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ASEAN
BIOLOGICAL THREATS
SURVEILLANCE CENTRE

TUBERCULOSIS

In the ASEAN Region

FOCUS REPORT

With Support by:

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ASSOCIATION OF SOUTHEAST ASIAN NATIONS

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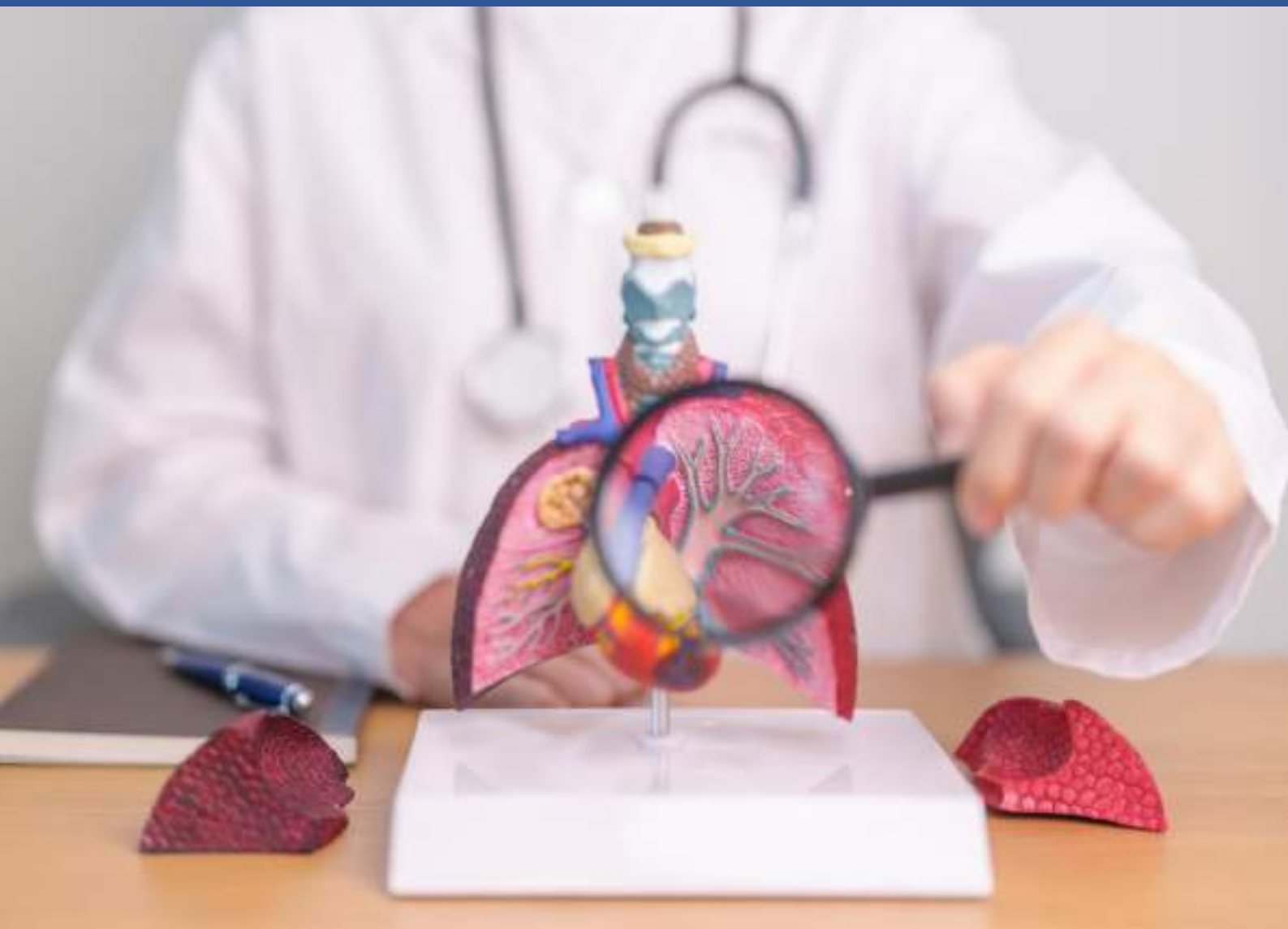
Acronyms and Abbreviations

AIDS : Acquired Immunodeficiency Syndrome
AMS : ASEAN Member States
ART : Antiretroviral Therapy
ASEAN : Association of Southeast Asian Nations
BCG : Bacille CalmetteGuérin
DNA : Deoxyribonucleic Acid
DOTS : Directly Observed Treatment, Shortcourse
DRS : Drug-Resistance Surveillance
DR-TB : Drug Resistant Tuberculosis
DST : Drug Susceptibility Testing
DS-TB : Drug Susceptible Tuberculosis
EPTB : Extrapulmonary Tuberculosis
FDC : Fixed Dose Combination
GDP : Gross Domestic Product
HBCs : High Burden Countries
HIV : Human Immunodeficiency Virus
Hr-TB : Isoniazid-resistant, Rifampicin-susceptible Tuberculosis
LF-LAM : Lateral Flow Urine Lipoarabinomannan Assay
LPAs : Line Probe Assays
LTBI : Latent Tuberculosis Infection
MDR-TB : Multidrug-Resistant Tuberculosis
MOH : Ministry of Health
MTBC : *Mycobacterium tuberculosis* Complex
MTBC : Mycobacterium tuberculosis Complex
NAATs : Nucleic Acid Amplification Tests
NGS : Next Generation Generation Sequencing Generation Sequencing
NTBCC : National Tuberculosis Care Centre
NTBP : National Tuberculosis Programme
NTCC : National Tuberculosis Coordinating Centre
NTPs : National Tuberculosis Programs
PCR : Polymerase Chain Reaction
PhilSTEP : Philippine Strategic Tuberculosis Elimination Plan
PMTPT : Programmatic Management of Tuberculosis Preventive Treatment
Pre-XDR-TB : Pre-Extensively Drug-Resistant Tuberculosis
PTB : Pulmonary Tuberculosis
RR-TB : Rifampicin-Resistant Tuberculosis
SDG : Sustainable Development Goal
STEP : Singapore Tuberculosis Elimination Programme
TB : Tuberculosis
TBI : Tuberculosis Infection
TB-LAMP : Loop Mediated Isothermal Amplification Mediated Isothermal Amplification
TPT : Tuberculosis Preventive Treatment
UHC : Universal Health Coverage
UNHLM : United Nations High Level Meeting Level Meeting
UV : Ultraviolet
WHO : World Health Organization

TUBERCULOSIS

Introduction & Methods



Introduction

Tuberculosis (TB) is an infectious disease that primarily affects the lungs and is caused by the bacterium *Mycobacterium tuberculosis*. It spreads through the air when individuals with active, transmissible TB infection cough, sneeze, speak, or sing, releasing bacteria into the environment.

TB continues to pose a major public health challenge across the ASEAN region, where every Member State consistently reports new cases and deaths each year. In response to the global burden, countries worldwide—including ASEAN Member States—renewed their commitments during the 2023 United Nations High-Level Meeting (UNHLM) on TB to accelerate efforts toward ending the disease.

This report presents an overview of TB, covering its transmission, clinical manifestations, and available treatment options, along with up-to-date statistics on incidence and mortality. It also examines the current TB situation within ASEAN, assessing the disease's impact and the region's coordinated actions in surveillance, rapid response, and public health interventions. By highlighting these aspects, the report underscores the essential role of prevention, preparedness, and targeted action in reducing TB burdens among high-risk and vulnerable populations.

Methods

This report utilises a comprehensive literature review to examine the global TB landscape, with a specific emphasis on the ASEAN region. Data were sourced from established scientific databases, including PubMed and Scopus. Additional information on TB incidence, drawing on publications from the World Health Organization (WHO) and national reports from ASEAN Member States, as well as diagnostic criteria, preventive measures, and policy frameworks, was compiled from official documents and reputable news outlets. This multi-source, integrative approach enabled an in-depth assessment of current trends, epidemiological patterns, and key challenges in TB control and management across the ASEAN region.

