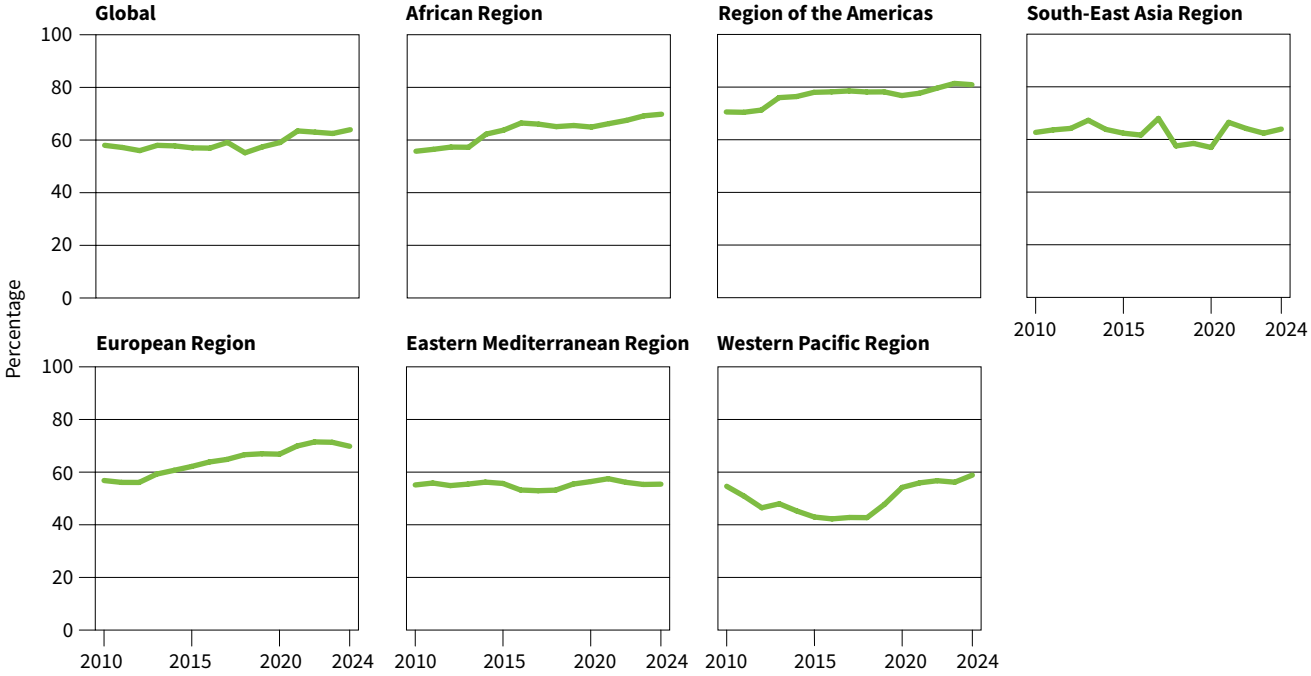


[a] Data are for notified cases.

FIG. 20

Percentage of people newly diagnosed with pulmonary TB who were bacteriologically confirmed, globally and for WHO regions,[a] 2010–2024

Indonesia is included in the WHO Western Pacific Region for the whole time series.



[a] Data are for notified cases. The calculation for years prior to 2013 is based on smear results, except for the European Region where data on confirmation by culture were also available for the period 2010–2012.

sites had access to WRDs: Bangladesh, China, Lesotho, Mongolia, Namibia, Papua New Guinea, South Africa and Zambia. This list was unchanged from 2023. Expanding access to TB diagnosis using rapid tests should be a top priority for all countries. Reductions in the price of rapid tests would facilitate such expansion.

In many countries, there is a need to increase the percentage of people diagnosed with pulmonary TB based on bacteriological confirmation, including by ensuring that all those diagnosed with TB are initially tested with a rapid test, in line with the global target set for 2027 (**Table 1**).

Of the 6.9 million people diagnosed with pulmonary TB worldwide in 2024, 64% were bacteriologically confirmed (**Fig. 20**), a small improvement from 62% in 2023.

Among the six WHO regions, there were steady improvements between 2020 and 2024 in the African Region (from 65% to 70%) and the Region of the Americas (from 77% to 81%); in the other regions, levels of bacteriological confirmation were either stable or fell slightly (**Fig. 19**).

At country level, the percentage of people with pulmonary TB who were bacteriologically confirmed was 80% or more in 114 countries. Among the 30 high TB burden countries, six achieved a level of 75% or above: Bangladesh, Liberia, Mongolia, Namibia, Nigeria and Viet Nam.

The levels of bacteriological confirmation already achieved in the WHO Region of the Americas and in a variety of countries in other parts of the world show what is feasible with currently available TB diagnostics. Efforts to reach comparable levels, particularly through expanded use of rapid tests, are required elsewhere.[1]

Testing for HIV among people diagnosed with TB

High levels of coverage sustained

The global coverage of HIV testing among people diagnosed with TB remained high in 2024, at 82%. This was a slight increase from 81% in 2023 and 80% in 2022.

At regional level, the highest percentages were achieved in the WHO African Region (89%) and the European Region (94%). In 101 countries or areas, at least 90% of people diagnosed with TB knew their HIV status; this included 32 of the 47 countries in the WHO African Region, where the burden of HIV-associated TB is highest.

Worldwide in 2024, a total of 413 516 cases of TB among people living with HIV were notified, equivalent to 6.2% of the 6.7 million people newly diagnosed with TB who had an HIV test result. Overall, the percentage of people newly diagnosed with TB who had an HIV-posi-

[1] Further details (e.g. for individual countries) are provided in the report webpages (section 2.2) and the report app.

tive test result has been falling globally for many years, following a peak of 28% in 2006.

Coverage of TB diagnosis and treatment

Post-COVID recovery sustained but sizeable gaps remain

The 2025 milestone and 2030/2035 targets of the End TB Strategy can only be achieved if everyone who develops TB disease is promptly diagnosed using WHO-recommended diagnostic tests and then treated with drug regimens recommended by WHO *(24, 26, 27)*.[1] One of the targets set at the 2023 UN high-level meeting on TB is that 90% of people with TB have access to quality-assured diagnosis and treatment by 2027 (**Table 1**).

There are still sizeable global and regional gaps between the estimated number of people who develop TB each year (incident cases) and the number of people newly diagnosed with TB and officially reported as a TB case (**Fig. 16**, **Fig. 17**). In 2024, the best estimate of the global gap was 2.4 million.[2] The gap has narrowed since 2020, a year in which it widened substantially (to a best estimate of 4.5 million) amid COVID-related disruptions in the first year of the pandemic. Gaps have also been narrowing in five WHO regions, most notably in the WHO African, Eastern Mediterranean and South-East Asia regions. The exception is the Region of the Americas.

Reasons for gaps between the estimated number of people who develop TB each year (incident cases) and the number of people newly diagnosed with TB and officially reported as a TB case include underdiagnosis as well as underreporting of people diagnosed with TB to national authorities (with the latter not accounted for in official case notification data). It is also important to highlight that some of the people diagnosed with TB and officially reported as a TB case may not have had the disease. Overdiagnosis is most likely to occur among people who have TB signs and symptoms but who have a bacteriologically negative test result. Universal coverage of the most sensitive and specific WHO-recommended diagnostics for all people with presumptive TB is needed to limit the number of overdiagnoses.

The global number of people newly diagnosed with TB and officially reported as a TB case in 2024 (8.3 million) was equivalent to 78% (95% UI: 72–84%) of the estimated 10.7 million (95% UI: 9.9–11.5 million) people who developed TB in 2024. This was a slight increase from 76% (95% UI: 71–82%) in 2023 and was considerably higher than the levels of 49% (95% UI: 40–63%) in 2010 and 57% (95% UI: 53–61%) in 2020.

Among the 30 high TB burden countries in 2024, the number of people newly diagnosed with TB and officially reported as a TB case as a percentage of the estimated number of people who developed TB (incident cases) was highest (>80%) in Bangladesh, Brazil, Ethiopia, India, Kenya, Mozambique, Uganda and Zambia.[3] In Mozambique especially, overdiagnosis may have artificially inflated notification data, given that the proportion of notified cases diagnosed based on bacteriological confirmation in 2024 was only 50%.

Three high TB burden countries had particularly low numbers of people newly diagnosed with TB relative to estimated levels of incidence in 2024: Lesotho (about 50%), Mongolia (<50%) and Myanmar (<50%).

In 2024, the global gap between estimated TB incidence and the reported number of people newly diagnosed with TB was mostly accounted for by 10 countries (**Fig. 21**). These 10 countries collectively accounted for 63% of the global gap. The top five countries (collectively accounting for 40% of the global gap) were Indonesia (10%), India (8.8%), the Philippines (7.5%), Pakistan (7.2%) and China (6.9%). From a global perspective, efforts to increase levels of case detection and treatment are of particular importance in these countries.

ART for people living with HIV and TB

High coverage, scope for further progress

Among people living with HIV who develop TB, both TB treatment and ART for HIV are required to prevent unnecessary deaths from TB and HIV. Since 2019, the global coverage of ART for people living with HIV who were newly diagnosed with TB and reported as a TB case has been maintained at a high level; it reached 91% in 2024, up from 88% in 2023.

However, when provision of ART is compared with the total number of people living with HIV estimated to have developed TB in 2024, coverage was much lower, at 61%. This was almost unchanged from the level of 60% in 2023, and far below the overall level of ART coverage for people living with HIV, which was 77% (95% UI: 62–90%) at the end of 2024 *(28)*. The main reason for the relatively low coverage was the big gap between the estimated number of people living with HIV who developed TB in 2024 (a best estimate of 619 000) and the reported number of people living with HIV who were diagnosed with TB in 2024 (413 516).

TB treatment outcomes

Sustained at high levels

The treatment success rate for people treated for drug-susceptible TB has been sustained at a high level in recent years. Globally, it was 88% in 2023 and in 2022 – an increase from 87% in 2021 and 86% in 2020 (**Fig. 22**).

Treatment success rates remain lower among peo-

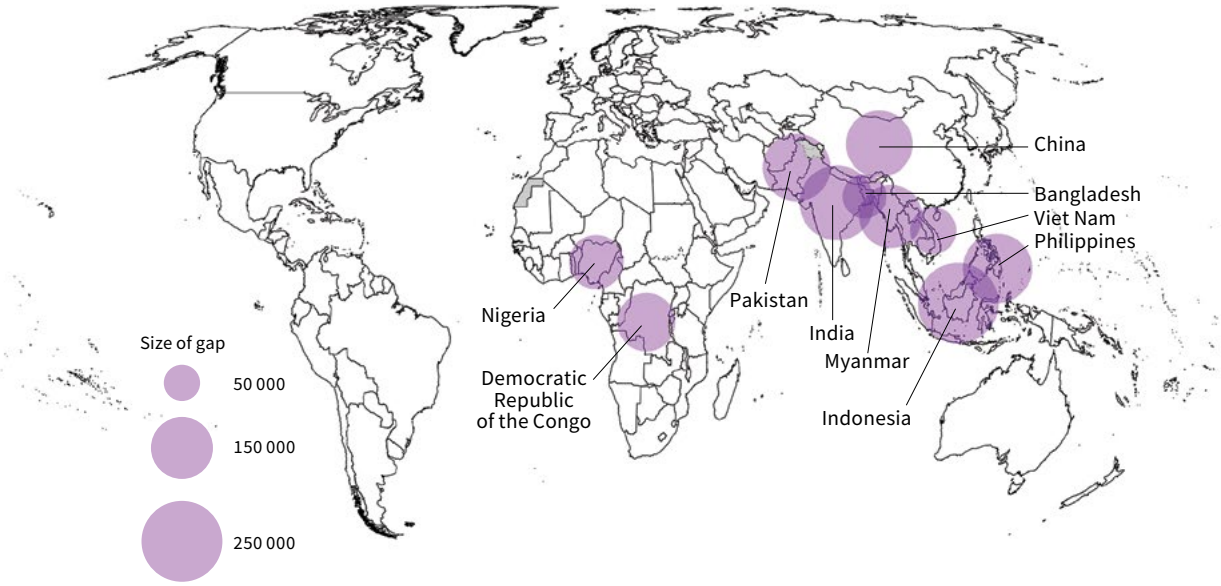
[1] A summary of the treatment regimens recommended by WHO is provided in **Annex 1**.

[2] That is, the difference between a best estimate of 10.7 million incident cases and 8.3 million people who were newly diagnosed with TB and officially notified as a TB case.

[3] Further details are provided in the report webpages (section 2.3).

FIG. 21

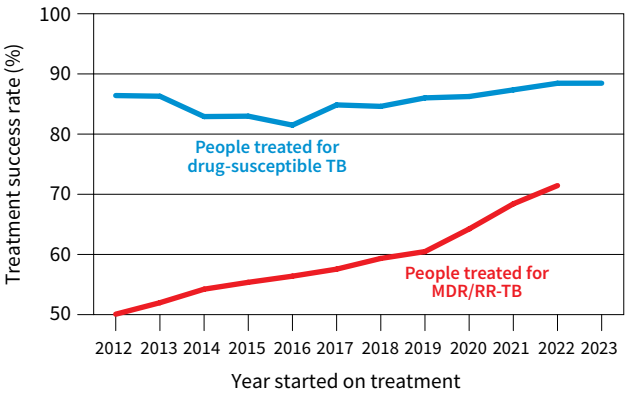
The ten countries with the largest gaps between notifications of people newly diagnosed with TB and the best estimates of TB incidence,[a] 2024



[a] The ten countries ranked in order of the size of the gap between notified cases and the best estimates of TB incidence in 2024 are Indonesia, India, the Philippines, Pakistan, China, Myanmar, the Democratic Republic of the Congo, Nigeria, Viet Nam and Bangladesh.

FIG. 22

Global treatment success rates for drug-susceptible TB and MDR/RR-TB, 2012–2023[a]



[a] 2012 is the first year for which WHO collected data about treatment outcomes for MDR/RR-TB.

ple living with HIV (79% globally in 2023, unchanged from 2022). The treatment success rate for children and young adolescents (aged <15 years) was 92% in 2023, an increase from 90% in 2022. Among 31 high burden countries[1] that reported outcome data disaggregated by sex, the treatment success rate in 2023 was slightly higher among females (90%) than males (87%).

Provision of TB treatment to HIV-negative people is estimated to have averted 45 million deaths between 2010 and 2024; among people living with HIV who were diagnosed with TB, the combination of TB treatment and ART is estimated to have averted an additional 7.0 million deaths between 2010 and 2024 (**Table 4**). The combined total for the period 2000–2024 was 83 million.

Drug-resistant TB: diagnosis and treatment

Diagnostic gaps, improving treatment outcomes, growing use of 6-month regimens

WHO uses five categories to classify cases of drug-resistant TB:

- isoniazid-resistant TB;
- RR-TB (defined above);
- MDR-TB (defined above);
- pre-extensively drug-resistant TB (pre-XDR-TB),

[1] Since 2021, WHO has requested data on treatment outcomes disaggregated by sex from the 49 countries in one of the three WHO lists of high burden countries, which are for TB, HIV-associated TB and MDR/RR-TB (**Annex 3**). The countries from which such data are requested may be expanded in future (e.g. to include all countries with case-based digital surveillance systems for TB).

TABLE 4

Cumulative number of deaths (in millions) averted by a) TB treatment as well as b) antiretroviral treatment for people diagnosed with TB who were also living with HIV, globally and by WHO region, 2010–2024

Indonesia is included in the WHO Western Pacific Region.

	HIV-NEGATIVE PEOPLE		PEOPLE LIVING WITH HIV[a]		TOTAL	
WHO REGION	BEST ESTIMATE	UNCERTAINTY INTERVAL	BEST ESTIMATE	UNCERTAINTY INTERVAL	BEST ESTIMATE	UNCERTAINTY INTERVAL
African Region	6.6	5.4–7.7	5.2	4.4–6.0	12	10–13
Region of the Americas	1.5	1.4–1.6	0.27	0.24–0.29	1.8	1.6–1.9
South-East Asia Region	17	14–19	0.85	0.52–1.2	18	15–20
European Region	1.3	1.2–1.5	0.25	0.22–0.28	1.6	1.4–1.7
Eastern Mediterranean Region	4.2	3.6–4.7	0.056	0.024–0.088	4.2	3.7–4.8
Western Pacific Region	14	13–16	0.42	0.34–0.50	15	13–16
Global	**45**	**40–50**	**7**	**6.0–7.9**	**52**	**46–57**

[a] Deaths from TB among people with HIV are officially classified as deaths caused by HIV/AIDS (with TB as a contributory cause). This is the reason why the estimates make a clear distinction between people with and without HIV.

defined as TB that is resistant to rifampicin and any fluoroquinolone (a class of second-line anti-TB drug); and

- XDR-TB, defined as TB that is resistant to rifampicin, plus any fluoroquinolone, plus at least one of either bedaquiline or linezolid.

RR-TB is included in WHO's Bacterial Priority Pathogens List, where it sits within the "critical group" category *(29)*.[1]

Detection of drug resistance requires bacteriological confirmation of TB and testing for resistance using rapid molecular diagnostic tests, culture methods or sequencing technologies.

Since 2018, WHO has recommended all-oral regimens for the treatment of MDR/RR-TB *(30)*. The latest recommendations for treatment of drug-resistant TB include three major categories of regimen *(26, 27)*:

- two 6-month all-oral regimens for people with MDR/RR-TB (with or without resistance to fluoroquinolones);[2]
- several all-oral short regimens of 9 months for people with MDR/RR-TB who do not have any resistance to fluoroquinolones; and
- longer regimens of 18–20 months that may include an injectable drug (amikacin).

The 6-month regimens are prioritized for use whereas the longest regimens are a last resort.

Globally in 2024, 83% of people diagnosed with bacteriologically confirmed TB were tested for rifampicin resistance (3.7/4.5 million), up from 79% (3.4/4.3 million) in 2023, representing major progress compared with 69% (2.4/3.5 million) in 2021 and 62% (2.2/3.6 million) in the pre-pandemic year of 2019 (**Fig. 23**). There were improvements in all six WHO regions; in 2024, the best coverage was in the European Region (91%), the South-East Asia Region (90%) and the Western Pacific Region (89%).

