Launched
7 November 2023

Main findings and messages
Acknowledgements

192 countries and areas that reported data
>500 people who contributed to reporting and review of data

Core Report Team, WHO HQ
Taghreed Adam, Annabel Baddeley, Mathieu Bastard, Saskia den Boon, Anna Dean,
Dennis Falzon, Katherine Floyd, Nebiat Gebreselassie, Marek Lalli, Irwin Law,
Peter Nguhiu, Hazim Timimi, Takuya Yamanaka

Other WHO staff: HQ, regional and country offices
Pedro Avedillo, Kenza Bennani, Vineet Bhatia, Martin van den Boom, Annemieke Brands, Andrei Dadu, Monica Dias,
Michel Gasana, Medea Gegia, Licé Gonzalez Angulo, Christian Gunneberg, Nazir Ismail, Ernesto Jaramillo, Avinash Kanchar,
Tereza Kasaeva, Alexei Korobitsyn, Giorgi Kuchukhidze, Farai Mavhunga, Cecily Miller, Francis Mhimbira, Fuad Mirzayev,
Ernesto Montoro, Fukushi Morishita, Carl-Michael Nathanson, Linh Nguyen, Liana Oganezova, Cicilia Gita Parwati, Kalpeshsinh Rahevar,
Md Kamar Rezwan, Samuel Schumacher, Charalambos Sismanidis, Anna Stukulova, Lana Syed, Sabine Vekuijl,
Kerri Viney, Yi Wang, Manami Yanagawa, Askar Yedilbayev, Matteo Zignol; plus all focal points for TB in WHO country offices

Other key contributors to report content
Nimalan Arinaminpathy (Imperial College, London, UK), Pete Dodd (Sheffield University, UK),
Andrew Siroka (consultant), Sandip Mandal (John Snow India)

Funding
USAID, government of Republic of Korea
Background/context
Report purpose

The report provides a comprehensive and up-to-date assessment of the TB epidemic and of progress in the response at global, regional and country levels, in the context of global commitments, strategies and targets.

WHO End TB Strategy, 2016-2035
UN Sustainable Development Goals, 2016-2030
2018 UN high-level meeting on TB
## End TB Strategy
### 2016–2035

<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>MILESTONES</th>
<th>TARGETS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2020</td>
<td>2025</td>
</tr>
<tr>
<td>1. Reduction in number of TB deaths compared with 2015 (%)</td>
<td>35%</td>
<td>75%</td>
</tr>
<tr>
<td>2. Reduction in TB incidence rate compared with 2015 (%)</td>
<td>20%</td>
<td>50%</td>
</tr>
<tr>
<td>3. Percentage of TB patients and their households facing catastrophic costs due to TB</td>
<td>Zero</td>
<td>Zero</td>
</tr>
</tbody>
</table>
SDG Target 3.3 includes ending the TB epidemic

TB incidence rate is indicator for assessment of progress
2018 UN high-level meeting on TB

Global targets

- 40 million people treated for TB, 2018–2022
- 30 million people provided with TB preventive treatment, 2018–2022
- US$ 13 billion per year by 2022, to provide TB diagnostic, treatment and prevention services
- US$ 2 billion per year for TB research, 2018–2022
## Main source of data for report

**Annual rounds of global TB data collection from 215 countries and areas**

<table>
<thead>
<tr>
<th>WHO Region</th>
<th>Countries and areas that reported data in 2023</th>
<th>WHO Member States that reported data in 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>46/47</td>
<td>46/47</td>
</tr>
<tr>
<td>Americas</td>
<td>39/45</td>
<td>32/35</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>21/22</td>
<td>20/21</td>
</tr>
<tr>
<td>Europe</td>
<td>44/54</td>
<td>43/53</td>
</tr>
<tr>
<td>SE Asia</td>
<td>11/11</td>
<td>11/11</td>
</tr>
<tr>
<td>Western Pacific</td>
<td>31/36</td>
<td>26/27</td>
</tr>
<tr>
<td>All regions</td>
<td>192/215</td>
<td>178/194</td>
</tr>
</tbody>
</table>

Plus: SDG and World Bank databases

Plus: monthly and quarterly notification data from >100 countries for the period since January 2020

[https://worldhealthorg.shinyapps.io/tb_pronto/](https://worldhealthorg.shinyapps.io/tb_pronto/)
Report format: 3 major components