Case Definition and Clinical Features

Case Definition

Tuberculosis, or TB, is one of oldest known diseases, with signs of infection detected in human skeletons that are thousands of years old (Babberis et al., 2017). Its bacterial cause remained a mystery until 24 March 1882, when Dr. Robert Koch identified the microorganism now known as *Mycobacterium tuberculosis* (CDC, 2024a).

TB is transmitted through aerosolised microdroplets, most released when a person with active TB coughs (Alzayer and Al Nasir, 2023). Infectious droplets can also be generated during activities such as singing, shouting, and sneezing. Prolonged and close exposure is the strongest determinant of transmission risk, which explains the higher likelihood of spread among household contacts and workplace colleagues (Kurtuluş, 2020). Transmission is also frequently reported in high-risk, crowded, or poorly ventilated settings, including prisons, mining sites, and public transportation (Hanifa, 2009; Andrews, et al, 2014). Although the lungs are the primary site of infection, referred to as pulmonary TB, the disease may also affect other organs and tissues, resulting in extrapulmonary forms of TB.

Certain groups are particularly susceptible to infection and disease progression, especially children under five and individuals living with Human Immunodeficiency Virus (HIV), due to their increased biological vulnerability (Martinez, et al, 2021). This report applies WHO's TB case definitions as specified in the Definitions and Reporting Framework for Tuberculosis (2013, with revisions in 2014 and 2020), summarized in Table 1 (WHO, 2020).

Table 1. Tuberculosis case definition

Term	Definition
Presumptive TB	A patient who presents with symptoms or signs suggestive of TB
Clinically diagnosed TB	A patient who does not meet the criteria for bacteriological confirmation yet has been identified as having active TB by a clinician or other healthcare professional who has opted to administer a full course of TB treatment. This definition encompasses cases diagnosed based on X-ray findings or indicative histological results, as well as extrapulmonary cases lacking laboratory confirmation. If a clinically diagnosed case is later determined to be bacteriologically positive—either before or after the initiation of treatment—it should be reclassified as bacteriologically confirmed.
Bacteriologically confirmed TB	A patient whose biological specimen is positive by smear microscopy, culture or WRD (such as Xpert MTB/RIF). All such cases should be notified, regardless of whether TB treatment has started.

According to the anatomical site of disease, tuberculosis can be classified to pulmonary tuberculosis (PTB) and extrapulmonary tuberculosis (EPTB), as presented in Table 2 (WHO, 2024a).

Table 2. Classification of a person with TB disease by anatomical site

Term	Definition
Pulmonary tuberculosis (PTB)	A person with TB disease involving the lung parenchyma or the tracheobronchial tree. *Note: A case with both pulmonary and extrapulmonary TB should be recorded and counted as a pulmonary TB case for surveillance purposes. Miliary TB is classified as pulmonary TB.*
Extrapulmonary tuberculosis (EPTB)	A person with TB disease involving organs other than the lung parenchyma or tracheobronchial tree (e.g. pleura, lymph nodes, digestive track, genitourinary tract, skin, joints and bones, meninges).

The classifications based on a patient's history of previous TB treatment differ slightly from earlier versions. The updated approach focuses exclusively on whether the individual has received TB treatment before, without considering bacteriological confirmation or the anatomical site of disease (WHO, 2010). The classification applied in this report is presented in Table 3 (WHO, 2024a).

Table 3. Classification based on history of previous TB treatment

Term	Definition
New case	A person with TB disease who has never been treated for TB or has only ever taken TB drugs for less than 1 month.
Recurrent case	A person with TB disease who has previously been treated for TB, was declared cured or treatment completed at the end of their most recent course of TB treatment and is now diagnosed with a new episode of TB.
Re-registered case	A person with TB disease who has been notified previously as a TB case, who started treatment and took TB drugs for at least 1 month, but who was not declared cured or treatment completed, and is now being started on a new course of TB treatment. Examples of re-registered cases include: a. a person who was declared treatment failed during or at the end of their most recent course of TB treatment and who is starting a new course of TB treatment (normally using a different drug regimen). b. a person who was declared lost to follow-up during or at the end of their most recent course of TB treatment and who has returned to start a new course of TB treatment; and c. a person whose outcome after their most recent course of TB treatment is undocumented and who has returned to start a new course of TB treatment.

Recording and verifying a patient's HIV status is essential for guiding appropriate treatment decisions, as well as for monitoring epidemiological trends and evaluating programme performance. The corresponding classification is presented in Table 4 (WHO, 2024a).

Table 4. Classification based on HIV status

Term	Definition
HIV-positive	A person with TB disease who has a documented positive result from HIV testing before, at the time of TB diagnosis or during the TB episode.
HIV-negative	A person with TB disease who has a negative result from HIV testing conducted at the time of TB diagnosis. *Note: If the person is subsequently found to be HIV-positive during their TB treatment, they should be reclassified as an HIV-positive TB case.*
HIV status unknown	A person with TB disease who has no result from HIV testing and no documented evidence of receiving treatment for HIV. *Note: If the person's HIV status is subsequently determined, they should be reclassified as an HIV-positive TB case or an HIV-negative TB case, as appropriate.*

It should be noted that registration categories for drug-resistant tuberculosis (DR-TB) exhibit minor variations and are detailed in the Companion Handbook to the WHO Guidelines for the Programmatic Management of Drug-Resistant Tuberculosis (WHO, 2022a). Drug resistance status is assigned by classifying TB cases according to the results of drug susceptibility testing (DST) performed on clinical isolates confirmed as *Mycobacterium tuberculosis* (WHO, 2024a).

Table 5. Classification based on drug resistance

Term	Definition
Drug-susceptible TB (DS-TB):	A person with TB disease for whom there is no evidence of infection with a strain of *M. tuberculosis* complex that is resistant to rifampicin or isoniazid. This includes people for whom DST was not done or for whom DST shows a strain of *M. tuberculosis* complex that is susceptible to both rifampicin and isoniazid.
Drug-resistant TB (DR-TB)	A person with TB disease who is infected with a strain of *M. tuberculosis* complex that is resistant to any TB medicines tested. When available, DST results for individual drugs should be recorded.
Isoniazid-resistant, rifampicin-susceptible TB (Hr-TB)	A person with TB disease who is infected with a strain of *M. tuberculosis* complex that is resistant to isoniazid but susceptible to rifampicin.
Rifampicin-resistant TB (RR-TB)	A person with TB disease who is infected with a strain of *M. tuberculosis* complex that is resistant to rifampicin. *Note: These strains may be either susceptible or resistant to isoniazid (i.e. MDR-TB) or resistant to other first-line or second-line TB medicines.*
Multidrug-resistant TB (MDR-TB)	A person with TB disease who is infected with a strain of *M. tuberculosis* complex that is resistant to both rifampicin and isoniazid.

Pre-extensively drug-resistant TB (pre-XDR-TB)	A person with TB disease who is infected with a strain of *M. tuberculosis* complex that is resistant to rifampicin (and which may also be resistant to isoniazid), and which is also resistant to at least one fluoroquinolone (either levofloxacin or moxifloxacin).
Extensively drug-resistant TB (XDR-TB)	A person with TB disease who is infected with a strain of *M. tuberculosis* complex that is resistant to rifampicin (and which may also be resistant to isoniazid) as well as resistant to at least one fluoroquinolone (levofloxacin or moxifloxacin) and at least one other "Group A" drug (bedaquiline or linezolid)

These classification categories are not strictly mutually exclusive. For instance, the definition of RR-TB also captures cases that meet criteria for MDR-TB and XDR-TB. Traditionally, monoresistance and polydrug resistance have been defined with reference only to first-line anti-TB agents. With the introduction of new treatment regimens, however, it will be necessary to extend classifications to reflect resistance profiles for fluoroquinolones, second-line injectable agents, and any additional anti-TB drugs for which robust DST becomes available.