Of the 30 high MDR/RR-TB burden countries, 24 reached a coverage of at least 80% in 2024: Angola, Azerbaijan, Bangladesh, Belarus, China, India, Indonesia, Kazakhstan, Kyrgyzstan, Mongolia, Myanmar, Nigeria, Papua New Guinea, Peru, the Republic of Moldova, the Russian Federation, Somalia, South Africa, Tajikistan, Ukraine, Uzbekistan, Viet Nam, Zambia and Zimbabwe. Three high MDR/RR-TB burden countries did not reach a coverage level of 50%: the Democratic People's Republic of Korea (1.6%), the Democratic Republic of the Congo (35%) and Mozambique (31%).

Among those tested for RR-TB worldwide in 2024, 147 592 people with MDR/RR-TB and 25 140 people with pre-XDR-TB or XDR-TB were detected, giving a combined total of 172 732 (4.6% of those tested). This was a decrease (–8.9%) from a combined total of 189 631 in 2023. Despite increased testing coverage and an increase in the absolute number of people tested, the number of people detected with MDR/RR-TB was lower in 2024 than in 2019 (when the total was 202 009). This is consistent with the estimated decline in the proportion of people with TB who have MDR/RR-TB (**Fig. 7**).

Worldwide, 164 545 people with MDR/RR-TB were enrolled on treatment in 2024, a fall (of 7.0%) from 177 017 in 2023 (**Fig. 24**). This level of enrolment is equivalent to 42% of the estimated number of people

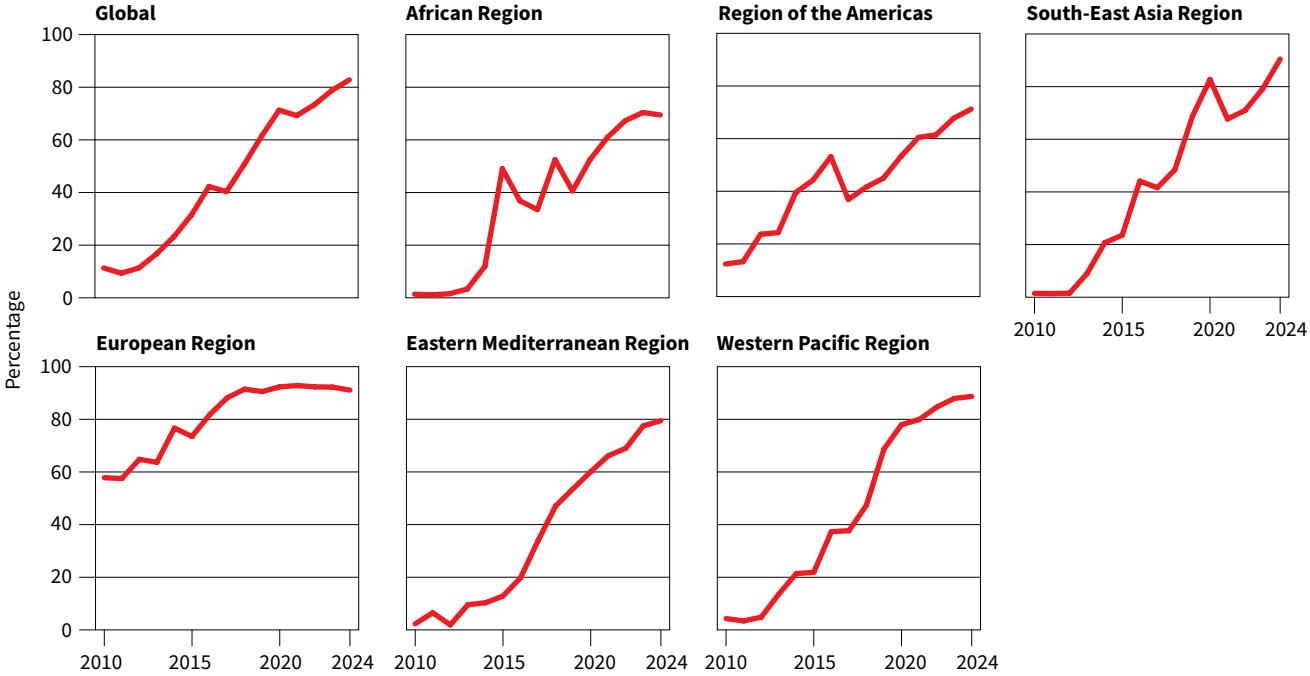
[1] The list includes 15 pathogens. Four are in the "critical group", seven are in the "high group" and four are in the "medium group".

[2] One regimen, referred to as BPaLM, comprises bedaquiline, pretomanid, linezolid and moxifloxacin. The other regimen, referred to as BDLLfxC, comprises bedaquiline, delamanid and linezolid, combined with levofloxacin or clofazimine or both. Unlike BPaLM, the latter can be used in children and during pregnancy.

FIG. 23

Percentage of people diagnosed with bacteriologically confirmed TB who were tested for rifampicin-resistant TB (RR-TB[a]), globally and for WHO regions, 2010–2024

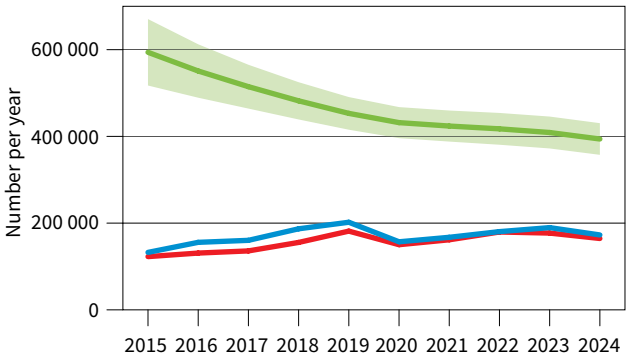
Indonesia is included in the WHO Western Pacific Region for the whole time series.



[a] Includes both new and previously treated cases; data for 2017 onwards are for pulmonary cases only.

FIG. 24

Global number of people diagnosed with MDR/RR-TB (blue) and number enrolled on an MDR-TB treatment regimen (red), compared with estimates of the global number of incident cases of MDR/RR-TB (95% uncertainty interval shown in green), 2015–2024[a]



[a] The time period corresponds to the period for which estimates of the incidence of MDR/RR-TB are available.

who developed MDR/RR-TB in 2024, similar to the level of 43% in 2023 (**Fig. 6**, **Fig. 24**).

Five countries accounted for about 60% of the gap between the estimated global number of people who developed MDR/RR-TB in 2024 (incident cases of MDR/RR-TB) and the global number of people enrolled on treatment in 2024. Listed in order of their share of the global gap, these countries were India (33%), the Philippines (9.3%), Indonesia (7.3%), China (6.1%) and Pakistan (4.1%).

Closing the global and country-level gaps between the estimated number of people developing MDR/RR-TB each year and the number of people started on treatment for MDR/RR-TB each year requires further improvements in the coverage of testing for RR-TB among those with bacteriologically confirmed TB, improvements in the percentage of those diagnosed with TB who are bacteriologically confirmed (necessary to test for drug resistance) and improvements in the proportion of people with TB who are diagnosed.

In recent years, there has been considerable progress in the treatment success rate achieved among people diagnosed with MDR/RR-TB (**Fig. 22**). For people started on treatment in 2022 (the latest year for which outcome data are available),[1] the treatment success rate was 71% – up from 68% in 2021 and 64% in 2020, and much better

[1] The time lag is because some treatment regimens last 18–20 months.

than the level of 50% in 2012.[1] Among WHO regions, the treatment success rate in 2022 ranged from 60% in the Region of the Americas to 77% in the South-East Asia Region.

Globally, the use of 6-month treatment regimens is expanding. In 2024, 34 256 people with MDR/RR-TB were reported to have been started on treatment with 6-month regimens, a substantial increase from 5653 in 2023 and 1744 in 2022. By the end of 2024, 6-month regimens were being used for treatment of MDR/RR-TB in 97 countries, up from 60 at the end of 2023 and 41 at the end of 2022.

Longer regimens (18–20 months) remain the most widely used of the three major categories of regimen. In 2024, 54% of people with MDR/RR-TB were enrolled on treatment with longer regimens, followed by 9-month (21%) and 6-month (21%) regimens.[2]

At regional level, the percentage of people treated for MDR/RR-TB with 6-month regimens increased substantially between 2023 and 2024 in the WHO African, Eastern Mediterranean and Western Pacific regions. The percentages in 2024 were highest in the WHO African Region (45%) and the Eastern Mediterranean Region (57%).

TB prevention and screening

Global coverage of TPT improving

The main health care intervention available to reduce the risk of TB infection progressing to active TB disease is TPT. Other preventive interventions are TB infection prevention and control, and vaccination of children with the bacille Calmette-Guérin (BCG) vaccine. The BCG vaccine can confer protection, especially from severe forms of TB in children.

WHO recommends TPT for people living with HIV, household contacts of people diagnosed with bacteriologically confirmed pulmonary TB and people in clinical risk groups (e.g. those receiving dialysis) *(31)*.[3] Options include a weekly dose of isoniazid and rifapentine for 3 months, a daily dose of isoniazid and rifampicin for 3 months, a daily dose of isoniazid and rifapentine for 1 month, a daily dose of rifampicin for 4 months and a daily dose of isoniazid for 6 or 9 months. In people exposed to MDR/RR-TB, a daily dose of levofloxacin for 6 months is recommended.

The global number of people provided with TPT in 2024 was 5.3 million, a further increase from 4.7 million in 2023 and a more than fivefold improvement compared with 2015 (**Fig. 25**).[4]

Since 2021, there has been a particularly noticeable increase in the number of household contacts enrolled on TPT: from 0.76 million in 2021 to 3.5 million in 2024. In contrast, the number of people living with HIV who were enrolled on TPT increased between 2015 and 2019 (reaching a peak of 3.0 million in 2019) before falling in 2020 and subsequently levelling off at about 2 million people per year.

The estimated global coverage of TPT among household contacts reached 25% in 2024, up from 20% in 2023 and substantially better than levels achieved in 2015 (<1%) and 2019 (5.0%) (**Fig. 26**).[5] For people living with HIV, coverage among those newly enrolled on ART was higher, at 58%; this was a small increase from 56% in 2023. The global target of 90% coverage by 2027 (**Table 1**) remains some way off.

In 95 countries that reported outcomes, the median completion rate for household contacts who started

FIG. 25

Global number of people provided with TPT, 2015–2024

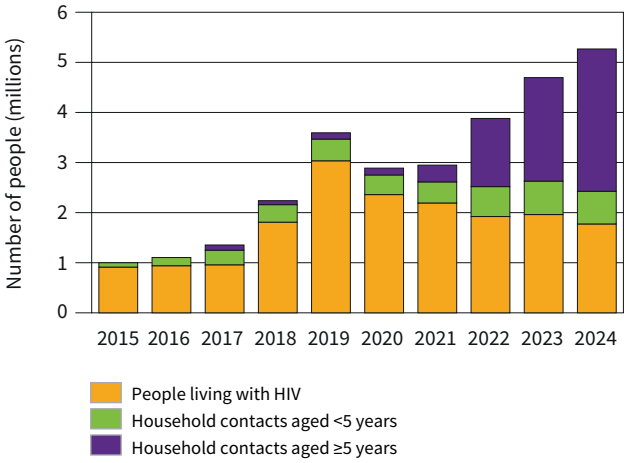
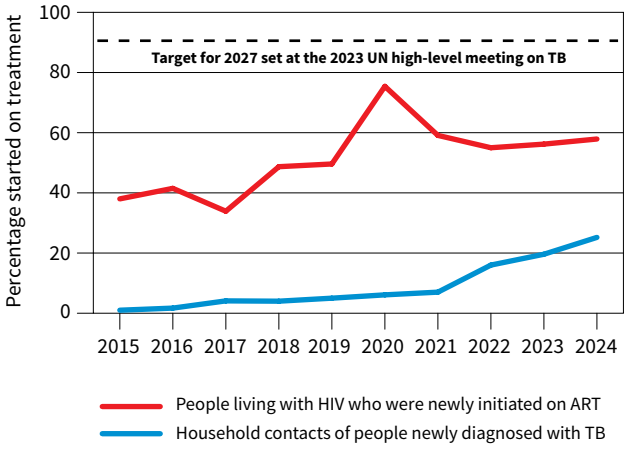


FIG. 26

Global coverage of TPT, 2015–2024



[1] 2012 was the first year for which WHO collected data on outcomes for people enrolled on treatment for MDR/RR-TB.

[2] For 4% of people, the regimen type was not reported.

[3] Addressing broader determinants that influence TB epidemics can also help to prevent TB infection and disease. These are discussed below.

[4] The number in 2015 was 1.0 million.

[5] Region and country-specific data are provided in the report webpages (section 3) and the report app.

TPT in 2023 was 89%, up from 87% (in 85 countries) in 2022. For people living with HIV, the median completion rate in 38 countries that reported data was 84% in 2023, up from 81% in 42 countries that reported data for 2022.

Substantial intensification and expansion of efforts and investment are needed to improve the provision of TPT. This includes providing more TB screening at household level, improving the follow-up to TB screening at household level and among people living with HIV, and increasing access to shorter (1–3 months) rifamycin-based regimens. The number of people treated using shorter regimens is growing; in 2024, it reached 2.1 million people (44% of those who started TPT) in 88 countries,[1] more than double the total of 1.0 million people in 86 countries in 2023 and a tenfold increase from 0.19 million people in 52 countries in 2021.

The ratio of the TB notification rate among health care workers to the TB notification rate in the general adult population reflects the effectiveness of TB infection control in health facilities; the ratio should be about 1. In 2024 the ratio was greater than 1 in nine countries that reported five or more TB cases among health care workers; this was a slight reduction from 12 countries in 2023 and 14 countries in both 2022 and 2021.

The global coverage of BCG vaccination in children was 88% in 2024, similar to the levels achieved in 2023 (87%) and 2022 (88%) after concerning declines (to 86% in 2020 and 85% in 2021) during the COVID-19 pandemic *(32)*.

Funding for TB services

Stagnating globally and far from target

Cuts to international donor funding threaten progress

Progress in reducing the burden of TB disease requires adequate funding for TB prevention, diagnostic and treatment services, sustained over many years. However, in low- and middle-income countries (LMICs) – which account for 99% of the reported number of people newly diagnosed with TB each year – funding has stagnated for 5 years and in 2024 it remained far short of what is needed. Cuts to international donor funding for the TB response in 2025 now threaten the sustainability of current levels of TB prevention, diagnostic and treatment services, and have made domestic funding in high TB burden countries more important than ever.

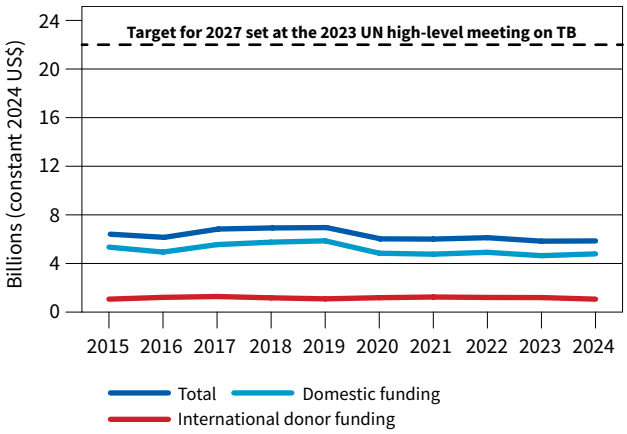
In 2024, the total funding available in LMICs was US$ 5.9 billion (in constant 2024 US$),[2] equivalent to only 27% of the global target of reaching US$ 22 billion per year by 2027 (**Fig. 27**, **Table 1**). The level of funding has stagnated since 2020, hovering around US$ 6 billion per year.

Throughout the period 2015–2024, the share of funding available from domestic and international sources in LMICs was relatively consistent. In 2024, 82% of the funding available for TB prevention, diagnostic and treatment services was from domestic sources. International donor funding amounted to US$ 1.1 billion in 2024, having ranged from US$ 1.1 billion to US$ 1.2 billion in almost every year since 2015,[3] with most of this funding provided through grants from the Global Fund and bilateral funding from USAID.[4]

In 2024, the overall figure for the share of funding provided from domestic sources in LMICs continued to be strongly influenced by the five original BRICS countries: Brazil, the Russian Federation,[5] India, China and South

FIG. 27

Funding available for TB prevention, diagnostic and treatment services in 131 low- and middle-income countries by source,[a,b,c] 2015–2024



[a] Sources: data reported by NTPs and estimates produced by the WHO Department for HIV, Tuberculosis, Hepatitis and Sexually Transmitted Infections.

[b] The data sources, boundaries, accounting rules, and estimation methods used in this report are different from those of the System of Health Accounts 2011 (SHA2011). The TB funding data reported here are thus not comparable with the disease expenditure data, including for TB, that are reported in WHO's Global Health Expenditure Database.

[c] The 131 countries accounted for 99% of the global number of notified TB cases in 2024.

[1] Among these 88 countries, 82 reported using the 3-month weekly regimen of rifapentine and isoniazid, and 28 reported using the 1-month daily regimen of rifapentine and isoniazid. Overall, these two regimens were used for 73% of those treated using rifamycin-based regimens.

[2] All amounts quoted in this subsection are in constant 2024 US$. Numbers should not be directly compared with those in previous reports, because adjustments to the whole time series are made for each new report, to account for inflation.