- Read the main report findings and messages
- Explore more detailed and interactive content
- Country, regional and global profiles

Data for key indicators at your fingertips

- Data
  - Web-based profiles
  - TB data
  - Slide set

- Others
  - Top findings and messages (multilingual)
  - Technical appendices

- Standard topics
  - 1. TB disease burden
  - 2. TB diagnosis & treatment
  - 3. TB prevention
  - 4. TB financing
  - 5. UHC & TB determinants
  - 6. TB research & innovation

- Featured topics
  - UN declaration on TB
  - New treatment for TB
  - International donor funding
  - TB in prisons
  - TB epidemiological reviews
  - MAF-TB

- web and app-based access
- relatively small, “bite-sized” chunks
- easier to read, digest, navigate and use

https://www.who.int/teams/global-tuberculosis-programme/tb-reports/global-tuberculosis-report-2023
Overarching findings
Overarching findings

1. Major global recovery in the number of people being newly diagnosed with TB in 2022, after 2 years of COVID-related disruptions

2. This has started to reverse or moderate the damaging impact of the pandemic on the number of people dying from TB and falling ill with TB

BUT

3. In 2022, TB remained the second leading cause of death from an infectious disease, after COVID-19

4. Global TB targets set for 2018–2022 at the first UN high-level meeting on TB were mostly missed and End TB Strategy targets are off track
Reported number of people newly diagnosed with TB (case notifications)
Global recovery in reported number of people newly diagnosed with TB

7.5 million in 2022: highest number since WHO started global TB monitoring in mid-1990s

![Graph showing the number of people newly diagnosed with TB from 2010 to 2022. The graph indicates a 18% drop from 2019 to 2020, reaching a peak of 7.5 million in 2022.]
Recovery in India, Indonesia, Philippines
Collectively, ≥60% of global reduction in 2020 and 2021
High TB burden countries yet to recover to level of 2019

Countries ordered according to size of relative reduction in 2020
African Region

Limited impact on reported numbers of people newly diagnosed with TB
Limited or no negative impact on reported numbers of people newly diagnosed with TB

Increases in 6 high TB burden countries (HBCs) in Africa
Estimates of TB disease burden
Consequences of disruption and recovery for TB disease burden

Reductions in reported number of people newly diagnosed and treated for TB

- Increase in number of people with undiagnosed and untreated TB
- Increase in number of people dying from TB
- Increased transmission and then, with a lag-time, increase in number of people developing TB

Recovery: opposite pattern
Global number of deaths caused by TB
decrease in 2022, reversing upward trend in 2020 and 2021

- 1.3 million in 2022, down from 1.4 million in both 2020 and 2021, back to level of 2019
- 167,000 in 2022, down from 196,000 in 2021

Shaded areas show 95% uncertainty intervals
COVID-related disruptions resulted in about half a million excess deaths from TB
In 2022, TB remained the second leading cause of death from an infectious disease, after COVID-19

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated number of TB deaths among HIV-negative people*</td>
<td>1.13 million</td>
</tr>
<tr>
<td>(95% UI: 1.02–1.26)</td>
<td></td>
</tr>
<tr>
<td>Officially reported number of deaths from COVID-19</td>
<td>1.24 million</td>
</tr>
<tr>
<td>Estimated number of deaths from HIV/AIDS</td>
<td>0.63 million</td>
</tr>
<tr>
<td>(95% UI: 0.58–0.67)</td>
<td></td>
</tr>
</tbody>
</table>

*Deaths from TB among people with HIV officially classified as deaths from HIV/AIDS

TB more badly impacted than HIV

Deaths from TB in 2022 almost double those from HIV/AIDS, which continued to fall.