Transmission

TB spreads person-to-person through airborne droplet nuclei (Figure 1). Infectious individuals expel tiny particles of *M. tuberculosis* when they cough, sneeze, speak, or sing (CDC, 2019). These particles, about 1–5 microns across, can stay aloft for hours; breathing contaminated air may lead to infection.

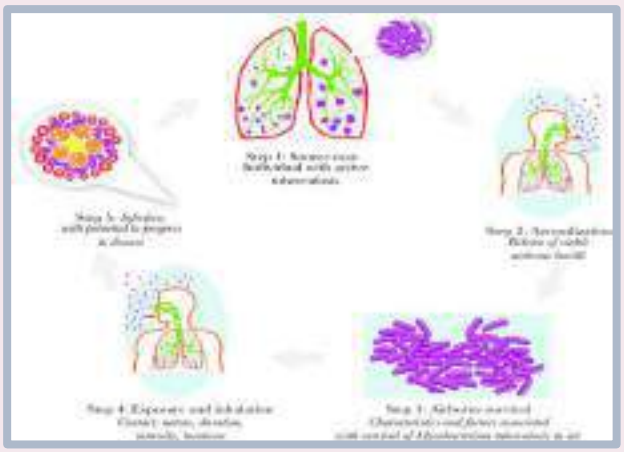


Figure 1. Transmission of Tuberculosis (Source: Nwoke, Chukwuebuka (https://www.researchgate.net/publication/362701191_Critical_Appraisal_Focusing_on_Tuberculosis_Risks_among_Displaced_Persons_Do_We_Have_a_Smoking_Gun))

Not all contacts of a person with TB become infected. The probability of transmission depends on four principal determinants: **(1) infectiousness of the index case,** the degree to which the person with TB is contagious; **(2) exposure environment,** characteristics of the setting (ventilation, crowding, duration) that modify airborne risk; **(3) frequency and duration of contact,** how often and how long the exposed person was in proximity to the infectious case; and **(4) susceptibility of the contact,** the immune status and other host factors that influence vulnerability to infection.

Risk Factors and Risk Groups

Among people infected with *Mycobacterium tuberculosis*, the average lifetime risk of developing active TB disease is estimated at around 5–10% (WHO, 2024b). This risk is much higher in certain groups, particularly young children under 5 years of age and individuals with weakened immune systems. The course of the tuberculosis epidemic is also significantly influenced by socioeconomic determinants and comorbid risk factors, including undernutrition, diabetes, HIV infection, alcohol consumption, and tobacco use (WHO, 2021).

To monitor progress toward the Sustainable Development Goals (SDGs), WHO developed a framework comprising 14 indicators across seven SDGs that are linked to TB incidence (WHO, 2021). Among these, undernutrition and low Gross Domestic Product (GDP) per capita show particularly strong associations with TB burden. In 2020, global estimates attributed 1.9 million incident TB cases to undernutrition, 0.74 million each to HIV and alcohol use, 0.73 million to smoking, and 0.37 million to diabetes.

In 2023, adult men (≥15 years) accounted for the largest share of TB cases (6.0 million; 55%), followed by adult women (3.6 million; 33%) and children (1.3 million; 12%) (WHO, 2024c). Case notifications represented 70% of the estimated incidence overall, but coverage varied: 72% for adult men, 75% for adult women, 49% for children aged 0–14 years, and only 42% for children under 5 years.

Clinical Presentation

TB is most often diagnosed when symptomatic individuals seek medical care. In certain circumstances, however, TB may be identified incidentally during assessment for unrelated conditions. For example, chest radiography performed following trauma may reveal pulmonary abnormalities consistent with TB (CDC, 2024b). TB disease can also be detected through contact investigations after recent exposure. Clinical manifestations vary depending on the anatomical site affected. General symptoms of TB disease (in any part of the body) include fever, night sweats, weight loss, loss of appetite, and loss of energy.

Figure 2. General symptoms of Tuberculosis

TB predominantly affects the lungs, manifesting as pulmonary TB, which accounts for most reported cases. The clinical presentation of pulmonary TB typically includes the following symptoms:

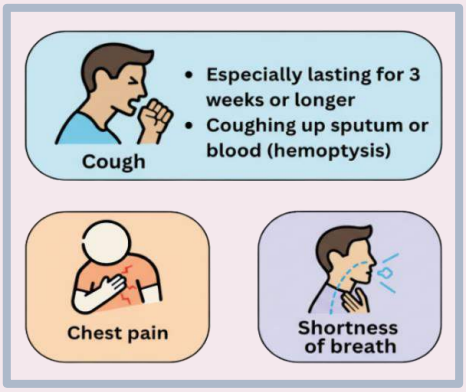


Figure 3. Clinical presentations of pulmonary TB

Extrapulmonary TB refers to infection occurring in organs outside the lungs, with clinical manifestations varying according to the site involved. Common presentations include hematuria suggestive of renal TB, headache or confusion indicative of TB meningitis, back pain associated with spinal TB, hoarseness linked to laryngeal TB, lymphadenopathy reflecting TB of the lymph nodes, and swollen, painful joints consistent with TB of bone or cartilage. In patients presenting with systemic symptoms and elevated risk, extrapulmonary TB should be considered within the differential diagnosis.

Clinical Diagnostic

The End TB Strategy of the WHO highlights the critical importance of early diagnosis and universal DST, underscoring the central role of laboratories in the post-2015 era for rapid and reliable detection of TB and associated drug resistance. Over the past 16 years, WHO has formally endorsed a range of new diagnostic technologies to strengthen global TB control (WHO, 2024d).

- **Real-time polymerase chain reaction (PCR)** technologies, such as Xpert® MTB/RIF and Xpert® MTB/RIF Ultra (Cepheid), as well as Truenat™ (Molbio). These automated assays provide integrated, point-of-care solutions suitable for peripheral health facilities and are among the most widely adopted diagnostic tools. They detect MTBC DNA and identify mutations associated with rifampicin resistance. Effective implementation requires both hardware and software for result reporting, supported by established laboratory networks and trained personnel.

Figure 4. Real time polymerase chain reaction (PCR) (Source: https://www.who.int/nepal/news/detail/22-05-2025-who-boosts-nepal-s-disease-detection-capacity-with-rt-pcr-machine-handover-to-nphl)

- **Moderate-complexity automated nucleic acid amplification tests (NAATs)** are largely automated following the sample preparation step. They can be employed as an initial diagnostic for tuberculosis, simultaneously detecting resistance to rifampicin and isoniazid. These platforms enable rapid and accurate results and are particularly efficient in high-volume testing environments. Consequently, they are well suited to densely populated areas with established sample referral systems.

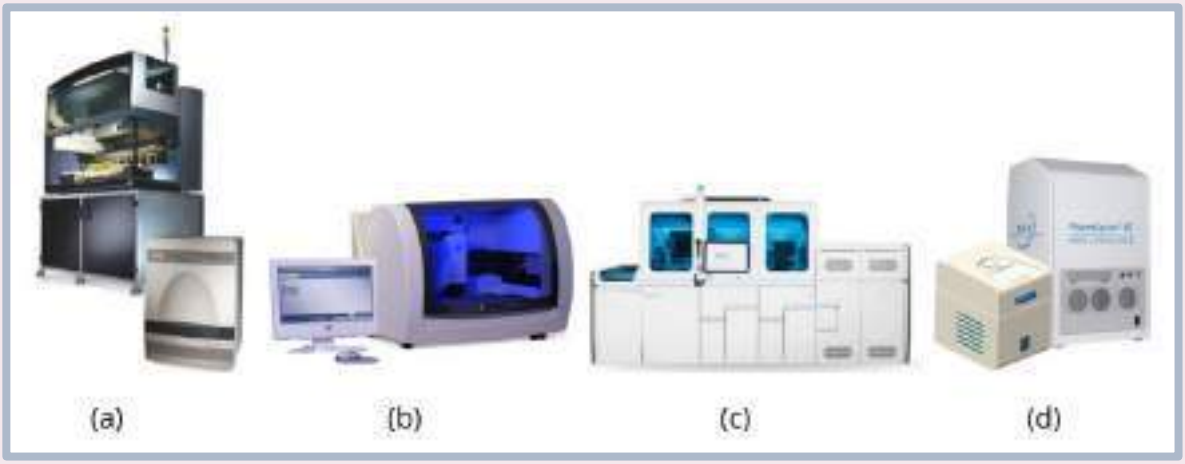


Figure 5. Moderate-complexity automated NAATs. (a) Abbott Real Time MTB and MTB RIF/INH; (b) BD MAX MDR-TB; (c) Cobas MTB and MTB-RIF/INH; and (d) Fluoro Type MTB and MTBDR

- **Loop-mediated isothermal amplification (TB-LAMP)** amplifies Deoxyribonucleic Acid (DNA) at a constant temperature, eliminating the need for a thermocycler. Amplified products are detected visually under ultraviolet (UV) light directly in reaction tubes. This method requires minimal equipment and can be implemented effectively in basic laboratory facilities. However, current TB-LAMP technology does not allow for the detection of mutations associated with drug resistance.