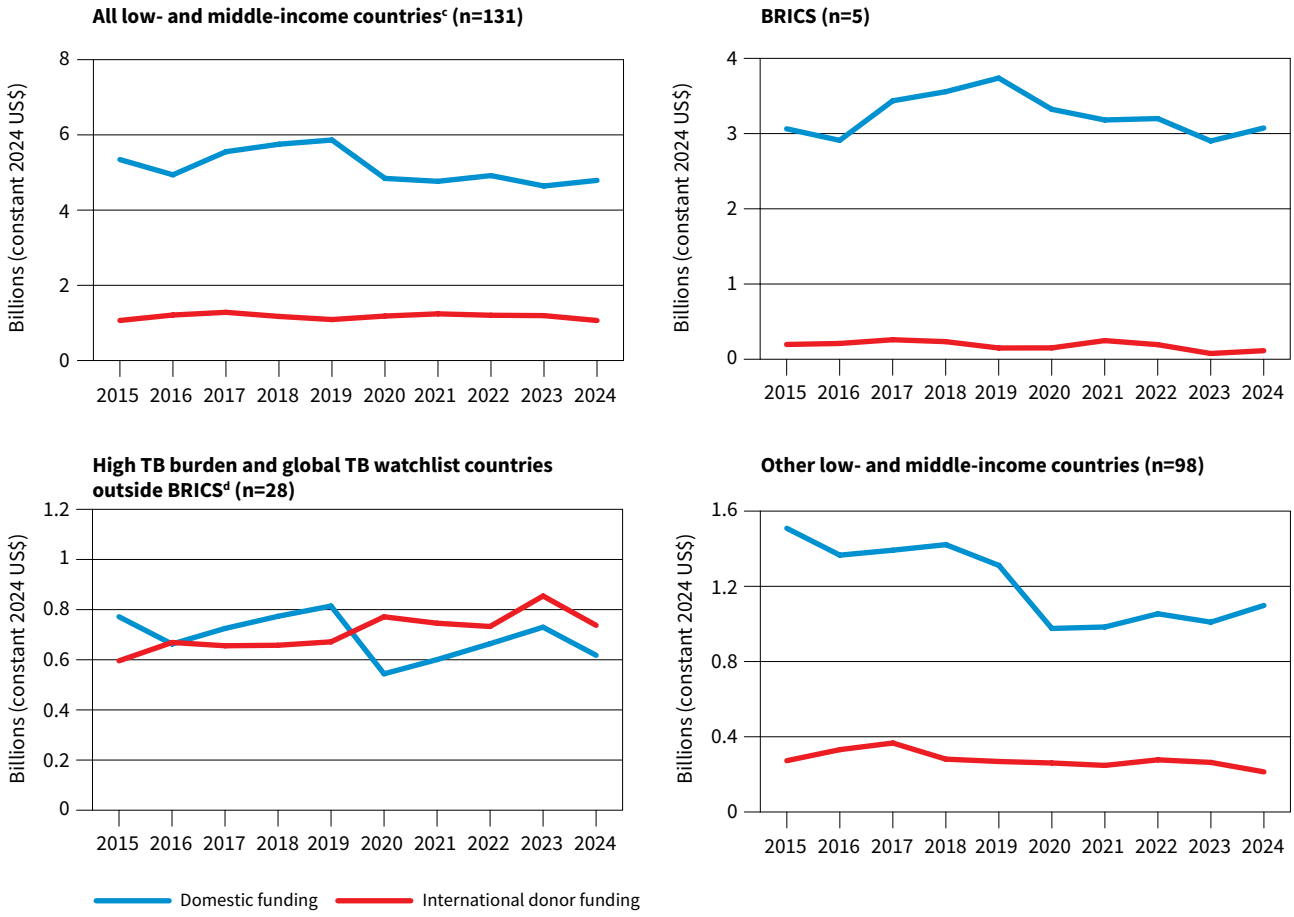
[3] The exception was 2017, when it reached US$ 1.3 billion.

[4] Further details are provided in the report webpages (section 4.1 and section 4.2).

[5] In the most recent classification of countries by income group published by the World Bank *(33)*, the Russian Federation was categorized as a high-income country. It has been included in analyses for LMICs because it was an upper-middle-income country for most of the period 2015–2024, it is in WHO's list of high-burden countries for drug-resistant TB and it is one of the three countries on WHO's global TB watchlist (**Annex 3**).

FIG. 28

Funding available for TB prevention, diagnostic and treatment services in 131 low- and middle-income countries and three other country groups,[a,b] 2015–2024



BRICS: Brazil, the Russian Federation, India, China, South Africa.

[a] Sources: data reported by NTPs and estimates produced by the WHO Department for HIV, Tuberculosis, Hepatitis and Sexually Transmitted Infections.

[b] The data sources, boundaries, accounting rules, and estimation methods used in this report are different from those of the System of Health Accounts 2011 (SHA2011). The TB funding data reported here are thus not comparable with the disease expenditure data, including for TB, that are reported in WHO's Global Health Expenditure Database.

[c] The 131 countries accounted for 99% of the global number of notified TB cases in 2024.

[d] The two global TB watchlist countries included are Cambodia and Zimbabwe.

Africa[1] (**Fig. 28**). Together, these countries accounted for US$ 3.1 billion (64%) of the total of US$ 4.8 billion in 2024 that was provided from domestic sources. Overall, 96% of available funding in BRICS and all funding in Brazil, China and the Russian Federation in 2024 was from domestic sources.

In other LMICs, international donor funding remained crucial (**Fig. 28**). In 2024, such funding accounted for 54% of the funding available in the 26 high TB burden countries and two global TB watchlist countries (Cambodia and Zimbabwe) outside BRICS, and 63% of the funding available in low-income countries.

In 2025, decisions by the government of the United States of America (USG) and wider political developments have resulted in cuts to international donor funding, including for health in general and TB specifically.

In 2024, the USG was the largest contributor of funding to the Global Fund (about one third). It was also the largest bilateral donor for TB, providing grants to 24 priority countries. Through these two channels, the USG contributed about 50% of international donor funding for TB in the period 2015–2024.[2]

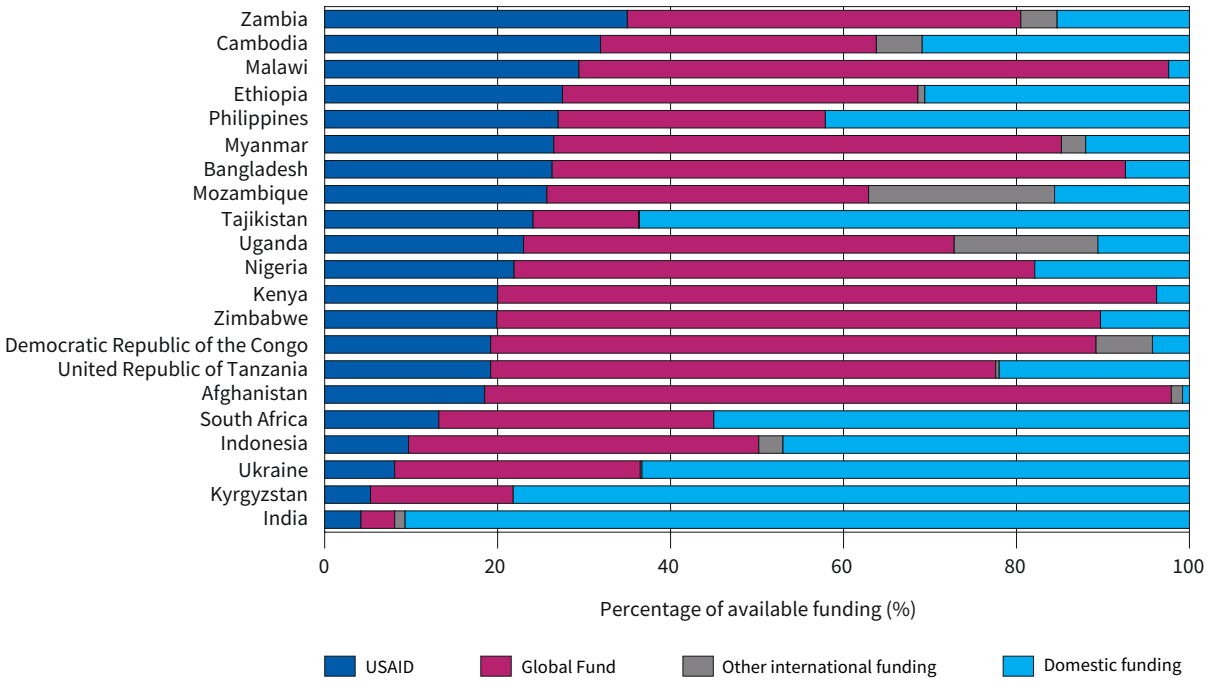
In 2025, the Global Fund has anticipated reductions in contributions due to changes in the landscape of funding for global health, and requested countries to pause or defer activities as a first step. As of July 2025,

[1] BRICS is used here to refer only to the five original members of the BRICS group of countries, acknowledging that this group expanded in 2024 and in 2025 comprises 11 countries.

[2] This figure is based on a comprehensive analysis of international donor funding for TB based on donor reports to the Organisation for Economic Co-operation and Development (OECD). A graphic that illustrates the shares contributed by OECD countries is provided in the report webpages (section 4.2).

FIG. 29

Sources of funding available[a] for TB prevention, diagnostic and treatment services in 2024, for 21 countries[b] that reported receiving Global Fund grants and bilateral funding from USAID in 2024



USAID: United States Agency for International Development.

[a] Domestic funding in this graphic is based on data reported by NTPs, which typically do not include the financial costs associated with inpatient and outpatient care required during TB treatment.

[b] There were an additional three countries that were USAID priorities for bilateral funding for TB in 2024 for which data were not available: Pakistan, Uzbekistan and Viet Nam.

funding for the 2024–2026 grant cycle had been cut by US$ 1.4 billion – equivalent to 11% of the original allocation *(34)*.

It remains too early for a reliable assessment of domestic and international donor funding for the TB response in 2025.[1] However, the share of national TB programme (NTP) funding in 2024 that was provided by bilateral grants from USAID, grants from the Global Fund and domestic sources in countries that were USG priorities for TB provides a good indication of the extent to which changes to USG bilateral funding and reductions in grants from the Global Fund could impact overall levels of funding in 2025.

In 2024, USG bilateral funding accounted for 20% or more of the total available funding reported by NTPs in 13 of the USG priority countries for TB, with the highest share (over 30%) in Zambia and Cambodia (**Fig. 29**). Almost all the countries that received USG bilateral funds for TB in 2024 were also highly reliant on Global Fund grants in 2024 (the main exception was India).

Modelling has already been used to assess how cuts in international donor funding for TB in these countries and other LMICs could affect the number of people developing TB and the number of deaths caused by TB *(35–38)*. Estimates of impact include:

- about half a million additional deaths and 1.4 million additional cases[2] in the period 2025–2035 if USAID funding is not replaced, increasing to about 2 million additional deaths and 5 million additional cases when cuts in contributions to the Global Fund are also considered *(36)*;[3]
- about 0.1 million additional deaths and 0.6 million additional cases in the period 2025–2030 resulting from USG funding cuts, if service disruptions last for only 3 months and funding is subsequently restored, potentially increasing to about 2 million additional deaths and 10 million additional cases if USG funding is not restored (or replaced) and service disruptions are prolonged *(37)*.[4]

For comparison, WHO has estimated that disruptions to TB diagnosis and treatment during the COVID-19 pandemic resulted in about 700 000 excess TB deaths in the 4-year period 2020–2023 *(23)*.

[1] Data about the total amount of funding available for the TB response in 2025, by funding source and category of expenditure, will be collected by WHO in the next (2026) round of global TB data collection (**Annex 2**).

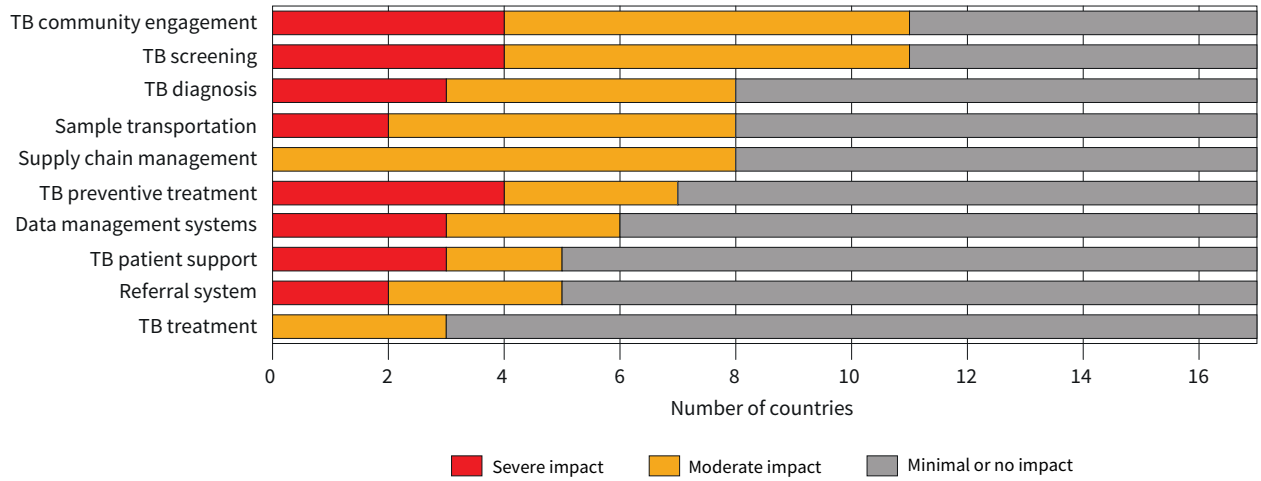
[2] This is compared with a scenario in which levels of funding in 2024 are sustained.

[3] These estimates are for 79 countries that collectively account for about 90% of global TB incidence.

[4] These estimates are for 26 high TB burden countries that collectively account for about 80% of global TB incidence.

FIG. 30

Reported impacts on TB services and associated support systems in 2025, for 17 countries[a] that reported receiving Global Fund grants and bilateral funding from USAID in 2024



[a] As of August 2025, information was not available for four of the 21 countries shown in **Fig. 29**. Information was obtained from WHO country offices between April and August 2025.

A key influence on model projections is the assumption that cuts in funding will result in a proportionate reduction in access to treatment.[1]

Given the potential impact of funding cuts on the numbers of people falling ill with TB and the number of deaths caused by TB, it is critical to monitor how TB services are being affected in practice. In 2025, WHO has gathered information from countries about how TB services and associated support systems are being affected, with particular attention to countries (shown in **Fig. 29**) that were recipients of both USG bilateral funding and Global Fund grants in 2024. WHO has also continued to request countries to report provisional TB case notification data on a monthly or quarterly basis *(39)*, using a system initially established in 2020 to monitor the impact of COVID-related disruptions; these data can provide an early signal of whether disruptions to diagnosis and treatment are occurring. Again, particular attention has been given to countries that were recipients of both USG bilateral funding and Global Fund grants in 2024 (and this will continue).

As of August 2025, the most frequently reported impacts on services and supportive systems were related to TB community engagement, TB screening, TB diagnosis, sample transportation and supply-chain management, with a moderate or severe impact reported by eight or more of the 17 countries for which information was provided; only a few countries reported that TB treatment services had been affected (**Fig. 30**).

In terms of NTPs specifically, more than half of the 17 countries reported impacts on technical support (e.g. from in-country advisors), management and supervision activities, staffing, procurement of diagnostic supplies, periodic surveys (e.g. national TB prevalence surveys, national surveys of anti-TB drug resistance and national surveys of costs faced by TB-affected households), programme reviews and the development of national strategic plans.[2]

Provisional monthly and quarterly TB case notification data available for the first 6 months of 2025 suggest a mixed picture that will need ongoing attention (**Fig. 31**). The countries with reductions in notifications beyond what would be expected based on recent trends include Cambodia, Kenya, Mozambique and Uganda.

In 2025, Nigeria and South Africa are two examples of high TB burden countries that have increased domestic funding for TB, to mitigate the loss of international donor funding. Variation in the share of funding from domestic sources within a given income group suggests that there is scope to increase domestic funding in some other high TB burden and global TB watchlist countries.[3]

Strong national strategic plans for TB that are properly costed should provide the foundation for domestic resource mobilization; countries committed to such plans at the 2023 UN high-level meeting on TB (**Table 2**). WHO guidance on national strategic planning is available *(40)* and the TB module of the Integrated Health Tool for planning and costing (available online) can be used for budgeting as well as optimization of resource allocation and use.

[1] In the models, this is captured as a reduction in the per-capita rate of diagnosis and treatment initiation.

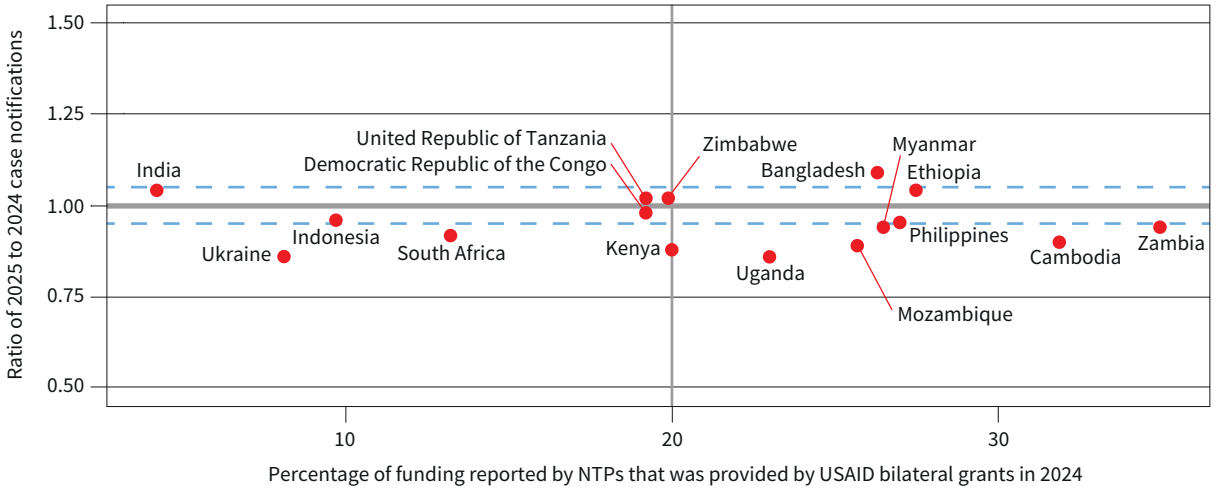
[2] Further details are provided in one of the "featured topics" on the report webpages.

[3] Further details are provided in the report webpages (section 4.1).

FIG. 31

Provisional number of case notifications of people newly diagnosed with TB in 2025 (relative to 2024) compared with the share of funding for TB that was provided by USAID bilateral grants in 2024, for 16 countries[a] that reported receiving Global Fund grants and bilateral funding from USAID in 2024

On the y-axis, values below 1 indicate fewer notifications in 2025 compared with 2024, and vice versa for values above 1. The comparison is for the first 6 months of 2024 and 2025. The horizontal dashed lines demarcate levels of +5% and -5%, relative to 2024.