Shaded areas show 95% uncertainty intervals.
Globally, TB incidence continued to increase

Best estimate of 10.6 million in 2022, up from 10.3 million in 2021 and 10.0 million in 2020

Shaded area shows 95% uncertainty interval
8 countries, 68% of global cases in 2022

87% in 30 high TB burden countries

- China
- Bangladesh
- Philippines
- Indonesia
- India
- Pakistan
- Democratic Republic of the Congo
- Nigeria

Number of incident cases

- 100,000
- 500,000
- 1,000,000
- 2,000,000

Circles shown for countries with at least 100,000 estimated cases
Distribution by age and sex

5.8 million men (55%), 3.5 million women (33%), 1.3 million children (12%)
Estimated number of people developing MDR/RR-TB relatively stable from 2020–2022

Shaded area shows 95% uncertainty interval
Declines in proportion of people with TB who have MDR/RR-TB, 2015–2022

Shaded areas show 95% uncertainty intervals
Estimation of TB disease burden during COVID-19 pandemic and its aftermath is difficult

- Country and region-specific dynamic models relied upon for low and middle-income countries with large absolute or relative reductions in TB case notifications (beyond historical trends) in 2020 and/or 2021

- New direct measurements of disease burden needed
  - National VR systems
  - National TB prevalence surveys*
  - National inventory studies to measure underreporting**

*Survey underway in Cambodia (3rd survey) and 11 other countries actively considering repeat surveys: Ethiopia, Ghana, Indonesia, Malawi, Nigeria, Pakistan, Thailand, Uganda, Tanzania, Zambia and Zimbabwe

**Studies in planning phases in Indonesia and the Philippines
End TB Strategy milestones for reductions in TB disease burden
Global number of deaths caused by TB

19% net reduction from 2015 to 2022, far off 2025 milestone

- 1.30 million in 2022, vs 1.62 million in 2015
- 2025 End TB Strategy milestone
  - 75% reduction from 2015 level

Reduction 2015–2019 was 19%; from 2010–2019, 33%
Number of TB deaths at regional level

Dashed line shows the 2025 milestone of the End TB Strategy: 75% reduction, 2015–2025

**Africa**
- 38% reduction, 2015–2022

**Americas**
- 41% increase, 2015–2022

**South-East Asia**
- 6.3% decrease, 2015–2022

**Europe**
- 32% reduction, 2015–2022

**Eastern Mediterranean**
- 7.8% decrease, 2015–2022

**Western Pacific**
- 3.3% decrease, 2015–2022

African Region estimated to have passed first Strategy milestone (35% reduction from 2015)

European Region is close

Shaded areas show 95% uncertainty intervals
Reduction in TB deaths at country level
2022 vs 2015

47 countries with reductions ≥35% mostly in Africa and Europe
Global TB incidence rate
8.7% net reduction from 2015 to 2022, far off 2025 milestone

Best estimate of 133 per 100 000 population in 2022, down from 146 in 2015

Reduction 2015–2020 was 12%; from 2010–2020, 21%
TB incidence at regional level

Dashed line shows the 2025 milestone of the End TB Strategy: 50% reduction, 2015–2025

- **Africa**: 23% reduction, 2015–2022
- **Americas**: 14% increase, 2015–2022
- **South-East Asia**: 6.6% reduction, 2015–2022
- **Europe**: 25% reduction, 2015–2022
- **Eastern Mediterranean**: 7.4% reduction, 2015–2022
- **Western Pacific**: 3.7% reduction, 2015–2022

African Region & European Region estimated to have passed first Strategy milestone (20% reduction from 2015)

Shaded areas show 95% uncertainty intervals
Reduction in TB incidence at country level

2022 vs 2015

83 countries with reductions ≥20%, mostly in Africa and Europe
What was required to reach the 2025 milestones?

**TB incidence: accelerated decline**

- To 4-5% per year by 2020 and then “current best performers”
- To 10% per year by 2025 “best achieved historically”, in context of universal health coverage (UHC) and progress in addressing TB determinants

**TB deaths**

- Accelerated declines in TB incidence
- Reduction in case fatality ratio to 6.5% Requires that everyone with TB can access treatment according to international standards
  - Average level of high-income countries
TB diagnosis and treatment
Narrowed global gap between estimated number of people falling ill with TB and reported number of newly diagnosed with TB.