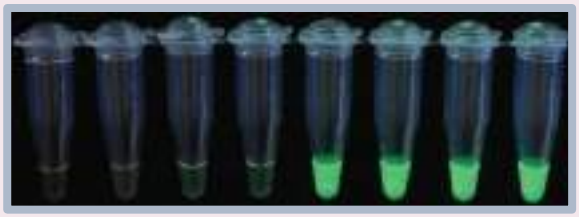


Figure 6. Loop-mediated isothermal amplification (TB-LAMP) (Source: WHO (https://www.who.int/publications/i/item/9789241511186))

- **Antigen detection in lateral flow format (LF-LAM)** assay is a urine-based immunocapture test designed to detect TB antigen. In specific populations, LF-LAM can complement other approved diagnostics, offering a unique point-of-care benefit. Despite limitations in sensitivity, LF-LAM serves as a rapid bedside rule-in test for individuals living with HIV, particularly in urgent clinical situations where immediate diagnosis is critical for survival (WHO, 2022b).

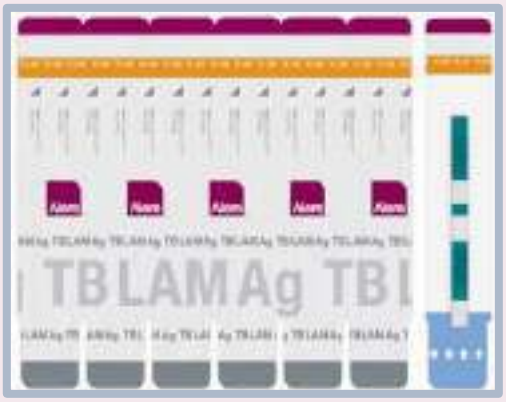


Figure 7. Lateral Flow Lipoarabinomannan (LF-LAM)

- **Low-complexity automated NAATs** are now available for detecting resistance to isoniazid and second-line anti-TB drugs. Designed as reflex tests for mycobacterium tuberculosis complex (MTBC-positive) specimens, they provide rapid DST in intermediate and peripheral laboratories. The first product in this category can simultaneously identify resistance to isoniazid, fluoroquinolones, ethionamide, and amikacin, with results available in under 90 minutes. This significantly reduces turnaround time compared to line probe assays (LPAs) and culture-based DST.

- **Line probe assays (LPAs)** are DNA strip tests that detect MTBC DNA and assess drug resistance profiles by analyzing amplicon binding to specific probes targeting resistance-associated mutations and wildtype sequences. Although technically more complex than Xpert® assays, LPAs can identify resistance to a broader range of first- and second-line drugs and provide mutation-specific information.

These platforms are tailored for reference laboratories in high-burden settings, with results available in approximately 5 hours.

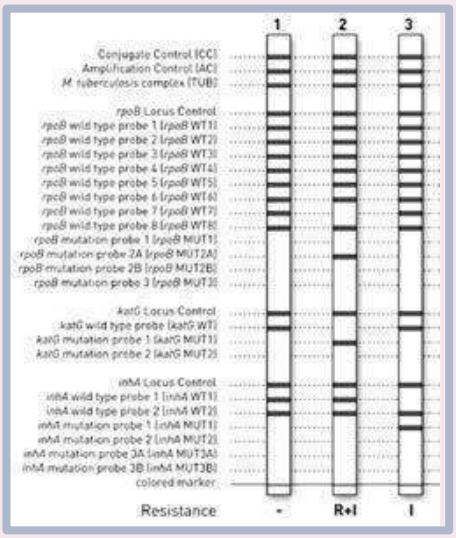


Figure 9. First-Line Line Probe Assay (FL-LPA)

Figure 8. Second-Line Line Probe Assay (FL-LPA)

(Source: https://tbksp.who.int/en/node/3087)

- **Targeted next generation sequencing (NGS)** combines gene amplification with sequencing to detect resistance to multiple drugs in a single assay. It can analyze entire genes to identify specific mutations, offering potentially greater accuracy than current WHO-recommended diagnostics. Importantly, targeted NGS can detect resistance to novel and repurposed drugs not covered by existing molecular assays, making it a promising tool for contemporary treatment protocols. Implementation requires regulatory approval from national authorities or relevant organizations prior to deployment.