[a] Notification data reported to WHO as of 8 October 2025 were used. Of the 21 countries that reported relevant funding data (**Fig. 29**), provisional notification data for 2025 were not available for Afghanistan, Kyrgyzstan, Malawi, Nigeria and Tajikistan.

UHC and costs faced by TB-affected households

Faster progress required, TB target off track

Global targets for reductions in TB disease burden can only be achieved if TB prevention, diagnostic and treatment services are provided within the context of progress towards UHC. For example, when the End TB Strategy was adopted in 2014, it was estimated that reaching the 2025 milestone of a 75% reduction in the number of deaths caused by TB (compared with 2015) would require reducing the TB case fatality rate to 6.5% by 2025.[1] Such a low case fatality rate is only feasible if everyone with TB can promptly access diagnostic and treatment services.

UHC means that everyone can obtain the health services they need without suffering financial hardship *(41)*. Through their adoption of the SDGs, all countries have committed to achieving UHC by 2030: Target 3.8 is "Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all" *(1)*. The two indicators being used to monitor progress towards this target are a UHC SCI (Indicator 3.8.1) and the percentage of the population experiencing household expenditures on health care that are "large" in relation to household expenditures or income (Indicator 3.8.2).[2]

The SCI can take values from 0 (worst) to 100 (best); to date, it has been calculated using 14 tracer indicators, one of which is the coverage of TB treatment. In the monitoring of Indicator 3.8.2 by WHO and the World Bank, direct out-of-pocket medical expenditures that account for more than 10% of annual household expenditure or income have been classified as "catastrophic" *(41–43)*. As of September 2025, estimates of the SCI at global, regional and country levels were available for the period 2000–2021, while estimates of the percentage of the population facing catastrophic out-of-pocket health expenditures at global, regional and country-income-group levels were available for 2000–2019 *(42, 43)*.[3,4]

Worldwide, the SCI increased from a score of 45 (out of 100) in 2000 to 68 in 2019, and remained stable at this level in 2021. Most progress occurred between 2000 and 2015, and was primarily due to improvements in service coverage for infectious diseases (with only

[1] This was in combination with a 50% reduction in the TB incidence rate. The estimated case fatality rate in 2024 was 11.5%.

[2] Indicator 3.8.2 is a measure of financial hardship rather than financial barriers to accessing health care. The need for out-of-pocket payments may deter many people from seeking care.

[3] For this reason, estimates in this section are based on those published as of September 2025.

[4] The definitions of SDG Indicator 3.8.1 and SDG Indicator 3.8.2 were updated in March 2025; updated estimates are scheduled for publication in December 2025.

limited changes for other areas of service provision).

At regional level, the SCI increased in all six WHO regions between 2000 and 2019; the biggest gains in absolute terms were in the Eastern Mediterranean Region (from 30 to 62) and the Western Pacific Region (from 49 to 79). There were also increases in all four World Bank income groups. Progress stalled between 2019 and 2021 in most WHO regions and World Bank income groups. In 2021, the WHO regions with the highest values were the European Region (81) and the Region of the Americas (80); the region with the lowest value was the African Region (44).

Among the 30 high TB burden countries, most made progress in service coverage between 2000 and 2019. The largest gains in absolute terms (+30 index points or more) were in China, India, Myanmar, Thailand and Viet Nam. However, as at global and regional levels, progress stalled or reversed in most countries between 2019 and 2021, during the COVID-19 pandemic. In 2021, the high TB burden countries with the highest SCI values (around 80) were Brazil, China and Thailand; most other countries had values between about 40 and 60 (**Fig. 32**).

In contrast to improvements in the SCI, the proportion of the general population facing catastrophic out-of-pocket expenditures on health worsened between 2010 and 2019, rising from 11.4% (794 million people) in 2010 to 13.5% (1.04 billion people) in 2019 *(42)*. At regional level, higher proportions in 2019 compared with 2010 were estimated for all WHO regions except the Region of the Americas.

National values for the percentage of the population facing catastrophic out-of-pocket expenditures on health are available for different years and there is more geographical variability than with the SCI, including within regions. Of the 30 high TB burden countries, estimates of the percentage of the population facing catastrophic health expenditures are particularly high (≥15% of the population) for Angola, Bangladesh, China, India, Nigeria, Sierra Leone and Uganda.

Values for both indicators in the 30 high TB burden countries show that there is a long way to go before the SDG targets for UHC are achieved in most of these countries (**Fig. 32**). Only Thailand stands out as having a very high SCI (82 in 2021)[1] and a low level of catastrophic out-of-pocket health expenditures (2.0% of households). A Universal Coverage Scheme was established in Thailand in 2002 to provide an explicit benefit to all citizens of the country who were not already covered by a health insurance scheme in the formal sector; the scheme is supported by domestic funding and a strong primary health care system *(44)*.

To achieve UHC, substantial increases in investment in health care are critical. Between 2000 and 2022,[2] there were striking increases in health expenditure (from all sources) per capita in a small number of high TB burden countries, notably the upper-middle-income countries of Brazil, China, South Africa and Thailand. There have also been considerable increases in several lower-middle-income countries: Bangladesh, India, Indonesia, Kenya, Lesotho, Mongolia, Myanmar, the Philippines and Viet Nam. Health expenditure has been rising in most low-income and high TB burden countries, most noticeably in the Central African Republic, Ethiopia, Liberia and Mozambique, albeit from much lower levels.[3]

Given the importance of UHC to targets for reductions in TB incidence and mortality, the End TB Strategy included a third target for the reduction of cost barriers to accessing TB diagnosis and treatment that are faced by people with TB and their households (**Box 2**). The target is that no TB-affected households face total costs (comprising direct medical expenditures, nonmedical expenditures and indirect costs such as income losses) that are catastrophic (defined as total costs exceeding 20% of annual household income). The key differences between this TB-specific indicator and the SDG UHC indicator for household expenditures on health care (Indicator 3.8.2) are explained in **Box 3**.

Between 2015 and August 2025, a total of 42 countries completed a national survey of costs faced by people treated for TB and their households; among these 42 countries, 40 (including 20 of the 30 high TB burden countries and two of the three global TB watchlist countries)[4] have reported results.[5] In 2024, repeat surveys were completed in the Republic of Moldova and Viet Nam, and data collection for a repeat survey was underway in Brazil and the United Republic of Tanzania.

The mean total cost (in constant US$ prices for 2024)[6] incurred by people treated for TB and their households ranged from US$ 78 (95% confidence interval [CI]: US$ 62–97) in the Gambia to US$ 3800 (95% CI: US$ 3040–4560) in Mongolia.

The percentage of TB-affected households facing total costs that were catastrophic ranged from 13% (95% CI: 10–17%) in El Salvador to 92% (95% CI: 86–97%) in the Solomon Islands; the pooled average for all 40 countries, weighted for each country's number of notified cases, was 47% (95% CI: 37–58%) (**Fig. 33**).[7] Among 37 countries that reported disaggregated data, the percentage facing catastrophic total costs was much higher for drug-resistant TB, with a pooled average of 82% (95% CI: 71–93%).

Survey results have been used to inform approaches

[1] Categories used by WHO for UHC SCI monitoring are "very high" (≥80), "high" (60–79) and "medium" (40–59).

[2] 2022 is the latest year for which data are currently available.

[3] Further details are provided in the report webpages (section 5.1).

[4] See **Annex 3**.

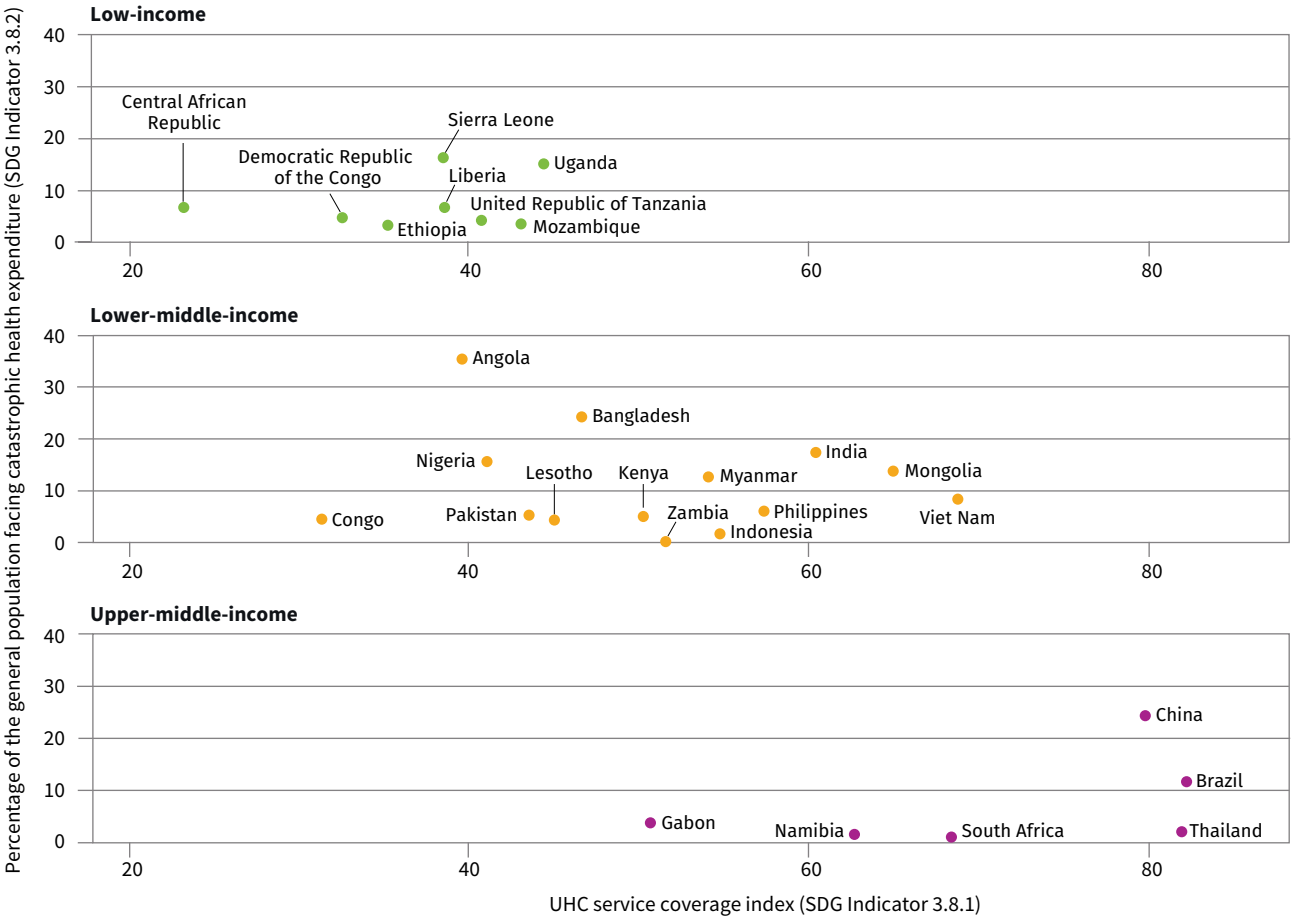
[5] Results from surveys in Benin and China have not been reported to WHO.

[6] All values were converted to a common year of prices (constant 2024 US$), to allow for fair comparisons among surveys.

[7] Further details are provided in the report webpages (section 5.2).

FIG. 32

UHC service coverage index (SDG Indicator 3.8.1)[a] and percentage of the general population facing catastrophic health expenditure (SDG Indicator 3.8.2),[b] 30 high TB burden countries,[c] stratified by income group[d]



[a] The service coverage index (SCI) can take values from 0 (worst) to 100 (best) and is calculated using 14 tracer indicators, one of which is the coverage of TB treatment. Values shown for the SCI are estimates for the latest year for which data for SDG Indicator 3.8.2 are available. Values for the SCI are based on interpolated points between available years over the 2000–2021 period.

[b] Defined in 2017 as >10% of total household consumption or income. The latest available year (based on data published in 2023) ranges from 2007 to 2021 for the 30 high TB burden countries.

[c] Data for SDG Indicator 3.8.2 were not available for the Democratic People's Republic of Korea and Papua New Guinea.

[d] The classification is for the latest year for which data for SDG Indicator 3.8.2 are available.

Source: Global Health Observatory (https://www.who.int/data/gho).

to health financing, service delivery and social protection that will reduce these costs *(45, 46)*. They have also been used to produce model-based estimates of total costs faced by TB-affected households in other countries *(47)*.

Multisectoral action and accountability

Coverage of social protection inadequate

Undernutrition and diabetes are leading TB determinants

Achieving global targets for reductions in TB disease burden requires multisectoral action to help mitigate or remove barriers to accessing essential TB services and to address broader social determinants that influence TB transmission and susceptibility to development of disease. At the second UN high-level meeting on TB in 2023, Member States adopted a target that everyone with TB should have access to a health and social benefits package by 2027 (**Table 1**) and committed to strengthening multisectoral action and accountability (**Table 2**), including through use of the WHO MAF-TB *(48)*.[1]

Evidence about the coverage of social protection is available from the ILO. Although the data are for the general population rather than being specific to people with TB, they provide good evidence about overall levels of social protection, including in high TB burden countries. An estimated 52% of the world's population is covered by at least one social protection benefit (up from 43%

[1] To support use of the MAF-TB at national level, WHO has published a checklist for a situational assessment, an operational guide and examples of best practices *(49–51)*.

Box 3. The difference between "catastrophic total costs" for TB-affected households, and the SDG UHC indicator related to household expenditures on health care

It is important to distinguish between SDG Indicator 3.8.2, "the proportion of the population with large household expenditures on health as a share of total household expenditure or income", and "the percentage of TB-affected households facing catastrophic total costs due to TB", which is an indicator within the WHO End TB Strategy.

The SDG indicator is for the *general population*. Household expenditures on health are defined as *direct expenditures* on health by all household members who seek any type of care (preventive, curative, rehabilitative or long-term) for any type of disease, illness or health condition, in any type of setting (outpatient, inpatient or at home). They include both formal and informal expenditures. This indicator attempts to capture the impact of household expenditures on health on household ability to spend on other basic needs. The denominator of the total population includes many people who had no contact with the health system and thus had zero expenditures on health. Although these people did not experience financial hardship because of direct expenditures on health care, they may nonetheless have faced financial barriers to accessing health services that they needed. Hence, the SDG indicator cannot be used as a measure of financial barriers to access to health care.

Due to the nature of the illness, people with TB and their households can face severe direct and indirect financial and economic costs. These pose barriers that can greatly affect their ability to access diagnosis and treatment, and to complete treatment successfully. Costs included in the TB-specific indicator include not only *direct medical payments* for diagnosis and treatment, but also *direct nonmedical payments* (e.g. for transport and lodging) and indirect costs (e.g. lost income). In contrast to SDG Indicator 3.8.2, the TB-specific indicator is restricted to a particular population: *people diagnosed with TB who are users of health services that are part of NTP networks*.

Given these conceptual differences, the percentage of TB-affected households facing "catastrophic total costs" (defined as direct and indirect costs that account for >20% of their annual household income) is expected to be much higher than the percentage of the general population facing catastrophic expenditures on health care. Hence, the two indicators cannot and should not be compared directly.

in 2015),[1] with considerable variation among countries (**Fig. 34**). Coverage is strongly related to income level, ranging from an average of 9.7% in low-income countries to 86% in high-income countries. Among the 30 high TB burden countries, the percentage of the population covered by at least one social protection benefit varies from 3.1% in Uganda to 94% in Mongolia; in 19 of these countries, the percentage is below 50%.

When country values for the percentage of people covered by at least one social protection benefit are weighted according to each country's share of the global number of people newly diagnosed with TB and officially notified as a TB case in 2024, the global average is 44%. This weighted average provides a more "TB sensitive" global figure related to the coverage of social protection.

In July 2025, the need for intensified efforts to improve levels of social protection was recognized by UN Member States in the "Sevilla Commitment" *(52)*. The commitment is to expand the fiscal space for social protection, with a view to increasing coverage by at least 2 percentage points per year in countries where social protection is not yet universal.

Many new cases of TB are attributable to five risk factors: undernutrition, diabetes, alcohol use disorders, smoking (especially among men) and HIV infection (**Fig. 35**) *(53–56)*.[2,3] Multisectoral action is needed to address these and other determinants of TB, such as gross domestic product (GDP) per capita (**Fig. 36**) and poverty.[4]

The status of progress in strengthening multisectoral accountability for the TB response at national level can be assessed using data that are available for three key elements of the MAF-TB: multisectoral reviews of progress in the TB response and associated recommendations for action, including representation from civil society and affected communities; production of an annual TB report, to inform high-level review; and engagement of different sectors of government in the TB response.

In 2025, 90 countries reported that they had a multisectoral review mechanism in place, including 19 of the 30 high TB burden countries. These review mechanisms had representation from civil society and affected communities in 73 countries, including 19 of the 30 high TB burden countries.

A total of 110 countries reported publishing an annu-

[1] This estimate is based on data for the latest available year in each country, which ranges from 2019 to 2025.