Gap back to pre-pandemic level of about 3 million, down from about 4 million in 2020 and 2021, but still large.
Global number of people treated for TB
disaggregated by age

Millions

<table>
<thead>
<tr>
<th>Year</th>
<th>People aged ≥15 years</th>
<th>People aged 0–14 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>2012</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>2014</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>2016</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>2018</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>2020</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>2022</td>
<td>7</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: World Health Organization
Global TB treatment target*

Target missed

Target: 40 million 2018–2022

34 million (84%) treated in 2018–2022

*based on what was required to be on track to reach 2025 milestones of End TB Strategy
Global TB treatment
Subtarget for children also missed

Target: 3.5 million 2018–2022

2.5 million (71%) treated in 2018–2022
10 countries account for 71% global gap between TB incidence and reported cases

From global perspective, increased coverage of diagnosis and treatment of particular importance in these countries.
Number of people treated for MDR/RR-TB

*Age-disaggregated data only available at global level for 2018 onwards
Global target for treatment of MDR/RR-TB

Target missed

Target: 1.5 million 2018–2022

825,000 (55%) treated in 2018–2022
Global coverage of rapid testing for TB is improving

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>8.9%</td>
</tr>
<tr>
<td>2017</td>
<td>14%</td>
</tr>
<tr>
<td>2019</td>
<td>38%</td>
</tr>
<tr>
<td>2021</td>
<td>47%</td>
</tr>
</tbody>
</table>

WRD: WHO-recommended rapid diagnostic test
Treatment outcomes
Sustained or improving

- People newly diagnosed with TB (new and relapse cases)
  - 2012: 86%
  - 2013: 86%
  - 2014: 88%

- People diagnosed with rifampicin-resistant/MDR-TB
  - 2012: 50%
  - 2018: 63%
TB preventive treatment
Number of people provided with TB preventive treatment

In 2022, big increase in household contacts initiated on TPT

Millions

<table>
<thead>
<tr>
<th>Year</th>
<th>Household contacts aged ≥5 years</th>
<th>Household contacts aged &lt;5 years</th>
<th>People living with HIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>1</td>
<td>0.1</td>
<td>0</td>
</tr>
<tr>
<td>2016</td>
<td>1</td>
<td>0.1</td>
<td>0</td>
</tr>
<tr>
<td>2017</td>
<td>1</td>
<td>0.1</td>
<td>0</td>
</tr>
<tr>
<td>2018</td>
<td>1.5</td>
<td>0.4</td>
<td>0</td>
</tr>
<tr>
<td>2019</td>
<td>3.6</td>
<td>0.3</td>
<td>3.3</td>
</tr>
<tr>
<td>2020</td>
<td>2.9</td>
<td>0.2</td>
<td>2.7</td>
</tr>
<tr>
<td>2021</td>
<td>2.9</td>
<td>0.2</td>
<td>2.7</td>
</tr>
<tr>
<td>2022</td>
<td>3.8</td>
<td>0.3</td>
<td>3.5</td>
</tr>
</tbody>
</table>
Global target for TB preventive treatment

Target missed overall, but subtarget for people living with HIV far surpassed

Target: 30 million 2018–2022

15.5 million (52%) treated in 2018–2022

People living with HIV

Target: 6 million 2018–2022

11.3 million (>100%) treated in 2018–2022
Funding for TB diagnosis, treatment and prevention
Funding for essential TB services* down since 2019, less than half global target

Domestic funding
International donor funding

More than 10% lower in 2022 compared with 2019

*TB diagnosis, treatment, prevention
UHC and TB determinants
Almost all high TB burden countries far from UHC*, based on status of SDG UHC indicators

*Universal health coverage
Everyone can access the health services they need without suffering financial hardship

16 with values >5%
About half of people with TB and their households face catastrophic costs; pooled average = 49%; far from End TB Strategy target of zero.

Overall (29 countries):
- Solomon Islands
- Namibia
- Timor-Leste
- Zimbabwe
- Niger
- Mongolia
- Ghana
- Lao People's Democratic Republic
- Viet Nam
- Myanmar
- Zambia
- Democratic Republic of the Congo
- South Africa
- Burkina Faso
- Uganda
- Colombia
- Mali
- Brazil
- United Republic of Tanzania
- Philippines
- Fiji
- Indonesia
- Benin
- Papua New Guinea
- Thailand
- Kenya
- Lesotho
- El Salvador
- Pooled average

Drug-resistant TB only (25 countries):
- Solomon Islands
- Namibia
- Timor-Leste
- Zimbabwe
- Niger
- Nigeria
- Mongolia
- Ghana
- Lao People's Democratic Republic
- Viet Nam
- Myanmar
- Zambia
- Democratic Republic of the Congo
- South Africa
- Burkina Faso
- Uganda
- Colombia
- Mali
- Brazil
- United Republic of Tanzania
- Philippines
- Fiji
- Indonesia
- Benin
- Papua New Guinea
- Thailand
- Kenya
- El Salvador
- Pooled average

Even higher for people with drug-resistant TB: pooled average 83%.