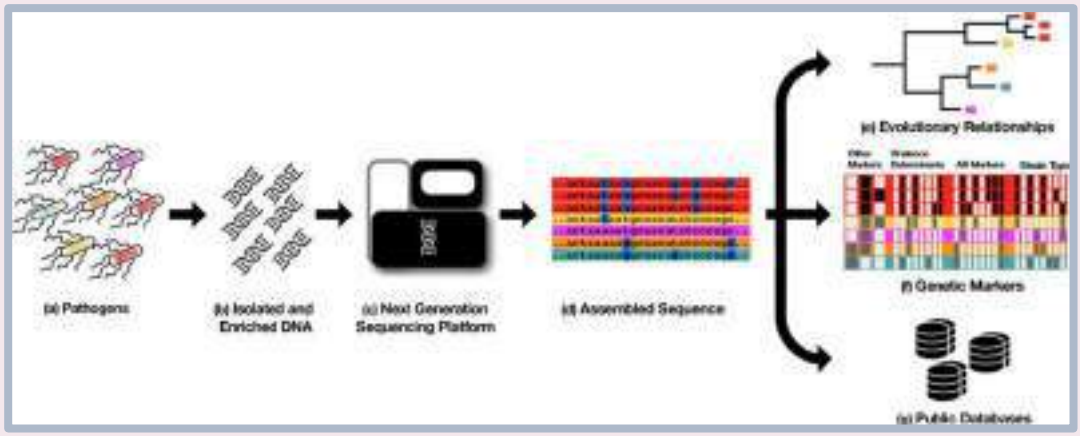
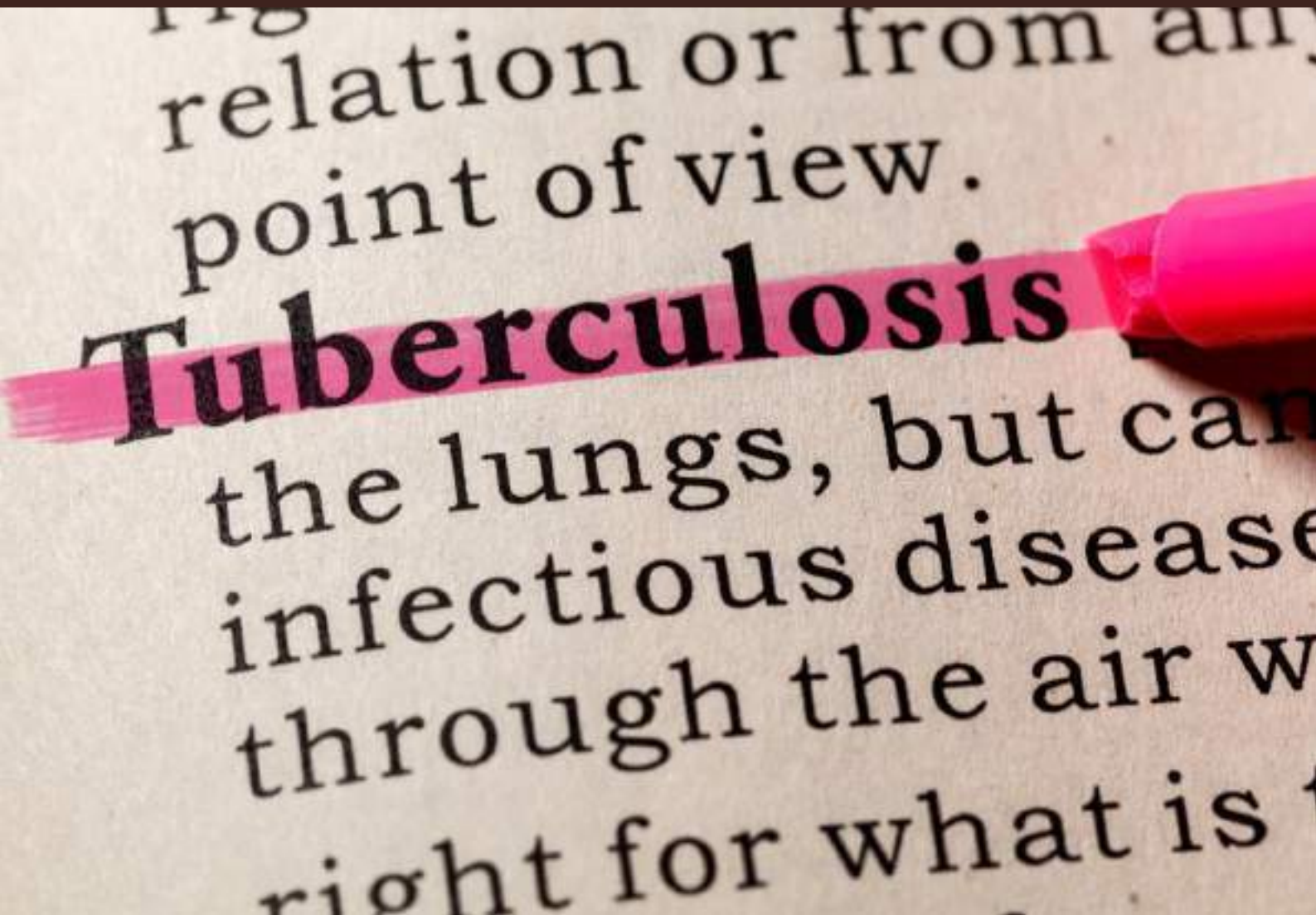


Figure 10. Targeted next-generation sequencing (NGS)
(Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC7008580/)

Epidemiology



Global Situation

TB continues to present a significant global public health challenge. In 2024, an estimated 10.7 million people developed TB (95% uncertainty interval: 9.9–11.5 million), and approximately 1.23 million individuals died from the disease (95% uncertainty interval: 1.13–1.33 million) (WHO, 2025a). Globally, the total estimated number of people developing TB declined in 2024 for the first time since 2020, following three consecutive years (2021–2023) of increases linked to COVID-19–related disruptions in TB detection and treatment services. The estimated 10.7 million cases in 2024 represent a 1% decrease from the 10.8 million reported in 2023, although the Figure remains higher than the pre-pandemic level recorded in 2020 (10.3 million).

In 2024, the global incidence rate of TB was estimated at 131 new cases per 100,000 population (95% uncertainty interval: 122–141) (WHO, 2025a). This represents an 8.7% reduction compared with 2015, far below the WHO's End TB Strategy target of a 50% reduction by 2025. The COVID-19 pandemic significantly disrupted TB diagnosis and treatment services, and these setbacks are estimated to have resulted in nearly 500,000 additional TB-related deaths between 2020 and 2022 compared with what would have been expected based on pre-pandemic trends.

The map in Figure 11 shows estimated TB incidence rates per 100,000 population in 2024, highlighting that the highest TB burdens remain concentrated in sub-Saharan Africa and parts of South and Southeast Asia, where many countries fall within the 300–499 or ≥500 cases per 100,000 categories. In contrast, much of Europe, North America, Australia, and parts of the Middle East display very low incidence levels (0–9.9 per 100,000).

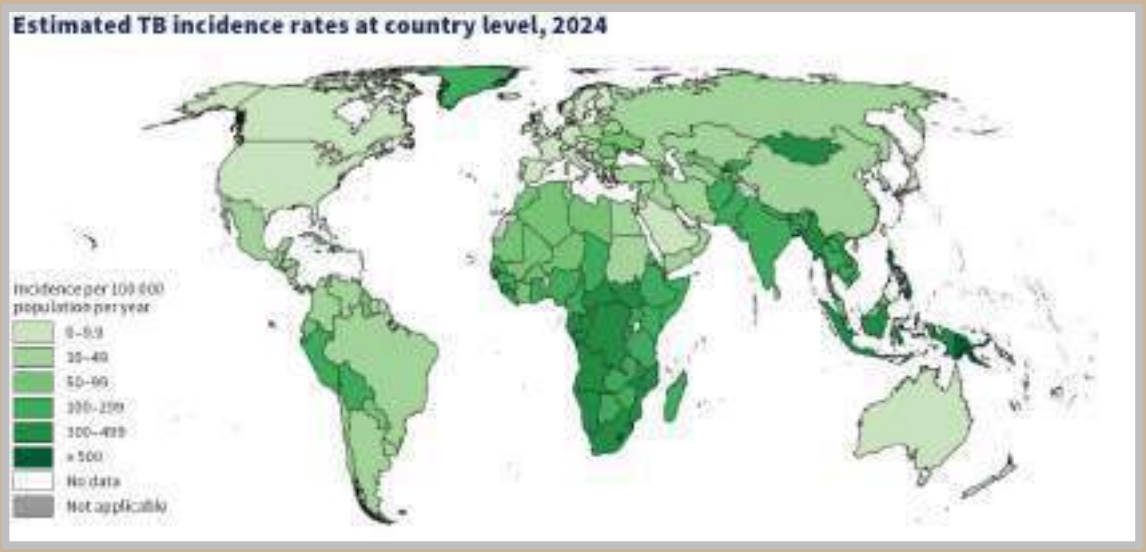


Figure 11. Estimated TB incidence rates at country level in 2024
(Source: WHO (https://www.who.int/teams/global-tuberculosis-programme/data))

Figure 12 shows that global notified TB cases have generally increased from 2015 to 2024, with a noticeable dip in 2020 due to disruptions in TB detection during the COVID-19 pandemic, followed by a steady recovery, reflecting WHO-reported trends in overall TB notifications (WHO, 2025a, WHO, 2026). In contrast, notified MDR/RR-TB cases remain much lower and are reported separately because they represent TB cases with confirmed drug resistance, whose detection also declined in 2020 and reemerged to 2023 before slightly dropping in 2024.

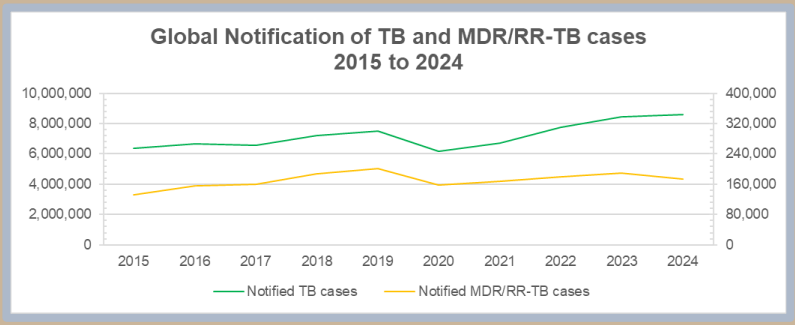


Figure 12. Global notification of TB and MRD/RR-TB cases, 2015-2024
(Source: WHO (https://www.who.int/teams/global-tuberculosis-programme/data))

The global distribution of TB cases in 2024 also showed noticeable regional disparities. Most people who developed TB resided in the WHO South-East Asia Region, which accounted for 34% of all new cases (WHO, 2025a). This was followed by the Western Pacific Region with 27% and the African Region with 25%. Much smaller proportions were reported in the Eastern Mediterranean (8.6%), the Americas (3.3%), and Europe (1.9%).