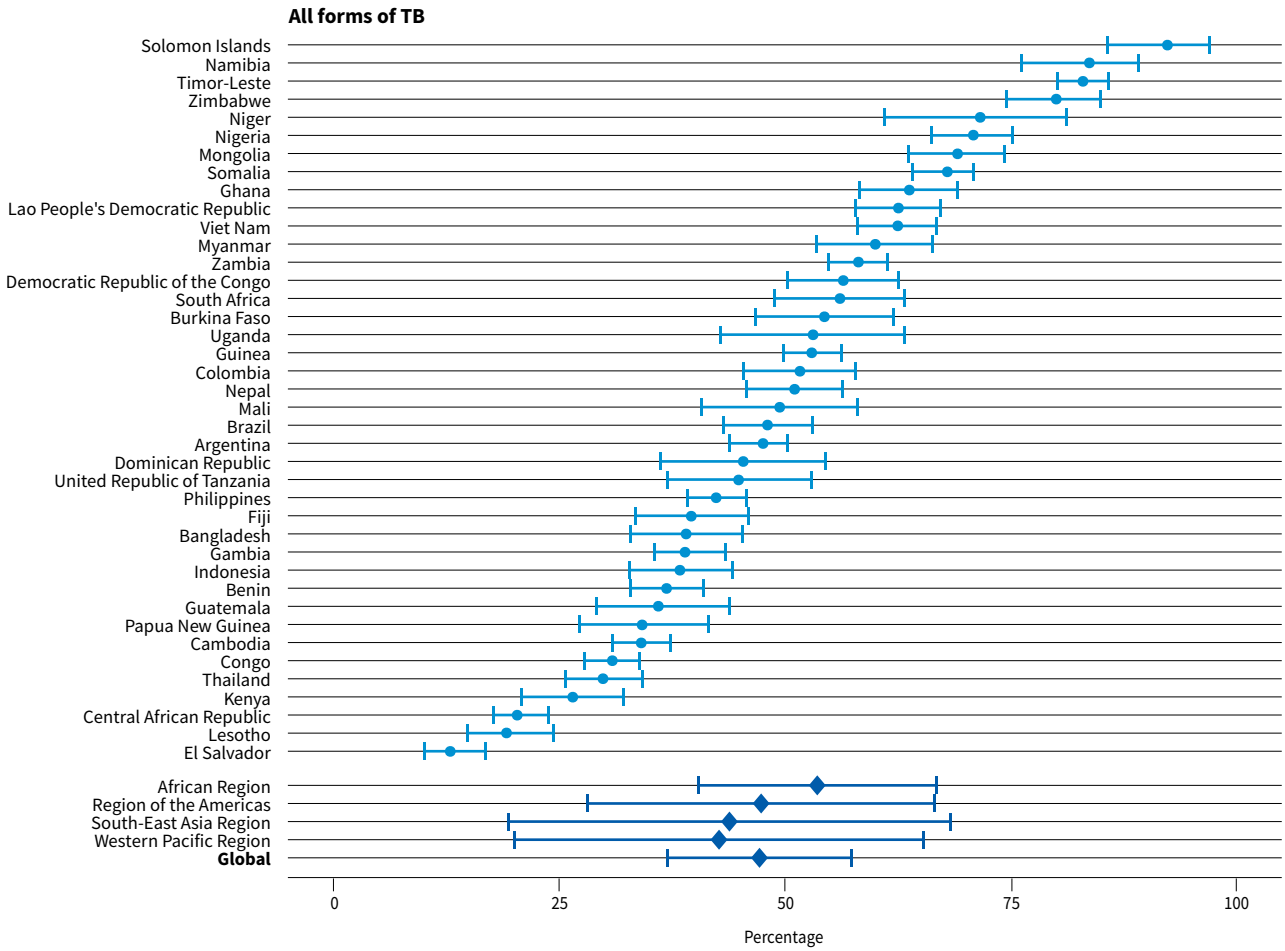
[2] Sources of data used to produce estimates include journal articles *(53–56)*, the World Bank SDG database, the WHO GHO and the WHO World Health Data Hub.

[3] Estimates have been revised upwards for diabetes, following the availability of more recent estimates of the prevalence of diabetes in the general population *(57)*.

[4] SDG targets and indicators that are associated with TB incidence are described in **Annex 5**.

FIG. 33

Estimates of the percentage of people treated for TB and their households facing catastrophic total costs (mean and confidence intervals),[a] national surveys completed 2015–2025[b]



[a] Defined as direct medical expenditures, direct nonmedical expenditures and indirect costs (e.g. income losses) that sum to >20% of annual household income. This indicator is not the same as the SDG indicator for catastrophic health expenditures; see **Box 3** for further explanation.

[b] The percentages are shown for 40 national surveys that have been completed and for which data have been reported. Data were not available for China and the Republic of Moldova.

al TB report on progress towards national TB-related targets and commitments, including 22 of the 30 high TB burden countries.

Beyond the health sector, the most widely engaged sectors of government were education (42% of countries), defence (34%), justice (27%) and social development (25%). There is considerable scope to increase engagement in these key sectors and beyond.

WHO also recommends that countries conduct MAF-TB baseline assessments, and then use the results to develop a MAF-TB implementation plan. In 2025, 60 countries reported that they had completed a MAF-TB baseline assessment and 64 reported that a MAF-TB implementation plan had been developed.

A total of 31 countries, including 12 high TB burden countries, had all five core elements of the MAF-TB in place. That is, they had a multisectoral review mechanism, engagement of civil society and affected communities in the review mechanism, an annual report, a baseline assessment and an implementation plan.[1]

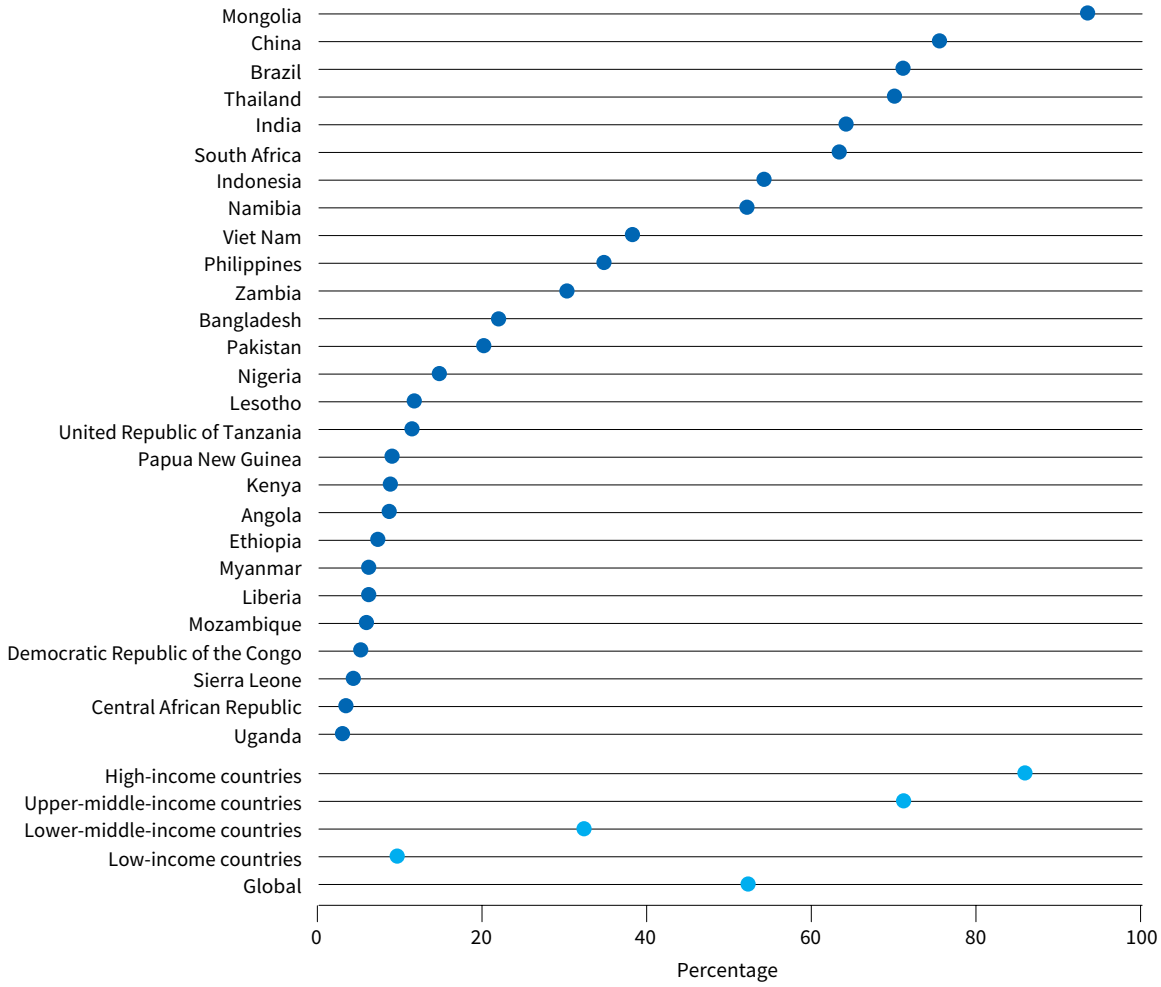
In line with the global part of the MAF-TB and requests at the 2023 UN high-level meeting on TB (**Table 2**), WHO will continue to lead the coordination of global TB monitoring, reporting and review, and will provide technical support and guidance to countries and partners. This work will continue to be informed by the WHO Civil Society Task Force on TB.

In 2024, WHO initiated work on how climate change affects the TB epidemic and progress in response efforts. Particular attention is being given to three pathways through which climate change affects TB: food insecurity and undernutrition, displacement and migration of populations, and disruption to health systems. An analytical framework and research agenda were published in 2025 *(58)*.

[1] Further details are provided in the report webpages (section 5.4).

FIG. 34

Percentage of the population covered by at least one social protection benefit, 30 high TB burden countries,[a] four income groups and globally,[b] latest available year[c]



[a] Data were not available for the Congo, the Democratic People's Republic of Korea and Gabon.

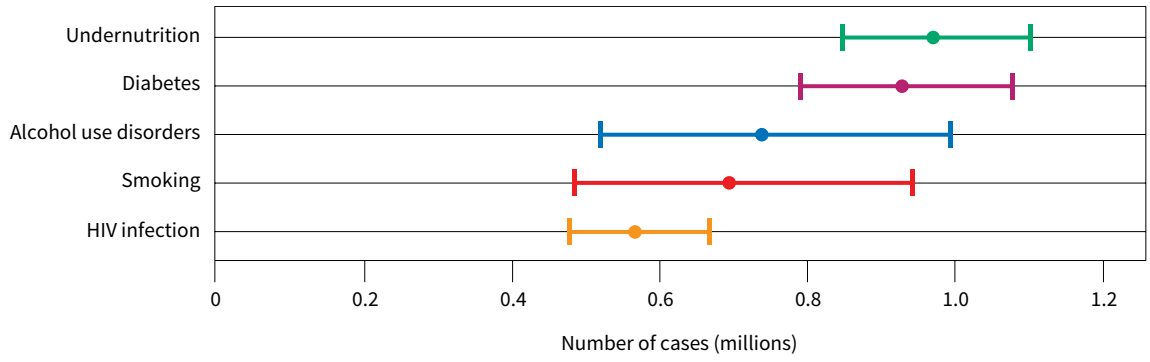
[b] Data are shown for World Bank income groups since income level is a key influence on social protection coverage.

[c] The latest available year ranges from 2019 to 2025.

Source: International Labour Organization.

FIG. 35

Global estimates of the number of people with a new episode of TB (incident cases) attributable to five risk factors,[a] 2024

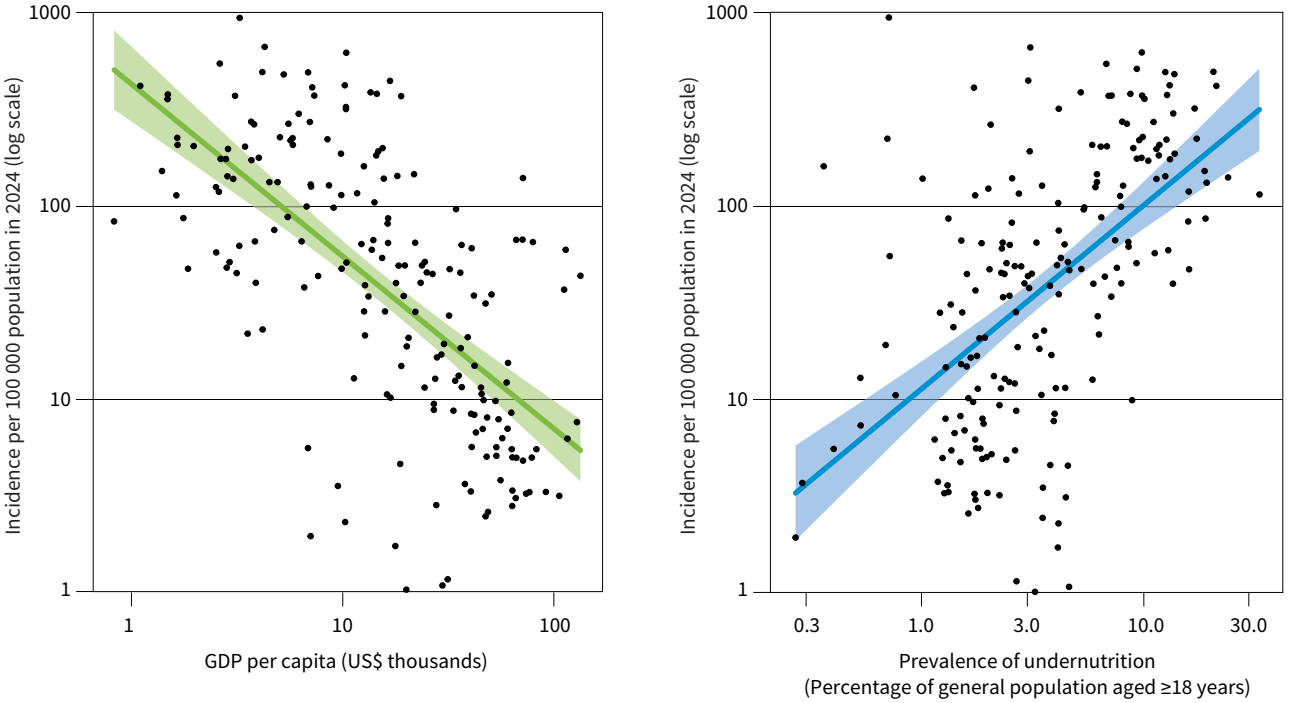


[a] Estimates for diabetes, smoking and alcohol use disorders are for the adult population only; this is consistent with available prevalence data. For adults aged ≥18, undernutrition is defined as a body mass index (BMI) <18.5. For children and adolescents aged 5–17 years, it is defined as a BMI of less than minus 2 standard deviations below the median. For those aged <5 years, it is defined as wasting (weight for height of less than minus 2 standard deviations from the median).

FIG. 36

Relationship between two SDG-related indicators[a,b] and the TB incidence rate

Each dot represents a country or area.



[a] The year of data used for GDP per capita and the population prevalence of undernutrition is the latest year for which data are available from the World Bank (https://data.worldbank.org/) and in the WHO Global Health Observatory (https://www.who.int/data/gho), respectively.

[b] For adults aged ≥18, undernutrition is defined as a body mass index (BMI) <18.5. For children and adolescents aged 5–17, it is defined as a BMI of less than minus 2 standard deviations below the median. For those aged <5 years, it is defined as wasting (weight for height of less than minus 2 standard deviations from the median).

TB research

Pipelines expanding but changes in funding landscape threaten progress

The End TB Strategy targets set for 2030 (**Box 2**) cannot be met without intensified research and innovation *(12)*. Major technological breakthroughs are urgently needed to accelerate the annual decline in the global TB incidence rate. Reductions in TB incidence achieved between 2015 and 2024 fall far short of the 2025 milestone of the strategy (12% compared with 50%).

Priorities include new vaccines to reduce the risk of infection, new vaccines or preventive drug treatments to reduce the risk of TB disease in people already infected; rapid diagnostic tests for accurate detection of TB disease at the point of care; and simpler, shorter treatments for TB disease. WHO has developed a global strategy for TB research and innovation, which was adopted by all Member States in 2020 *(59)*. This aims to support accelerated TB research and innovation, and improve equitable access to the benefits of research.

Recent years have seen important progress in the development of new TB diagnostics, drugs and vaccines.[1]

[1] A high-level summary is provided in this subsection. Further details are provided in the report webpages (section 6).

The diagnostic pipeline has expanded considerably. In August 2025, there were 63 tests in development for diagnosis of TB disease and infection. For TB disease, they included point-of-care (POC) tests (e.g. lateral flow tests), near-POC nucleic acid amplification tests (NAATs), automated NAATs of both low and moderate complexity, line probe assays for detection of drug resistance and targeted next-generation sequencing. For TB infection, they included interferon-gamma release assays and TB antigen-based skin tests. Novel technologies for TB screening (e.g. computer-aided detection using digital chest radiography) among people with a high likelihood of having TB disease were also in the pipeline.

As of August 2025, there were 29 drugs for the treatment of TB disease in Phase 1, Phase 2 or Phase 3 trials. This is the same number as in 2024, but an impressive increase from only eight drugs in 2015.

The 29 drugs comprise:

- 18 new chemical entities: alphibectir (BVL-GSK098), BTZ-043, delpazolid, GSK-286, ganfeborole (GSK-3036656), macozinone, MK-7762 (TBD09), quabodepistat (OPC-167832), TBAJ-587, TBAJ-876, TBI-223, pyrifazimine (TBI-166), TBA-7371, telacebec (Q203), sanfetrinem, SQ109, sutezolid and sudapyridine (WX-081);

- three drugs that have already been approved by WHO for use in treatment: bedaquiline, delamanid and pretomanid; and
- eight repurposed drugs: clofazimine, levofloxacin, linezolid, moxifloxacin, rifampicin (high dose), rifapentine, sitafloxacin and tedizolid.

In addition, various combination regimens with new or repurposed drugs, as well as host-directed therapies, are in Phase 2 or Phase 3/4 trials, or are being evaluated as part of operational research projects.

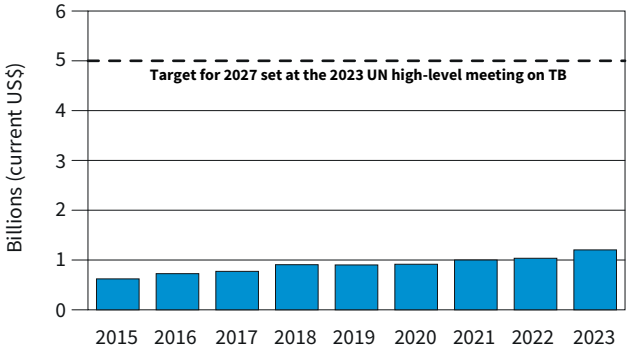
In August 2025, there were at least 42 clinical trials and implementation research studies underway to evaluate drug regimens and models of delivery for TPT. Trials are being used to assess the safety and efficacy of delamanid in preventing MDR-TB, TPT in people with diabetes and novel short-course regimens (e.g. thrice-weekly isoniazid and rifapentine for 1 month and rifamycin monotherapies given over 6 or 8 weeks). At least 16 studies of novel delivery models in both community and facility-based settings are being implemented.