17 high TB burden countries and 1 global TB watchlist country.
TB determinants

Relationship between TB incidence, income and undernourishment

Each dot represents a country or area
TB determinants
Global estimates of TB cases attributable to 5 risk factors in 2022

Undernourishment
HIV infection
Alcohol use disorders
Smoking
Diabetes

Number of attributable cases (millions)
TB research
Requirements to reach 2030 and 2035 targets

Technological breakthrough by 2025, to enable acceleration of decline in TB incidence to far beyond levels achieved historically

e.g. a new TB vaccine
Status of pipelines for diagnostics, drugs and vaccines

3 new diagnostic products to detect drug-resistant TB recommended by WHO in 2023

29+ clinical drug trials and other research studies for treatment of TB infection

28 drugs for treatment of TB disease in clinical trials

16 vaccine candidates in clinical trials
Funding for TB research

Half global target in 2021

Target set at 2018 UN high-level meeting on TB
US$ 2 billion per year, 2018-2022

UN high-level meeting on TB, 2023
UN high-level meeting on TB in 2023

New targets

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Global Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB treatment coverage</td>
<td>90% by 2027</td>
</tr>
<tr>
<td>Coverage of TB preventive treatment for priority groups</td>
<td>90% by 2027</td>
</tr>
<tr>
<td>(household contacts of people with TB; people living with HIV)</td>
<td></td>
</tr>
<tr>
<td>Coverage of rapid diagnostic testing for TB</td>
<td>100% by 2027</td>
</tr>
<tr>
<td>Coverage of health and social benefits package for people with TB</td>
<td>100% by 2027</td>
</tr>
<tr>
<td>Availability of new TB vaccines that are safe and effective</td>
<td>Rollout initiated, preferably within 5 years</td>
</tr>
<tr>
<td>Annual funding for universal access to quality prevention, diagnosis,</td>
<td>US$ 22 billion by 2027, US$ 35 billion by 2030</td>
</tr>
<tr>
<td>treatment and care for TB</td>
<td></td>
</tr>
<tr>
<td>Annual funding for TB research</td>
<td>US$ 5 billion by 2027</td>
</tr>
</tbody>
</table>
## UN high-level meeting on TB in 2023
### Commitments: main themes

| Provide comprehensive care to all people with TB | Strengthen the engagement of civil society and communities affected by TB |
| Address the crisis of drug-resistant TB | Enable and strengthen TB research |
| Build on interlinkages across the global health agendas of TB, UHC and PPPR, to strengthen the TB response | Promote access to affordable medicines |
| Address TB during health and Humanitarian emergencies | Strengthen multisectoral accountability |

**PPPR**: pandemic prevention, preparedness and response
Conclusions
Overarching message

Ending the global TB epidemic requires translating the commitments made at the 2023 UN high-level meeting on TB into action.
For more information
For more information

Read the main report findings and messages

[Image of the Global Tuberculosis Report 2023]

Explore more detailed and interactive content

<table>
<thead>
<tr>
<th>Standard topics</th>
<th>Featured topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. TB disease burden</td>
<td>UN declaration on TB</td>
</tr>
<tr>
<td>2. TB diagnosis &amp; treatment</td>
<td>New treatment for TB</td>
</tr>
<tr>
<td>3. TB prevention</td>
<td>International donor funding</td>
</tr>
<tr>
<td>4. TB financing</td>
<td>TB in prisons</td>
</tr>
<tr>
<td>5. UHC &amp; TB determinants</td>
<td>TB epidemiological reviews</td>
</tr>
<tr>
<td>6. TB research &amp; innovation</td>
<td>MAF-TB</td>
</tr>
</tbody>
</table>

Country, regional and global profiles

Data for key indicators at your fingertips

[Image of mobile phones with the Global Tuberculosis Report app]

<table>
<thead>
<tr>
<th>Apple store</th>
<th>Google store</th>
</tr>
</thead>
</table>

Data

| Web-based profiles | TB data | Slide set |

Others

| Top findings and messages (multilingual) | Technical appendices |

https://www.who.int/teams/global-tuberculosis-programme/tb-reports/global-tuberculosis-report-2023
For more information