These patterns reflect the continued concentration of TB burden in a relatively small group of countries. The 30 countries classified by WHO as high TB burden accounted for 87% of all estimated incident cases worldwide in 2024 (WHO, 2025a). Within this group, eight countries alone contributed two-thirds (67%) of the global total. The top five countries, India (25%), Indonesia (10%), the Philippines (6.8%), China (6.5%), and Pakistan (6.3%), collectively contributed more than half of all TB cases globally (54.6%).

The concept of high-burden countries has played an important role in global TB control for decades. WHO introduced its first list of 22 high-burden countries (HBCs) in 1998, identifying nations that together accounted for about 80% of global TB cases (WHO, 2025a). This framework helped guide targeted interventions and international support by focusing attention on countries with the greatest TB burden.

By 2015, the HBC approach had evolved into three distinct lists covering TB, TB/HIV, and MDR-TB. Each list included 30 countries, illustrated in Figure 13. Although many countries appeared on more than one list, a total of 49 countries were represented across the three categories (WHO, 2025a).

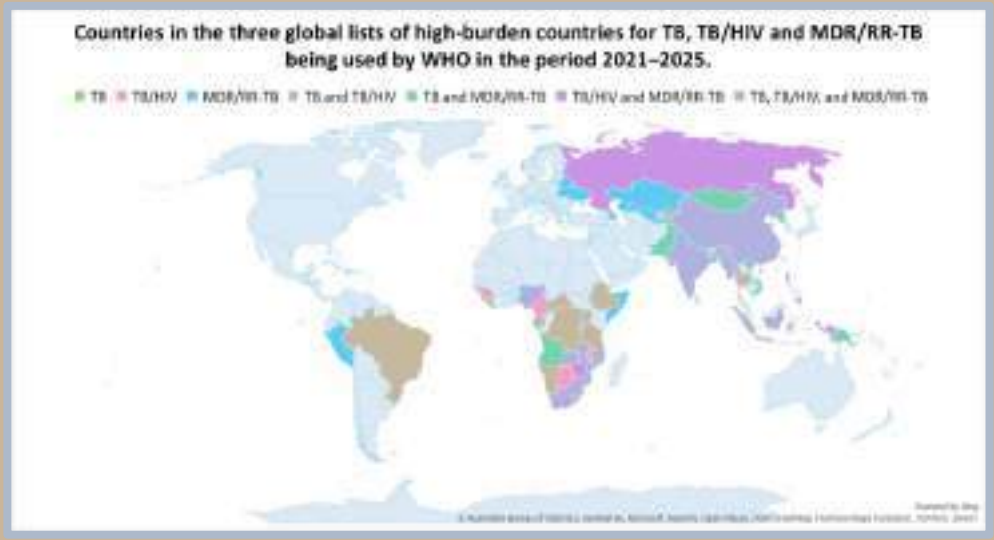


Figure 13. Countries in the three global lists of high-burden countries for TB, TV/HIV and MDR/RR-TB being used by WHO in the period 2021-2025
(data Source: WHO (https://www.who.int/teams/global-programme-on-tuberculosis-and-lung-health/tb-reports/global-tuberculosis-report-2025))

Globally, estimated TB-related mortality decreased by 29% in 2025. However, this achieves far from the WHO End TB Strategy target of a 75% reduction by 2025 (WHO, 2025a). Between 2015 and 2024, WHO estimates indicate a sustained downward trajectory, with annual deaths declining from 1,742,633 in 2015 to 1,230,570 in 2024 (Figure 14). The period from 2015 to 2019 showed consistent annual reductions, followed by a period of stagnation during the COVID-19 pandemic at approximately 1.41–1.43 million in 2020 and 2021. Mortality levels began to decrease again in 2022, reaching 1,353,003, and continued to fall through 2023 and 2024, culminating in the lowest estimated burden of the decade. Collectively, these data reflect a notable overall decline of nearly one-third over the ten-year period.

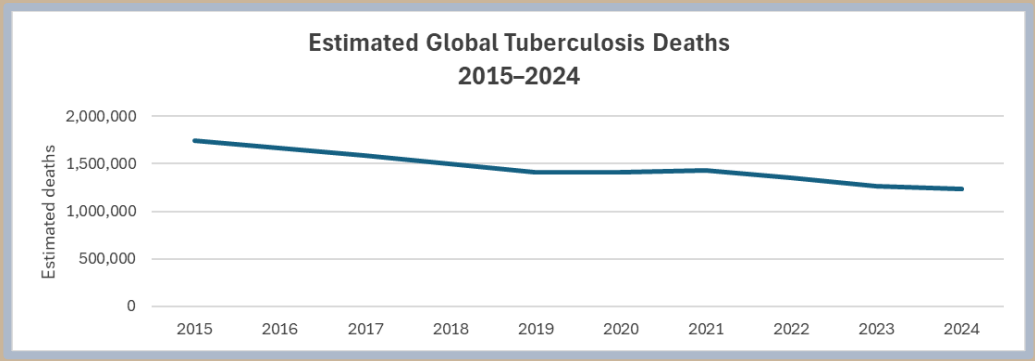


Figure 14. Countries in the three global lists of high-burden countries for TB, TV/HIV and MDR/RR-TB being used by WHO in the period of 2015 to 2024
(data Source: WHO (https://worldhealthorg.shinyapps.io/tb_profiles/))

Burden of Tuberculosis in the ASEAN Region

Tuberculosis continues to pose a significant public health challenge across the ASEAN region, with all member states reporting new cases and deaths each year. Five ASEAN countries, namely Indonesia, Myanmar, the Philippines, Thailand, and Viet Nam, are currently listed among the WHO's 30 high TB burden countries for 2021–2025 (WHO, 2025a). The following section presents annual data on notified cases of TB and MDR/RR-TB for each ASEAN Member State, as reported to the WHO (WHO, 2026):

Brunei Darussalam

Figure 15 shows that Brunei Darussalam's notified TB cases remained relatively stable from 2015 to 2024, fluctuating between roughly 200 and 300 cases per year, with a noticeable peak around 2020 followed by a gradual return toward mid-range levels. Meanwhile, notified MDR/RR-TB cases were extremely low throughout the period, with only occasional single-case detections in some years and none in others, indicating that drug-resistant TB is rare in the country. Overall, TB notification levels remain consistent year-to-year, and MDR/RR-TB appears sporadic rather than sustained.

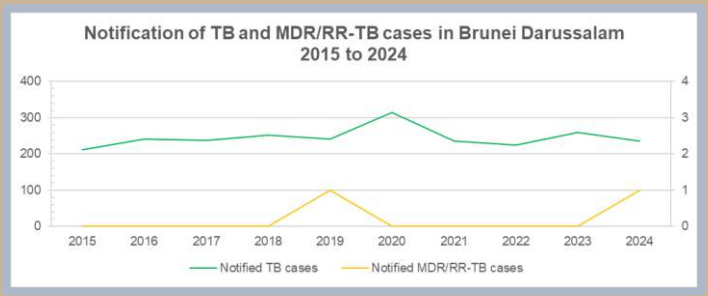


Figure 15. Notification of TB and MRD/RR-TB cases in Brunei Darussalam, 2015-2024
(Source: WHO (https://www.who.int/teams/global-tuberculosis-programme/data))

Cambodia

Cambodia's notified TB cases gradually declined from 2015 to 2020, reaching their lowest point during the pandemic, before rebounding in 2021 and stabilizing at around 30,000–32,000 cases through 2024 (Figure 16). In contrast, notified MDR/RR-TB cases rose moderately from 2015 to 2019 but dropped sharply to near zero in 2020, reflecting major disruptions to drug-resistant TB detection, then steadily recovered from 2021 onward.