In August 2025, there were 18 vaccine candidates in clinical trials, up from 15 in 2024: four in Phase 1, eight in Phase 2 and six in Phase 3. They included candidates to prevent TB infection and TB disease, and to help improve the outcomes of treatment for TB disease. Effective vaccines are particularly critical for accelerating annual reductions in TB incidence to levels that are much faster than those achieved historically.

Progress to date has been constrained by the overall level of investment. The most recently published data *(60)* show a total of US$ 1.2 billion in 2023 (**Fig. 37**); this represents a modest increase from US$ 1.0 billion in 2022 but is still only 24% of the global target of US$ 5 billion per year by 2027 (**Table 1**).

FIG. 37

Funding for TB research, 2015–2023



Source: Treatment Action Group, Stop TB Partnership. Tuberculosis research funding trends 2005–2023. New York: Treatment Action Group; 2024 (https://www.treatmentactiongroup.org/resources/tbrd-report/tbrd-report-2024/)

Even these levels of investment are now at risk. In 2023, the public sector was the largest source of funding for TB research (62% of the total), followed by philanthropic organizations (24%), the private sector (9%) and multilateral agencies (4%). Of particular significance, the US National Institutes of Health (NIH) was the largest individual funder, providing 34% of all global TB research funding. In 2025, many NIH grants for health-related research were terminated *(61)* and a 40% reduction in the NIH budget for 2026 has been proposed *(62)*.

When new evidence related to new TB drugs, diagnostic tests, treatment regimens and vaccines becomes available, it is reviewed by WHO and used to update WHO recommendations related to TB prevention, diagnosis, treatment and care (**Box 4**).

Box 4. New WHO guidance related to TB prevention, diagnosis, treatment and care

WHO published new guidelines and handbooks on TB prevention, diagnosis, treatment and care in the period between November 2024 and October 2025:

- consolidated guidelines and an operational handbook on TB diagnosis, which bring together guidance on detection of TB infection, disease and drug resistance in single documents *(24, 63)*;
- consolidated guidelines and an operational handbook on TB treatment and care, which bring together guidance for drug-susceptible TB and drug-resistant TB that was previously provided separately and include new guidance on treatment of MDR/RR-TB based on evidence from recent trials *(26, 64)*; and
- a third edition of an operational handbook on TB and comorbidities, which includes a new section on diabetes *(65)*.

Guidance on evidence generation related to new TB treatment regimens was released in December 2024 *(66)*.

A policy statement on the use of computer-aided detection for TB screening was issued in June 2025 *(67)*.

Target product profiles for TB screening tests and a consensus statement on the inclusion of pregnant and lactating women in TB research were released in August 2025 *(68, 69)*.

New recommendations on TB and undernutrition were published in October 2025 *(70)*, as part of a second edition of consolidated guidelines on TB and comorbidities.

All WHO guidelines and operational handbooks, as well as training modules and other documents to support the production of evidence-based recommendations, can be found on the WHO TB Knowledge Sharing Platform *(71)*.

4. Conclusions

All WHO and UN Member States have committed to ending the global TB epidemic, through their adoption of the End TB Strategy and SDGs. The 2030 targets of the End TB Strategy are a 90% reduction in the number of deaths caused by TB and an 80% reduction in the TB incidence rate compared with levels in 2015; the 2025 milestones are reductions of 75% and 50%, respectively.

These commitments were reaffirmed at two UN high-level meetings on TB, held in 2018 and 2023, and reinforced with additional targets related to funding, the provision of treatment to people with TB disease or TB infection, and the availability of new TB vaccines.

TB remains a major global public health problem, and progress in reducing the burden of disease falls far short of 2030 targets in most parts of the world. Nonetheless, after setbacks during the COVID-19 pandemic, most indicators are moving in the right direction and there are regional and country success stories.

Further and faster reductions in the burden of TB disease require improvements in the coverage of TB diagnostic, treatment and preventive interventions; action on broader determinants that drive new infections or increase the risk of developing disease once infected; and technological breakthroughs, such as a new TB vaccine. All depend on adequate funding, which remains grossly inadequate and has been stagnating since 2020.

Cuts to international donor funding from 2025 onwards threaten overall funding for the TB response in many countries. To achieve the goal of ending the global TB epidemic, political commitment and domestic funding in high TB burden countries are more important than ever.

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ANNEX 1

Basic facts about TB

Tuberculosis (TB) is an old disease. Studies of human skeletons show that it has affected humans for thousands of years *(1)*. Its cause remained unknown until 24 March 1882, when Dr Robert Koch announced his discovery of the bacillus responsible, subsequently named *Mycobacterium tuberculosis (2)*. The disease is spread when people who are sick with TB expel bacteria into the air (e.g. by coughing). TB typically affects the lungs (pulmonary TB) but can also affect other sites (extrapulmonary TB). Most people who develop the disease (about 90%) are adults and there are more cases among men than women.

Diagnostic tests for TB disease have improved substantially in recent years. There are now several rapid molecular tests recommended by WHO as the initial diagnostic test for TB, some of which can detect drug resistance simultaneously *(3)*. These tests can be used at the lower levels of the health system. A point-of-care lateral-flow test performed on urine is also recommended by WHO; its main use is to assist with diagnosis of TB in people with advanced HIV disease, in combination with rapid molecular tests. There are additional rapid molecular tests specifically for the detection of resistance to a variety of first- and second-line anti-TB drugs, while sequencing technologies can be used to provide a comprehensive individual profile of drug resistance. The older method of sputum smear microscopy (developed >100 years ago) is still used for TB diagnosis in low and middle-income countries but is increasingly being replaced with rapid tests.

Culture testing remains the reference standard for TB diagnosis. In addition, culture is required for the detection of resistance to newer anti-TB drugs and may also be used as a confirmatory test in settings and situations in which people have a low pre-test probability of having TB disease. Following diagnosis, culture or smear (as opposed to rapid molecular tests) are necessary to monitor an individual's response to treatment.

Screening can be used to detect people with TB earlier in the course of the disease, including people with TB whose diagnosis might otherwise be missed. TB screening algorithms recommended by WHO are based on chest X-ray, computer-aided detection software, molecular diagnostic tests, symptoms, physical signs and other tools *(4)*.

Without treatment, the death rate from TB is high. Studies of the natural history of TB disease in the absence of treatment with anti-TB drugs (conducted before drug treatments became available) found that about 70% of individuals with sputum smear-positive pulmonary TB died within 10 years of being diagnosed, as did about 20% of people with culture-positive (but smear-negative) pulmonary TB *(5)*.

Effective drug treatments were first developed in the 1940s.

For people with drug-susceptible TB (both pulmonary and extrapulmonary), the latest WHO treatment guidelines *(6)* include a strong recommendation for a 6-month regimen of isoniazid (H), rifampicin (R), ethambutol (E) and pyrazinamide (Z): all four drugs for the first two months, followed by H and R for the remaining 4 months. The guidelines also include recommendations that people aged 12 years and older with drug-susceptible pulmonary TB may be treated with a 4-month regimen of rifapentine (P), H, Z and moxifloxacin (M), and that children and adolescents between 3 months and 16 years of age with non-severe TB (and without suspicion or evidence of resistance to R and H) may be treated with a 4-month regimen (2 months of H, R, Z and sometimes also E, followed by 2 months of H and R). Globally, the treatment success rate for people with drug-susceptible TB has been sustained at a high level for many years. In the latest annual cohort of people enrolled on treatment for which data are available (2023), it was 88%.

Treatment for people diagnosed with R-resistant TB (RR-TB) and multidrug-resistant TB (MDR-TB, defined as resistance to H and R) requires other drug regimens. The latest WHO treatment guidelines *(5)* prioritize two 6-month regimens. One of these consists of bedaquiline (B), pretomanid (Pa), linezolid (L) and M (BPaLM); it was approved by WHO in 2022. The second consists of B, delamanid (DL), L, levofloxacin (Lfx) and clofazimine (BDLLfxC); it was approved by WHO in 2024. Globally, the treatment success rate for RR-TB has been steadily improving. It reached 71% in the most recent annual cohort of people enrolled on treatment for which data are available (2022), up from 50% in 2012. Further improvements are expected as the use of the 6-month treatment regimens expands.

Treatment for extensively drug-resistant TB (XDR-TB, defined as resistance to R, any fluoroquinolone and at least one of B or L) remains much more difficult and treatment success rates are typically low.

A global modelling study published in 2016 estimated that about a quarter of the world's population had been infected with *M. tuberculosis (7)*. More recent analyses and commentary suggest that the number of those currently infected is lower, given that some people will clear the infection *(8, 9)*. Following infection, the risk of developing TB disease is highest in the first 2 years (approximately 5%), after which it is much lower *(10)*. The probability of developing TB disease is much higher among people living with HIV, and among people affected by risk factors such as undernutrition, diabetes, smoking and alcohol consumption.

TB preventive treatment (TPT) is available to treat TB infection in people at risk of developing TB. Recommended options include: a weekly dose of H and P for 3 months (3HP), a daily dose of H and R for 3 months (3HR), a daily dose of H and P for 1 month (1HP), a daily dose of R for 4 months (4R) and a daily dose of H for 6 months (6H) or 9 months (9H) *(11)*. In people exposed to MDR/RR-TB, a daily dose of Lfx for 6 months (6Lfx) is recommended.

The only licensed vaccine for prevention of TB disease is the bacille Calmette-Guérin (BCG) vaccine. The BCG vaccine was introduced over 100 years ago, prevents severe forms of TB in children and is widely used. There is currently no licenced vaccine that is effective in preventing TB disease in adults, either before or after exposure to TB infection; however, results from a Phase II trial of the M72/AS01E candidate are promising *(12)*. This vaccine is now in a Phase III trial, along with five other vaccine candidates.

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ANNEX 2

Data sources and access

A2.1 Database contents

The *Global tuberculosis report 2025* is based on data requested annually from 215 countries and areas, including all 194 World Health Organization (WHO) Member States. Data are stored in the global TB database, which is managed by the TB Monitoring, Evaluation and Strategic Information unit of WHO's Department for HIV, Tuberculosis, Hepatitis and Sexually Transmitted Infections.

The department has implemented annual rounds of data collection since 1995. The main round of data collection for this report took place in April and May 2025. As in previous years, data were collected on the following: TB case notifications and treatment outcomes, including breakdowns by TB case type, age, sex, HIV status and drug resistance; laboratory diagnostic services; monitoring and evaluation, including surveillance and surveys specifically related to drug-resistant TB; contact screening and TB preventive treatment; digital systems for TB surveillance; TB infection control; engagement of all public and private care providers in TB prevention and care; community engagement; specific elements of the WHO multisectoral accountability framework for TB; budgets of national TB programmes (NTPs); use of general health services (hospitalization and outpatient visits) during treatment; and NTP expenditures. A shortened version of the questionnaire was used for high-income countries as defined by the World Bank[1] or low-incidence countries, defined as countries with an incidence rate of <20 cases per 100 000 population or <10 cases in total in 2023.

High TB burden countries and selected other regional priority countries were also asked to continue reporting monthly or quarterly provisional notification data. This process started in 2020 to monitor trends in the context of the COVID-19 pandemic.

Countries and areas reported data via a dedicated website.[2] Countries in the European Union submitted data on notifications and treatment outcomes to the TESSy system managed by the European Centre for Disease Prevention and Control (ECDC). Data from TESSy were uploaded into the WHO global TB database.

Additional data about the provision and completion of TB preventive treatment to people newly or currently enrolled in HIV care, detection of TB among people newly enrolled in HIV care, and provision of antiretroviral therapy for TB patients living with HIV were collected by the Joint United Nations Programme on HIV/AIDS (UNAIDS). These data were jointly validated by WHO and UNAIDS, and then uploaded into the WHO global TB database.

TABLE A2.1

Reporting of data in the 2025 round of global TB data collection

	COUNTRIES AND AREAS		WHO MEMBER STATES	
	NUMBER	NUMBER THAT REPORTED DATA	NUMBER	NUMBER THAT REPORTED DATA
African Region	47	46	47	46
Region of the Americas	45	35	35	29
South-East Asia Region	10	10	10	10
European Region	54	40	53	39
Eastern Mediterranean Region	22	21	21	20
Western Pacific Region	37	32	28	26
Global	**215**	**184**	**194**	**170**

Following review and follow-up with countries, the data used for the main part of this report were those that were available on **30 July 2025**. Table A2.1 shows the number of countries and areas that had reported data by 30 July 2025.

Indicators in the Sustainable Development Goals (SDGs) associated with TB incidence were imported into the global TB database on **7 July 2025**. Table A2.2 shows the data sources used.

Population estimates from the United Nations Population Division's 2024 revision of World Population Prospects[3] were imported into the global TB database on 2 July 2024 and used in the analyses for this report.

A2.2 Accessing TB data using the WHO website

Most of the data held in the WHO global TB database can be accessed via the WHO TB data web page.[4] This page provides comma-separated value (CSV) data files and data visualizations, as well as country, regional and global profiles.

[1] https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups
[2] https://extranet.who.int/tme
[3] https://population.un.org/wpp/
[4] https://www.who.int/teams/global-tuberculosis-programme/data

TABLE A2.2

Data sources for indicators in the SDGs that are associated with TB incidence

SDG INDICATOR	DISPLAY NAME IN PROFILE	DATA SOURCE	NAME AT SOURCE	SOURCE URL
1.1.1	Population living below the international poverty line (% of population)	UN SDG database	Proportion of population below the international poverty line of US$1.90 per day	https://unstats.un.org/SDGAPI/v1/sdg/Series/Data?seriesCode=SI_POV_DAY1
1.3.1	Population covered by social protection floors/systems (% of population)	World Bank	Coverage of social protection and labor programs (% of population)	http://data.worldbank.org/indicator/per_allsp.cov_pop_tot
2.1.1 *(alternative)*	Prevalence of undernutrition (% of population aged ≥18 years)	WHO-GHO	Prevalence of underweight among adults, BMI <18.5 (crude estimate) (%)	https://ghoapi.azureedge.net/api/NCD_BMI_18C
3.3.1 *(alternative)*	HIV prevalence (% of population aged 15–49 years)	WHO-GHO	Prevalence of HIV among adults aged 15 to 49 (%)	https://ghoapi.azureedge.net/api/MDG_0000000029
3.4.1 *(alternative)*	Diabetes prevalence (% of population aged ≥18 years)	WHO-GHO	Prevalence of diabetes, age-standardized	https://ghoapi.azureedge.net/api/NCD_DIABETES_PREVALENCE_AGESTD
3.5.2 *(alternative)*	Alcohol use disorders, 12 month prevalence (% of population aged ≥15 years)	WHO-GHO	Alcohol use disorders (15+), 12 month prevalence (%) with 95%	https://ghoapi.azureedge.net/api/SA_0000001462
3.a.1 *(alternative)*	Smoking prevalence (% of population aged ≥15 years)	WHO-GHO	Estimate of current tobacco smoking prevalence (%) (age-standardized rate)	https://ghoapi.azureedge.net/api/M_Est_smk_curr_std
3.8.1	UHC index of essential service coverage (based on 14 tracer indicators including TB treatment)	WHO-GHO	UHC index of essential service coverage	https://ghoapi.azureedge.net/api/UHC_INDEX_REPORTED
3.8.2	Greater than 10% of total household expenditure or income on health (% of population)	WHO-GHO	Catastrophic out-of-pocket health spending (SDG indicator 3.8.2)	https://ghoapi.azureedge.net/api/FINPROTECTION_CATA_TOT_10_POP
3.8.2 *(alternative)*	Health expenditure per capita, PPP (current international $)	World Bank	Current health expenditure per capita, PPP (current international $)	http://data.worldbank.org/indicator/SH.XPD.CHEX.PP.CD
7.1.2	Access to clean fuels and technologies for cooking (% of population)	World Bank	Access to clean fuels and technologies for cooking (% of population)	http://data.worldbank.org/indicator/EG.CFT.ACCS.ZS
8.1.1 *(alternative)*	GDP per capita, PPP (constant 2011 international $)	World Bank	GDP per capita, PPP (constant 2011 international $)	http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.KD
10.1.1 *(alternative)*	GINI index (0=perfect equality, 100=perfect inequality)	World Bank	GINI index (World Bank estimate)	http://data.worldbank.org/indicator/SI.POV.GINI
11.1.1	Population living in slums (% of urban population)	UN SDG database	Proportion of urban population living in slums (%)	https://unstats.un.org/SDGAPI/v1/sdg/Series/Data?seriesCode=EN_LND_SLUM

Data reported by countries, such as time series for case notifications and treatment outcomes, and WHO's estimates of TB disease burden, can be downloaded as CSV files covering all years for which data are available. They can be imported into many applications such as spreadsheets, databases and statistical analysis software. These files are the primary resource for anyone interested in conducting their own analyses of the records in the global TB database. A data dictionary that defines each of the variables available in the CSV files is also available.

The CSV files are generated on demand directly from the WHO global TB database, and may therefore include updates received after publication of the *Global tuberculosis report 2025*.

A2.3 Accessing TB data using the WHO Global Health Observatory

The WHO Global Health Observatory (GHO)[1] is a portal that provides access to data and analyses for monitoring the global health situation; it includes a data repository.

Data from WHO's global TB database can be viewed, filtered, aggregated and downloaded from within the GHO data repository.[2]

There is also an application programme interface (API)[3] using the open data protocol. The API allows analysts and programmers to use GHO data directly in their software applications.

[1] https://www.who.int/data/gho
[2] https://www.who.int/data/gho/data/themes/tuberculosis
[3] https://www.who.int/data/gho/info/gho-odata-api

ANNEX 3

WHO global lists of high TB burden countries

A3.1 Background

During the period 1998 to 2015, the concept of a "high burden country" (HBC) became familiar and widely used in the context of tuberculosis (TB). The first global list developed by the World Health Organization (WHO) consisted of 22 HBCs with approximately 80% of the world's TB cases; this was established in 1998. Subsequently two other HBC lists, for HIV-associated TB and multidrug-resistant TB (MDR-TB), were defined.