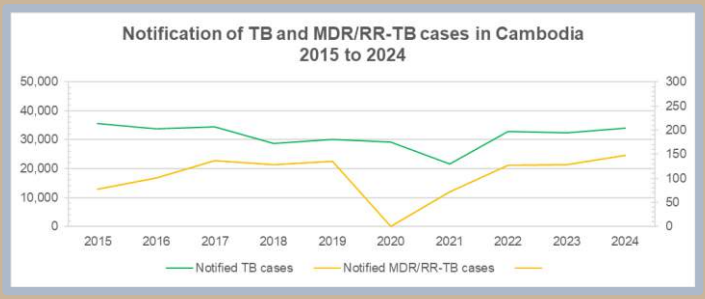


Figure 16. Notification of TB and MRD/RR-TB cases in *Cambodia*, 2015-2024
(Source: WHO (https://www.who.int/teams/global-tuberculosis-programme/data))

Indonesia

As shown in Figure 17, Indonesia's notified TB cases rose steadily from 2015 to 2019, reaching close to 600,000 before dropping sharply in 2020 during the COVID-19 disruption, then rebounding strongly from 2021 onward and stabilizing, with over 800,000 cases notified annually by 2023–2024. Notified MDR/RR-TB cases followed a similar pattern: increasing steadily up to 2019, falling noticeably in 2020, and then recovering between 2021 and 2023 before showing a slight decline in 2024. Overall, Indonesia demonstrates a clear pandemic-related dip followed by substantial recovery in both general TB and drug-resistant TB notifications, with MDR/RR-TB remaining a much smaller but consistently tracked subset of total TB cases.

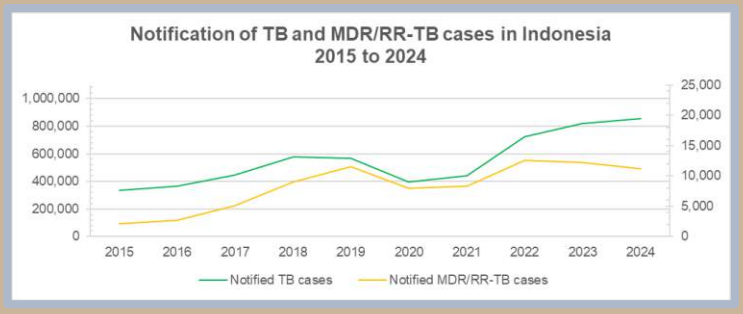


Figure 17. Notification of TB and MRD/RR-TB cases in *Indonesia*, 2015-2024
(Source: WHO (https://www.who.int/teams/global-tuberculosis-programme/data))

Lao People's Democratic Republic

Figure 18 shows that Lao PDR's notified TB cases increased steadily from 2015 to 2019, reaching around 8,500 cases before dropping in 2020, likely reflecting pandemic-related service disruptions, and then rebounding in 2021 and stabilizing slightly above 9,000 cases through 2023–2024. Notified MDR/RR-TB cases followed a gentler rise to 2019, declined in 2020, and then recovered modestly before gradually decreasing again after 2022. Overall, both TB and MDR/RR-TB notifications show a clear dip in 2020 followed by partial recovery, with MDR/RR-TB remaining a small but consistently monitored subset of total TB cases in the country.

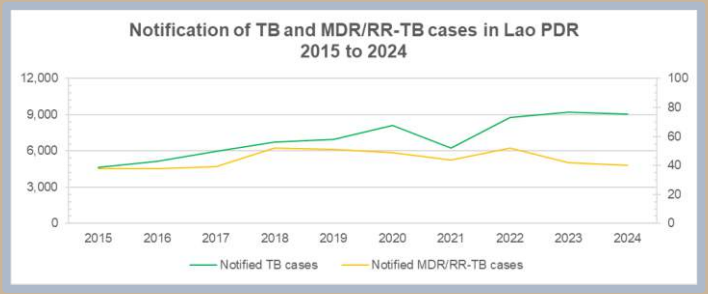


Figure 18. Notification of TB and MRD/RR-TB cases in *Lao People's Democratic Republic*, 2015-2024
(Source: WHO (https://www.who.int/teams/global-tuberculosis-programme/data))

Malaysia

Figure 19 shows that Malaysia's notified TB cases remained relatively steady from 2015 to 2024, fluctuating between about 24,000 and 27,000 cases, with a slight dip around 2020 followed by a gradual return to previous levels. Notified MDR/RR-TB cases display more variation, peaking sharply in 2017 before declining and then stabilizing at lower levels from 2019 onward, with modest fluctuations through 2024. Overall, TB notifications in Malaysia appear stable over time, while MDR/RR-TB notifications show occasional spikes but generally remain low compared to total TB cases.

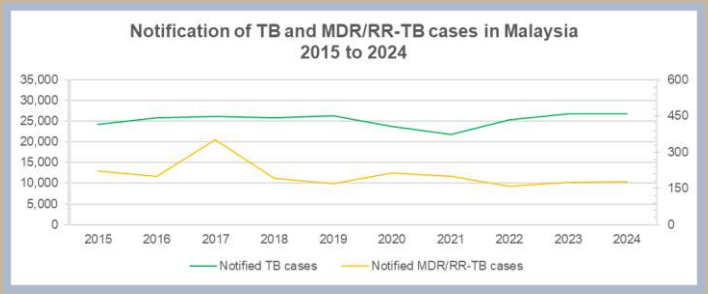


Figure 19. Notification of TB and MRD/RR-TB cases in *Malaysia*, 2015-2024
(Source: WHO (https://www.who.int/teams/global-tuberculosis-programme/data))

Myanmar

Myanmar's notified TB cases gradually declined from 2015 to 2020, hitting a pronounced low point during the pandemic (Figure 20). Notified TB cases then rebounded sharply in 2021 and stabilizing slightly above 120,000 cases through 2023, with a small dip again in 2024. Notified MDR/RR-TB cases follow a similar pattern, rising mildly until 2018, then falling significantly in 2020, recovering in 2021, and stabilizing below 3,000 cases in the following years. Overall, both TB and MDR/RR-TB notifications reflect a clear pandemic-related drop.

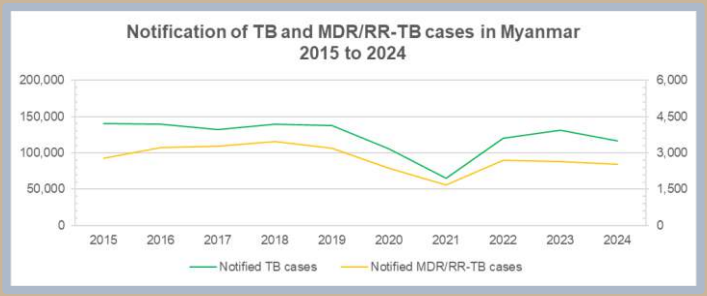


Figure 20. Notification of TB and MRD/RR-TB cases in *Myanmar*, 2015-2024
(Source: WHO (https://www.who.int/teams/global-tuberculosis-programme/data))

Philippines

Figure 21 shows that the Philippines' notified TB cases rose steadily from 2015 to a peak in 2019, dropped sharply in 2020 during the pandemic, and then rebounded from 2021 onward, reaching over 550,000 cases in 2023 before dipping slightly in 2024. Similarly, notified MDR/RR-TB cases rose until 2019, fell in 2020, recovered through 2022, and then declined slightly in 2023–2024.