In 2015, three WHO global lists of HBCs – for TB, TB/HIV and MDR-TB – were in use. With a new era of the United Nations (UN) Sustainable Development Goals (SDGs) and the WHO End TB Strategy starting in 2016, a thorough review of the three lists was undertaken by the WHO Global Tuberculosis Programme in 2015 *(1)*. This included consideration of whether the lists should be modified (and if so how) or whether they should be discontinued. The outcome of the review was the definition of three new global HBC lists, of 30 countries each, for the period 2016–2020: one for TB, one for TB/HIV and one for MDR-TB.

WHO conducted a consultation process in 2020 and early 2021, as the basis for defining updated global HBC lists for 2021–2025.

A3.2 Global HBC lists being used by WHO, 2021–2025

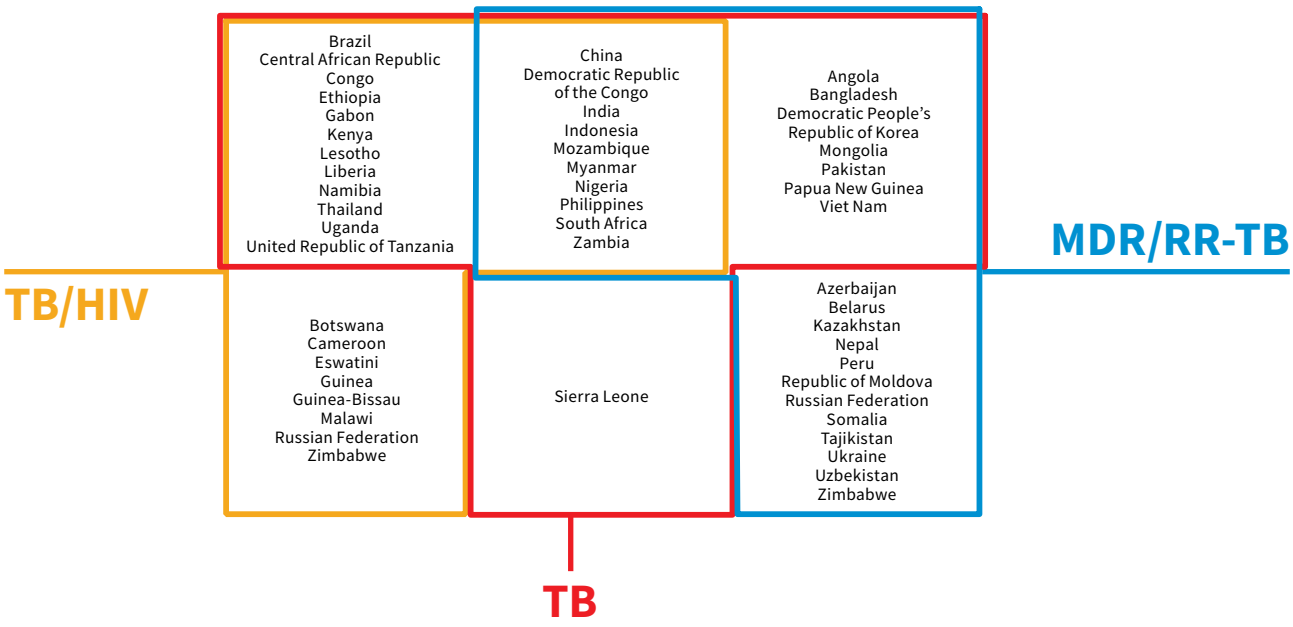
Three global HBC lists for 2021–2025 were established: one for TB, one for HIV-associated TB and one for MDR/rifampicin-resistant TB (MDR/RR-TB). The lists were defined using the same criteria as those agreed for the 2016–2020 lists, in combination with the WHO estimates (for 2019) of the incidence of TB, HIV-associated TB and rifampicin-resistant TB that were published in WHO's *Global Tuberculosis Report 2020*. Full details are available in a background document *(2)*.

The criteria for all three lists are the same:

- the top 20 countries in terms of their estimated absolute number of new (incident) cases in 2019; plus
- the 10 countries with the most severe burden in terms of the incidence rate (new cases per 100 000 popula-

FIG. A3.1

The three global lists of high-burden countries for TB, HIV-associated TB and MDR/RR-TB being used by WHO in the period 2021–2025, and their areas of overlap



tion in 2019) that are not already in the top 20, and that meet a minimum threshold in terms of their absolute number of cases. The thresholds are 10 000 new cases per year for TB; and 1000 new cases per year for HIV-associated TB and rifampicin-resistant TB.

The 30 countries that are in each of the three lists are shown in **Fig. A3.1** and **Table A3.1**. There is overlap among the three lists, but 49 countries are in at least one of them. Each list accounted for 86–90% of the estimated global incidence in 2019.

The main changes compared with the previous lists for 2016–2020 were:

- **The 30 high TB burden countries.** Cambodia, the Russian Federation and Zimbabwe transitioned out of the list; Gabon, Mongolia and Uganda joined the list.
- **The 30 high TB/HIV burden countries.** Angola, Chad, Ghana and Papua New Guinea transitioned out of the list; Gabon, Guinea, the Philippines and the Russian Federation joined the list.
- **The 30 high MDR/RR-TB burden countries.** Ethiopia, Kenya and Thailand transitioned out of the list; Mongolia, Nepal and Zambia joined the list.

The lists provide a focus for global action on TB, HIV-associated TB and drug-resistant TB in the countries where progress is most needed to achieve the targets set in WHO's End TB Strategy, the UN SDGs and political declarations at UN high-level meetings on TB (**Box 1**, **Table 1**). They also help to build and sustain national political commitment and funding in the countries with the highest burden in terms of absolute numbers or severity and promote global monitoring of progress in a well-defined set of countries.

The 30 high TB burden countries are given particular attention in the report. Where estimates of disease burden and assessment of progress in the response are for HIV-associated TB or MDR/RR-TB specifically, the countries in the other two lists are given particular attention. Country profiles for all countries are available online, including in the report mobile app.

A3.3 Global TB watchlist

Alongside the three updated global HBC lists, WHO established a "global TB watchlist". This consists of the three countries that exited the global list of 30 high TB burden countries in 2021, but which nonetheless warrant continued attention and will remain a priority in terms of support from WHO. The three countries in the watchlist are Cambodia, the Russian Federation and Zimbabwe.

TABLE A3.1

Countries in the three global lists of high-burden countries for TB, HIV-associated TB and MDR/RR-TB being used by WHO in the period 2021–2025.

The red square indicates that a country is in a list.

COUNTRY	TB	TB/HIV	MDR/RR-TB
Angola	■		■
Azerbaijan			■
Bangladesh	■		■
Belarus			■
Botswana		■	
Brazil	■	■	
Cameroon		■	
Central African Republic	■	■	
China	■	■	■
Congo	■	■	
Democratic People's Republic of Korea	■		■
Democratic Republic of the Congo	■	■	■
Eswatini		■	
Ethiopia	■	■	
Gabon	■	■	
Guinea		■	
Guinea-Bissau		■	
India	■	■	■
Indonesia	■	■	■
Kazakhstan			■
Kenya	■	■	
Kyrgyzstan			■
Lesotho	■	■	
Liberia	■	■	
Malawi		■	
Mongolia	■		■
Mozambique	■	■	■
Myanmar	■	■	■
Namibia	■	■	
Nepal			■
Nigeria	■	■	■
Pakistan	■		■
Papua New Guinea	■		■
Peru			■
Philippines	■	■	■
Republic of Moldova			■
Russian Federation		■	■
Sierra Leone	■		
Somalia			■
South Africa	■	■	■
Tajikistan			■
Thailand	■	■	
Uganda	■	■	
Ukraine			■
United Republic of Tanzania	■	■	
Uzbekistan			■
Viet Nam	■		■
Zambia	■	■	■
Zimbabwe		■	■

A3.4 Global HBC lists for 2026–2030

WHO will update the current lists for the 5-year period 2026–2030 towards the end of 2025. The lists will be defined according to the same criteria as those already used for the 2016–2020 and 2021–2025 lists. Incidence estimates for 2024 will provide the basis for the updated lists.

A3.5 Categorization of all countries and areas according to their level of TB disease burden

A categorization of all countries and areas according to their estimated TB incidence rate in 2024 is provided in **Table A3.2**. Countries that have moved categories between 2015 and 2024 are listed in **Table A3.3**.

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TABLE A3.2

Categorization of all countries and areas according to their level of TB disease burden in 2024

Countries are categorized using the estimated TB incidence rate (new cases per 100 000 population) in 2024. The categories were defined alongside the establishment of the WHO global HBC lists for 2021–2025 *(2)*.

Category 1, severely endemic; Category 2, highly endemic; Category 3, endemic; Category 4, upper moderate; Category 5, lower moderate; Category 6, low.

INCIDENCE CATEGORY	COUNTRIES AND AREAS INCLUDED, BY WHO REGION[a]	NUMBER OF COUNTRIES AND AREAS, AND CATEGORY SHARE (%) OF THE TOTAL ESTIMATED NUMBER OF INCIDENT TB CASES GLOBALLY IN 2024
Category 1 (≥500 incident cases per 100 000 population in 2024)	**African Region**: Lesotho **Western Pacific Region**: Kiribati, Papua New Guinea, the Philippines	4 countries and areas 8.8% of global incident TB cases
Category 2 (300–499 incident cases per 100 000 population in 2024)	**African Region**: Angola, the Central African Republic, the Congo, the Democratic Republic of the Congo, Eswatini, Gabon, Mozambique, Namibia, Sierra Leone, South Africa, South Sudan **Eastern Mediterranean Region**: Djibouti **South-East Asia Region**: Myanmar, Timor-Leste **Western Pacific Region**: Indonesia, the Marshall Islands, Mongolia	17 countries and areas 23% of global incident TB cases
Category 3 (100–299 incident cases per 100 000 population in 2024)	**African Region**: Botswana, Cameroon, Chad, Equatorial Guinea, Eritrea, Ethiopia, the Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Madagascar, Malawi, Nigeria, Senegal, Uganda, the United Republic of Tanzania, Zambia, Zimbabwe **Region of the Americas**: Bolivia (Plurinational State of), El Salvador, Haiti, Peru **Eastern Mediterranean Region**: Afghanistan, Pakistan, Somalia **European Region**: Greenland, Kyrgyzstan **South-East Asia Region**: Bangladesh, Bhutan, India, Nepal, Thailand **Western Pacific Region**: Cambodia, Fiji, the Lao People's Democratic Republic, Micronesia (Federated States of), Nauru, the Solomon Islands, Tuvalu, Viet Nam	42 countries and areas 54% of global incident TB cases
Category 4 (50–99 incident cases per 100 000 population in 2024)	**African Region**: Algeria, Burkina Faso, Burundi, Côte d'Ivoire, Mali, Mauritania, the Niger, Rwanda, São Tomé and Principe **Region of the Americas**: the Dominican Republic, Ecuador, Guyana, Panama, Paraguay **Eastern Mediterranean Region**: Libya, Morocco **European Region**: Azerbaijan, Republic of Moldova, Romania, Tajikistan, Ukraine, Uzbekistan **South-East Asia Region**: Sri Lanka **Western Pacific Region**: Brunei Darussalam, China, Hong Kong SAR, China, Macao SAR, Guam, Malaysia, Niue	29 countries and areas 3.1% of global incident TB cases
Category 5 (10–49 incident cases per 100 000 population in 2024)	**African Region**: Benin, Cabo Verde, the Comoros, Mauritius, the Seychelles, Togo **Region of the Americas**: Argentina, the Bahamas, Belize, Brazil, Chile, Colombia, Cuba, Guatemala, Honduras, Mexico, Nicaragua, Suriname, Trinidad and Tobago, Uruguay, Venezuela (Bolivarian Republic of) **Eastern Mediterranean Region**: Bahrain, Egypt, Iran (Islamic Republic of), Iraq, Kuwait, Lebanon, Oman, Qatar, the Sudan, the Syrian Arab Republic, Tunisia, Yemen **European Region**: Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Georgia, Kazakhstan, Latvia, Lithuania, Malta, Montenegro, North Macedonia, Poland, Portugal, the Russian Federation, Turkmenistan, Türkiye **South-East Asia Region**: Maldives **Western Pacific Region**: China, French Polynesia, New Caledonia, the Northern Mariana Islands, Palau, the Republic of Korea, Singapore, Tokelau, Vanuatu	60 countries and areas 10% of global incident TB cases
Category 6 (<10 incident cases per 100 000 population in 2024)	**Region of the Americas**: Anguilla, Antigua and Barbuda, Aruba, Barbados, Bermuda, the British Virgin Islands, Canada, the Cayman Islands, Costa Rica, Curaçao, Dominica, Grenada, Jamaica, Montserrat, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sint Maarten (Dutch part), the Turks and Caicos Islands, the United States of America **Eastern Mediterranean Region**: Jordan, the occupied Palestinian territory, including east Jerusalem, Saudi Arabia, the United Arab Emirates **European Region**: Andorra, Austria, Belgium, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Luxembourg, Monaco, Netherlands (Kingdom of the), Norway, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, the United Kingdom of Great Britain and Northern Ireland **Western Pacific Region**: American Samoa, Australia, the Cook Islands, Japan, New Zealand, Samoa, Tonga, Wallis and Futuna	62 countries and areas 0.58% of global incident TB cases

SAR, Special Administrative Region.

[a] The Democratic Republic of Korea is not listed in the table because estimates of TB incidence are currently under review.

TABLE A3.3

Countries that changed incidence category (n=61) between 2015 and 2024, by WHO region

The colour coding indicates whether countries moved to a lower category (**green**) or a higher category (**orange**). Darker **green** or **orange** indicates countries that moved down or up, respectively, by more than one category. An asterisk indicates countries that are in WHO's list of 30 high TB burden countries, 2021–2025.

a) African Region (n=16)

COUNTRIES AND AREAS	INCIDENCE CATEGORY IN 2015	INCIDENCE CATEGORY IN 2024
Central African Republic*	Severely endemic	Highly endemic
Eswatini	Severely endemic	Highly endemic
Namibia*	Severely endemic	Highly endemic
South Africa*	Severely endemic	Highly endemic
Botswana	Highly endemic	Endemic
Kenya*	Highly endemic	Endemic
United Republic of Tanzania*	Highly endemic	Endemic
Zambia*	Highly endemic	Endemic
Burundi	Endemic	Upper moderate
Côte d'Ivoire	Endemic	Upper moderate
Mauritania	Endemic	Upper moderate
São Tomé and Príncipe	Endemic	Upper moderate
Benin	Upper moderate	Lower moderate
Cabo Verde	Upper moderate	Lower moderate
Togo	Upper moderate	Lower moderate
Seychelles	Low	Lower moderate

b) Region of the Americas (n=8)

COUNTRIES AND AREAS	INCIDENCE CATEGORY IN 2015	INCIDENCE CATEGORY IN 2024
Haiti	Highly endemic	Endemic
Guyana	Endemic	Upper moderate
El Salvador	Upper moderate	Endemic
Nicaragua	Upper moderate	Lower moderate
Cayman Islands	Lower moderate	Low
Costa Rica	Lower moderate	Low
Ecuador	Lower moderate	Upper moderate
Cuba	Low	Lower moderate

c) Eastern Mediterranean Region (n=5)

COUNTRIES AND AREAS	INCIDENCE CATEGORY IN 2015	INCIDENCE CATEGORY IN 2024
Djibouti	Severely endemic	Highly endemic
Sudan	Upper moderate	Lower moderate
Tunisia	Upper moderate	Lower moderate
Libya	Lower moderate	Upper moderate
Saudi Arabia	Lower moderate	Low

d) European Region (n=18)

COUNTRIES AND AREAS	INCIDENCE CATEGORY IN 2015	INCIDENCE CATEGORY IN 2024
Georgia	Endemic	Lower moderate
Republic of Moldova	Endemic	Upper moderate
Tajikistan	Endemic	Upper moderate
Ukraine	Endemic	Upper moderate
Armenia	Upper moderate	Lower moderate
Belarus	Upper moderate	Lower moderate
Kazakhstan	Upper moderate	Lower moderate
Latvia	Upper moderate	Lower moderate
Lithuania	Upper moderate	Lower moderate
Russian Federation	Upper moderate	Lower moderate
Turkmenistan	Upper moderate	Lower moderate
Croatia	Lower moderate	Low
Estonia	Lower moderate	Low
Hungary	Lower moderate	Low
Serbia	Lower moderate	Low
Spain	Lower moderate	Low
United Kingdom of Great Britain and Northern Ireland	Lower moderate	Low
Malta	Low	Lower moderate

e) South-East Asia Region (n=1)

COUNTRIES AND AREAS	INCIDENCE CATEGORY IN 2015	INCIDENCE CATEGORY IN 2024
Maldives	Upper moderate	Lower moderate

f) Western Pacific Region (n=13)

COUNTRIES AND AREAS	INCIDENCE CATEGORY IN 2015	INCIDENCE CATEGORY IN 2024
Cambodia	Highly endemic	Endemic
Malaysia	Endemic	Upper moderate
Tokelau	Endemic	Lower moderate
China*	Upper moderate	Lower moderate
Fiji	Upper moderate	Endemic
Nauru	Upper moderate	Endemic
Northern Mariana Islands	Upper moderate	Lower moderate
Palau	Upper moderate	Lower moderate
Republic of Korea	Upper moderate	Lower moderate
Vanuatu	Upper moderate	Lower moderate
Japan	Lower moderate	Low
Tonga	Lower moderate	Low
Niue	Low	Upper moderate

ANNEX 4

Updates to estimates of TB disease burden

The report includes estimates of tuberculosis (TB) incidence and mortality for the period 2010–2024, estimates of TB incidence and mortality disaggregated by age and sex for 2024, and estimates of the incidence of rifampicin-resistant TB (RR-TB) for the period 2015–2024.

Updates to the methods used to produce these estimates are summarized below.

A4.1 General updates, methods to estimate TB incidence

In September 2024, the World Health Organization (WHO) convened its Global Task Force on TB Impact Measurement *(1)*. The main purpose of the meeting was to conduct a comprehensive review of methods used by WHO to produce estimates of TB incidence and mortality. Two new methods for producing estimates of TB incidence – both of which leverage the universal health coverage (UHC) Service Coverage Index (SCI) *(2)* – were agreed upon *(3, 4)*.

In this report, the two new methods were used as follows:

- Upward adjustment of TB case notifications based on country-specific UHC SCI values. This method was used for 98 countries, which collectively accounted for 3.8% of the global number of incident TB cases in 2024. For these countries, this type of upward adjustment has replaced the previous method of a standard upward adjustment of TB notifications.
- Upward adjustment of TB case notifications according to an incidence-to-notification ratio derived from a UHC SCI–based statistical model. This method was used for 32 countries, which collectively accounted for 7.4% of the global number of incident cases in 2024. For these countries, this type of upward adjustment has replaced the previous method of using case notifications combined with expert opinion about case detection gaps.

There were six countries for which the new UHC SCI–based method was not a suitable replacement for the previous method of using case notifications combined with expert opinion about case detection gaps. A customized approach was used instead, based on in-depth bilateral discussions with national TB programmes (NTPs) about the latest available data and recent developments in TB services as well as health services more broadly.

Finally, for 32 countries with a very low burden of TB (<10 reported cases per year), incidence estimates in this report are based on TB case notifications, with no adjustment. This approach has replaced the previous method of using case notifications combined with a standard upward adjustment.

All other methods used to estimate TB incidence remain unchanged from those used for the *Global tuberculosis report 2024 (5)*.

A4.2 Country-specific updates

Brazil

For the period 2010–2019, TB incidence was estimated through upward adjustment of TB case notifications according to the estimated proportion of incident cases that were treated for TB. This proportion was estimated using TB-related mortality data *(6)*.

Cambodia

A third national TB prevalence survey was completed in Cambodia in July 2024. The results were used alongside findings from previous surveys (implemented in 2002 and 2011) to update TB incidence and mortality estimates for the period 2010–2024.

India

Updated cause-of-death data from the Sample Registration System (SRS) for 2 years (2020 and 2022) were incorporated into the country-specific dynamic model that is used to produce TB incidence and mortality estimates, following their official publication in 2025 *(7)*.

Estimates of the incidence of RR-TB for 2015–2024 were produced using two major data sources: results from a national survey of anti-TB drug resistance in 2016 and routine surveillance data for 2024. Previously (until the *Global tuberculosis report 2024*), only the national survey data were available for use. The 2024 surveillance data met the coverage and quality criteria used by WHO to determine whether routine surveillance data can be used to estimate the incidence of RR-TB, and were reported to WHO following extensive data validation by the country's National TB Elimination Programme.

Myanmar

TB case notification data for 2024 indicated that disruptions to TB diagnosis and treatment during the coronavirus disease (COVID-19) pandemic were less

severe than previously estimated. Estimates of TB incidence and mortality since 2020 were revised accordingly.

Thailand

Data about the numbers of people screened for TB since the COVID-19 pandemic indicated that TB services recovered to pre-pandemic levels more rapidly than previously suggested by TB case notification data alone. Estimates of TB incidence and mortality were revised accordingly.

A4.3 General updates

Several countries reported historical data that were previously missing or made corrections to previously reported data, but these had limited or negligible impact on updated estimates.

In July 2025, the Joint United Nations Programme on HIV/AIDS (UNAIDS) published updated estimates of HIV prevalence and mortality *(8)*. These were used in replacement of previous estimates.

A4.4 Overview of data sources for the 30 high TB burden and three global TB watchlist countries

The main data sources currently available to inform estimates of TB disease burden in the 30 high TB burden countries and three global TB watchlist countries (**Annex 3**) are summarized in **Table A4.1**.

Details about the methods used for all countries are provided in the report webpages (Section 1.1 and Section 1.2) and the **technical appendix**.

References

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TABLE A4.1

Sources of data available to inform estimates of TB disease burden in the 30 high TB burden countries and the three global TB watchlist countries, 2010–2024[a]

Blue indicates that a source is available, **orange** indicates it will be available in the near future, and **red** indicates that a source is not available.

COUNTRY	NOTIFICATION DATA	STANDARDS AND BENCHMARK ASSESSMENT[b]	NATIONAL INVENTORY STUDY[c]	NATIONAL TB PREVALENCE SURVEY[d]	NATIONAL DRUG RESISTANCE SURVEY OR SURVEILLANCE[e]	NATIONAL VR DATA OR MORTALITY SURVEY[f]
Angola	2000–2024	2019, 2023	–	–	*2022–2024*	–
Bangladesh	2000–2024	2019, 2022	–	2015	2011, 2019, *2024*	–
Brazil	2000–2024	2018	–	NA	2008	2000–2023
Cambodia	2000–2024	2018, 2022	–	2002, 2011, 2023	2007, 2018, *2024*	See footnote g
Central African Republic	2000–2024	2019, 2022	–	–	2009, *2024*	–
China	2000–2024	–	2018, 2022	2000, 2010	2007, 2013, *2020*, *2022– 2024*	2004–2021
Congo	2000–2024	2019, 2022	–	–	*2024*	
Democratic People's Republic of Korea	2000–2024	2017	–	2016	2014	
Democratic Republic of the Congo	2000–2024	2019, 2022	–	–	2017	–
Ethiopia	2000–2024	2016, 2023	–	2011	2005, 2018, *2018*, *2020*, *2023*	–
Gabon	2000–2024	2018, 2020	–	–	*2023*	–
India	2000–2024	2019	2016	2019–2021	2016, *2024*	2000–2019 , 2020, 2022
Indonesia	2000–2024	2019, 2022	2017, 2023	2013–2014	2018, *2023*, *2024*	2006–2007, 2009–2015
Kenya	2000–2024	2017, 2021	2013	2015	2014, 2024, *2020*, *2024*	–
Lesotho	2000–2024	2017, 2022	–	2019	2014, 2024, *2019–2024*	–
Liberia	2000–2024	2015, 2019	–	–	–	–
Mongolia	2000–2024	2015, 2018	2026	2014–2015	2007, 2016, *2018–2024*	2016–2019
Mozambique	2000–2024	2013	–	2017–2019	2007, 2021, *2021–2023*	–
Myanmar	2000–2024	2017, 2022	–	2009, 2018	2003, 2008, 2013, *2018*, *2020*, *2023*, *2024*	–
Namibia	2000–2024	2019, 2022	–	2017–2018	2008, 2015, *2018*, *2020–2024*	
Nigeria	2000–2024	2020, 2023	–	2012	2010, *2022–2024*	–
Pakistan	2000–2024	2019, 2022	2012, 2017	2011	2013, *2019–2020*	2006, 2007, 2010
Papua New Guinea	2000–2024	2017, 2023	–	–	2014, *2023–2024*	–
Philippines	2000–2024	2016, 2019	2026	2007, 2016	2004, 2012, 2019, *2021–2023*	2000–2014, 2016–2019
Russian Federation	2000–2024	2017	–	NA	*2016–2024*	2000–2024
Sierra Leone	2000–2024	2015, 2020	–	–	–	–
South Africa	2000–2024	2019, 2022	2022 2026	2017–2019	2002, 2014, *2021–2024*	2000–2017
Thailand	2000–2024	2013	–	2012	2001, 2006, 2012, 2018, *2023–2024*	2000, 2002–2019
Uganda	2000–2024	2019, 2023	–	2014–2015	2011, *2018–2019*, *2023*	–
United Republic of Tanzania	2000–2024	2018, 2023	–	2012	2007, 2018, *2021–2024*	–
Viet Nam	2000–2024	2019, 2023	2017	2007, 2017–2018	2006, 2012, *2018*, *2020–2024*	–
Zambia	2000–2024	2016, 2020	–	2014	2000, 2008, 2020, *2018–2024*	–
Zimbabwe	2000–2024	2019, 2022	–	2014	2016, *2018–2020*, *2022–2024*	–

NA, not applicable; VR, vital registration

[a] Data for the period 2000–2009 can inform estimates for the period 2010–2024 and are shown for this reason. The three global TB watchlist countries are Cambodia, the Russian Federation and Zimbabwe.

[b] The WHO TB surveillance checklist of standards and benchmarks is designed to assess the quality and coverage of notification data (based on 9 core standards), VR data (1 core standard) and data for drug-resistant TB, HIV co-infection and childhood TB (3 supplementary standards). The second edition of the WHO TB surveillance checklist also includes an assessment of monitoring and evaluation related to TB care (2 supplementary standards) and TB prevention (2 supplementary standards). If more than two assessments have been done, the years of the last two only are shown.

[c] Studies are planned in Mongolia, the Philippines and South Africa in 2026–2027. Prioritization of TB inventory studies is recommended in countries where a large share of TB care is provided to TB patients outside the existing NTP network.

[d] Brazil does not meet the following criteria recommended by the WHO Global Task Force on TB Impact Measurement for implementing a national prevalence survey: TB incidence ≥150 per 100 000 population per year, no VR system and under-5 mortality rate (probability of dying by age of 5 per 1000 live births) is >10.

[e] Data points are shown for people without a history of previous TB treatment only. Data are available from continuous surveillance (indicated by italics in blue cells) based on routine diagnostic testing in all listed countries except Brazil, the Democratic People's Republic of Korea, the Democratic Republic of the Congo, Liberia and Sierra Leone.

[f] Years of data availability for Indonesia, Mongolia, Pakistan and South Africa were provided to WHO by IHME.

[g] Input data used to inform covariates for estimating TB mortality in Cambodia are available here: Ma, J., Vongpradith, A., Ledesma, J.R. et al. Progress towards the 2020 milestones of the end TB strategy in Cambodia: estimates of age and sex specific TB incidence and mortality from the Global Burden of Disease Study 2019. BMC Infect Dis 22, 904 (2022). https://doi.org/10.1186/s12879-022-07891-5.

ANNEX 5

The WHO TB-SDG monitoring framework

In 2017, the World Health Organization (WHO) developed a framework for monitoring of indicators in the United Nations (UN) Sustainable Development Goals (SDGs) that are strongly associated with tuberculosis (TB) incidence. This was done as part of the preparations for the first global ministerial conference on TB *(1)*, building on previously published work that identified clear linkages between a range of social, economic and health-related indicators and TB incidence *(2–4)*.

In 2024, the framework was updated, with undernutrition replacing undernourishment as the selected indicator for SDG 2. This followed the publication of a systematic review related to the risk of TB in people with and without undernutrition *(5)*.

The TB-SDG monitoring framework comprises 14 indicators under seven SDGs (**Table A5.1**).

For SDG 3, the framework includes seven indicators:

- coverage of essential health services;
- proportion of the population with large household expenditures on health as a share of total household expenditure or income;
- current health expenditure per capita;
- HIV prevalence;
- prevalence of smoking;
- prevalence of diabetes; and
- prevalence of alcohol use disorders.

For SDGs 1, 2, 7, 8, 10 and 11, the seven indicators selected for monitoring are:

- proportion of the population living below the international poverty line;
- proportion of the population covered by social protection floors or systems;
- prevalence of undernutrition;
- proportion of the population with primary reliance on clean fuels and technology;
- gross domestic product (GDP) per capita;
- Gini index for income inequality; and
- proportion of the urban population living in slums.

Collection and reporting of data for the 14 indicators does not require any additional data collection and reporting efforts by national TB programmes (NTPs). Nor does it require data collection and reporting efforts that go beyond those to which countries have already committed in the context of the SDGs. At the global level, the UN has established a monitoring system for SDG indicators, and countries are expected to report data on an annual basis via the appropriate UN agencies (including WHO). Therefore, analysis of the status of, and trends in, the 14 indicators related to TB can be based primarily on data held in the UN's SDG database.

In some cases, the official SDG indicator was not considered the best metric, and a better (but closely related) alternative was identified and justified (one under SDG 2, five under SDG 3, one under SDG 8 and one under SDG 10). In such cases, the data sources are one of the following: WHO, the Organisation for Economic Co-operation and Development (OECD), the Joint United Nations Programme on HIV/AIDS (UNAIDS) or the World Bank.

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TABLE A5.1

TB-SDG monitoring framework: indicators to monitor within SDG 3

SDG 3: Ensure healthy lives and promote well-being for all at all ages					
SDG TARGETS FOR 2030	**SDG INDICATORS**	**ALTERNATIVE INDICATORS TO MONITOR**	**RATIONALE**	**DATA SOURCE**	**COLLECT DATA FOR TB PATIENTS SPECIFICALLY?**
3.3 End the epidemics of AIDS, TB, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases	**3.3.1** Number of new HIV infections per 1000 uninfected population **3.3.2** TB incidence per 100 000 population	HIV prevalence	HIV is a strong risk factor for development of TB disease and is associated with poorer treatment outcomes. HIV prevalence is selected in preference to HIV incidence because it is directly measured.	UNAIDS WHO	Yes, already routinely collected. NA
3.4 Reduce premature mortality by one third from non-communicable diseases and promote mental health and well-being	**3.4.1** Mortality rate attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease	Prevalence of diabetes	Diabetes is a strong risk factor for development of TB disease, although a link with TB incidence at the national (as opposed to individual) level has been difficult to establish due to confounding. Diabetes prevalence is more relevant than mortality for TB since it directly influences the risk of developing TB.	WHO	Could be considered at country level, to inform planning of care for comorbidities.
3.5 Strengthen prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol	**3.5.2** Alcohol consumption per capita per year (in litres of pure alcohol) among those aged ≥15 years (harmful level defined nationally)	Prevalence of alcohol use disorders	Alcohol use is a strong risk factor for TB disease and poorer treatment outcomes at the individual level, although a link with TB incidence at the national (as opposed to individual) level has been hard to establish due to confounding. The prevalence of alcohol use disorders is the most relevant indicator in the context of TB.	WHO	Could be considered at country level, to inform planning of care for comorbidities.
3.8 Achieve Universal Health Coverage (UHC), including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all	**3.8.1** Coverage of essential health services (defined as the average coverage of essential services based on 16 tracer interventions). **3.8.2** Proportion of population with large household expenditures on health as a share of total household expenditure or income	NA NA	Achieving UHC is required to achieve the three high-level targets of the End TB Strategy for reductions in the TB incidence rate, reductions in the number of TB deaths and elimination of catastrophic total costs for TB-affected households (defined as >20% of household income).	WHO	TB treatment coverage has been monitored for years and is one of the 14 tracer indicators that have been selected to measure SDG indicator 3.8.1. There is a TB-specific indicator that is complementary to 3.8.2 (see **Box 3** of the main report).
3.a Strengthen implementation of the WHO Framework Convention on Tobacco Control	**3.a.1** Age-standardized prevalence of current tobacco use among those aged ≥15 years	Prevalence of smoking among those aged ≥15 years (%)	Smoking is a strong risk factor for TB disease at the individual level, although a link with TB incidence at the national (as opposed to individual) level has been difficult to establish due to confounding.	WHO	Could be considered (e.g. to inform access to smoking cessation interventions).
3.c Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States	**3.c.1** Health worker density and distribution	Current health expenditure per capita	Health expenditure per capita is negatively correlated with TB incidence.	WHO	No

AIDS, acquired immune deficiency syndrome; HIV, human immunodeficiency virus; NA, not applicable; SDG, Sustainable Development Goal; TB, tuberculosis; UHC, universal health coverage; UNAIDS, Joint United Nations Programme on HIV/AIDS; WHO, World Health Organization.

TB-SDG monitoring framework: indicators to monitor beyond SDG 3

SDG TARGETS FOR 2030	SDG INDICATORS	ALTERNATIVE INDICATORS TO MONITOR	RATIONALE	DATA SOURCE	COLLECT DATA FOR TB PATIENTS SPECIFICALLY?
SDG 1: End poverty in all its forms everywhere					
1.1 Eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day	**1.1.1** Proportion of population living below the international poverty line	NA	Poverty is a strong risk factor for TB, operating through several pathways. Reducing poverty should also facilitate prompt health-care seeking. Countries with higher levels of social protection have lower TB burden. Progress on both indicators will help to achieve the End TB Strategy target to eliminate catastrophic costs for TB patients and their households.	UN SDG database, World Bank	No
1.3 Implement nationally appropriate social protection systems and measures for all, including floors, and achieve substantial coverage of the poor and vulnerable	**1.3.1** Proportion of population covered by social protection floors/ systems	NA			Could be considered (e.g. to facilitate access to social protection).
SDG 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture					
2.1 End hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food year-round	**2.1.1** Prevalence of undernourishment	Prevalence of undernutrition among those aged ≥18 years (%)	Prevalence of undernutrition among those aged ≥18 years (%). A recent systematic review published in 2024 has provided estimates of the relative risk of TB among people with and without undernutrition (defined as a body mass index of <18.5 kg/m^2 among those aged ≥18 years).	WHO	Should be considered (e.g. weight collected from all TB patients to inform the need for nutritional support).
SDG 7: Ensure access to affordable, reliable, sustainable, and modern energy for all					
7.1 Ensure universal access to affordable, reliable and modern energy services	**7.1.2** Proportion of population with primary reliance on clean fuels and technology	NA	Indoor air pollution is a risk factor for TB disease at the individual level. There has been limited study of ambient air pollution but it is plausible that it is linked to TB incidence.	WHO	No
SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all					
8.1 Sustain per capita growth in accordance with national circumstances and, in particular, at least 7% GDP growth per year in the least developed countries	**8.1.1** Annual growth rate of real GDP per capita	GDP per capita	Historic trends in TB incidence are closely correlated with changes in the absolute level of GDP per capita (but not with the growth rate).	World Bank	No
SDG 10: Reduce inequality within and among countries					
10.1 Achieve and sustain income growth of the bottom 40% of the population at a rate higher than the national average	**10.1.1** Growth rates of household expenditure or income per capita, overall and for the bottom 40% of the population	Gini index for income inequality	TB is a disease of poverty. Decreasing income inequalities combined with economic growth should have an effect on the TB epidemic.	World Bank OECD	No
SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable					
11.1 Ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums	**11.1.1** Proportion of urban population living in slums, informal settlements or inadequate housing	NA	Living in a slum is a risk factor for TB transmission due to its link with overcrowding. It is also a risk factor for developing TB disease, due to links with air pollution and undernutrition.	UN SDG database	No

GDP, gross domestic product; NA, not applicable; OECD, Organisation for Economic Co-operation and Development; SDG, Sustainable Development Goal; TB, tuberculosis; UN, United Nations; WHO, World Health Organization.