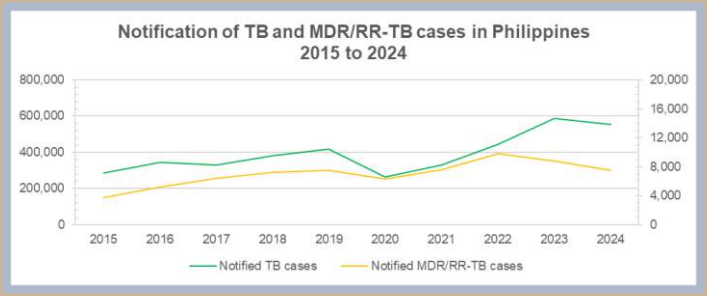


Figure 21. Notification of TB and MRD/RR-TB cases in *Philippines*, 2015-2024
(Source: WHO (https://www.who.int/teams/global-tuberculosis-programme/data))

Singapore

Singapore's notified TB cases, as shown in Figure 22, remained relatively stable from 2015 to 2024, fluctuating between about 2,000 and 2,500 cases, with slight peaks in 2016 and 2022 before dipping in 2023 and rising again in 2024. Notified MDR/RR-TB cases follow a similar modest fluctuation pattern, rising to a small peak in 2016, declining around 2019 and 2023, and increasing again in 2024. Overall, both TB and MDR/RR-TB notifications show mild year-to-year variation but no major long-term shifts over the decade.

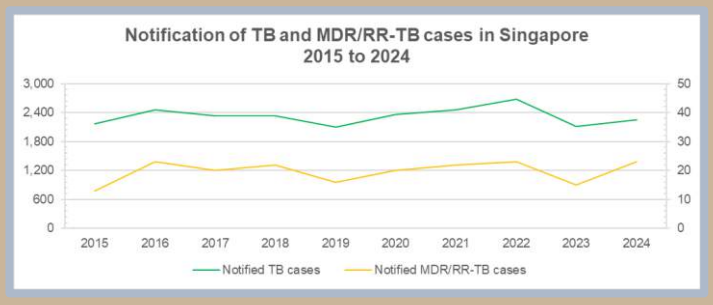


Figure 22. Notification of TB and MRD/RR-TB cases in *Singapore*, 2015-2024
(Source: WHO (https://www.who.int/teams/global-tuberculosis-programme/data))

Thailand

Figure 23 shows that Thailand's notified TB cases increased steadily from 2015 to a peak around 2018–2019, before declining noticeably in 2020—likely reflecting pandemic-related disruptions—and then gradually recovering to about 80,000–85,000 cases by 2023–2024. Notified MDR/RR-TB cases followed a similar pattern, rising sharply from 2015 to a peak in 2017, then fluctuating slightly before dropping significantly in 2020 and slowly increasing again through 2024.

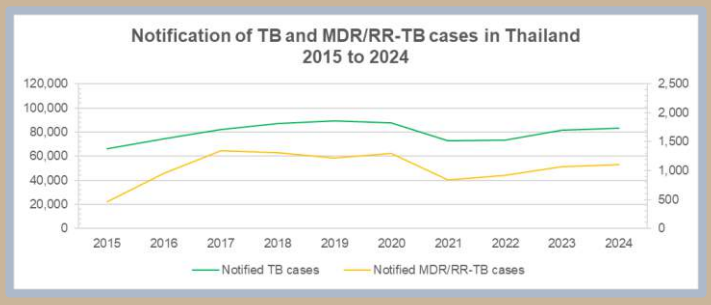


Figure 23. Notification of TB and MRD/RR-TB cases in *Thailand*, 2015-2024
(Source: WHO (https://www.who.int/teams/global-tuberculosis-programme/data))

Timor-Leste

Timor-Leste's notified TB cases remained stable from 2015 to 2018, then gradually declined to 2021 before rose to a peak in 2023 and dropping again in 2024 (Figure 24). Notified MDR/RR-TB cases show a similar upward trend, increasing from 2015 to a small peak in 2023 before declining in 2024. Overall, both TB and MDR/RR-TB notifications generally increased over the decade, with a noticeable rise after 2020, although both indicators show a dip in 2024 following their 2023 peaks.

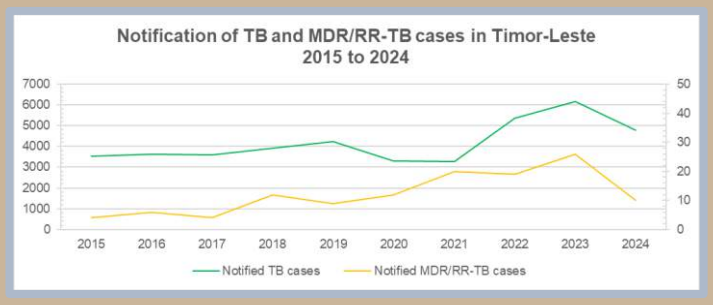


Figure 24. Notification of TB and MRD/RR-TB cases in *Timor-Leste*, 2015-2024
(Source: WHO (https://www.who.int/teams/global-tuberculosis-programme/data))

Viet Nam

As demonstrated in Figure 25, Viet Nam's notified TB cases remained relatively stable from 2015 to 2019, fluctuating around 100,000 cases, before dropping sharply in 2020 during the pandemic and then rebounding strongly in 2021, with numbers stabilizing slightly above pre-pandemic levels through 2024. Notified MDR/RR-TB cases followed a similar pattern, increasing gradually up to 2019, falling noticeably in 2020, and then rising again in 2021 before levelling off slightly below their peak in the following years.

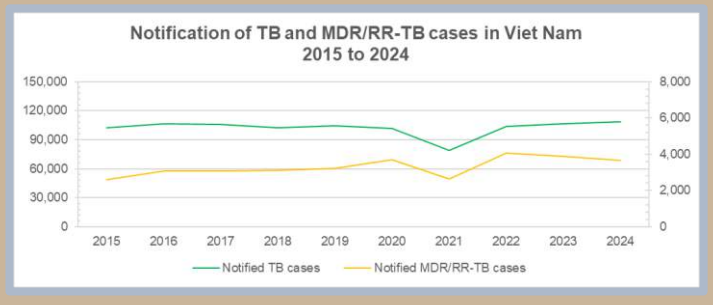


Figure 25. Notification of TB and MRD/RR-TB cases in *Viet Nam*, 2015-2024
(Source: WHO (https://www.who.int/teams/global-tuberculosis-programme/data))

Case Management and Prevention

Case Management

For several decades, the WHO has issued recommendations for the treatment of TB. The current WHO guidelines for DS-TB are consolidated from the WHO Guidelines for Treatment of **DS-TB** and Patient Care (2010 edition, updated in 2017). These guidelines emphasize a 6-month regimen consisting of four first-line TB medicines: isoniazid, rifampicin, ethambutol, and pyrazinamide. This regiment has been widely implemented globally and achieves treatment success in approximately 85% of patients.

The WHO Consolidated Guidelines on Tuberculosis (2025) bring together all evidence-based recommendations that remain valid from the 2010 and 2017 editions and integrate newer guidance released in 2021, including the use of shorter 4-month regimens for DS-TB. The guidelines now offer two main treatment options, with specific recommendations for TB/HIV co-management and the use of adjuvant corticosteroids.

Treatment of DS-TB using a 6-month regimen

- Recommended for new pulmonary TB patients.
- Daily dosing is advised; thrice-weekly dosing is not recommended in either intensive or continuation phases.
- Use of fixed-dose combination (FDC) tablets is preferred over separate drug formulations.
- Extension of the intensive phase is not recommended, even if sputum smear remains positive at its completion.

Treatment of drug-susceptible TB using 4-month regimens

- Patients aged 12 years or older may receive regiment of isoniazid, rifapentine, moxifloxacin and pyrazinamide (2HPMZ/2HPM)
- Children and adolescents (3 months–16 years) with non-severe TB (without suspicion or evidence of MDR/RR-TB): may receive 2HRZ(E)/2HR.

DS-TB treatment and antiretroviral therapy (ART) in people living with HIV

- TB patients with HIV should receive the same treatment duration as HIV-negative patients.
- ART should be initiated as soon as possible, within two weeks of starting TB treatment, regardless of CD4 count.

The use of adjuvant steroids in the treatment of TB meningitis and pericarditis

- In **tuberculous meningitis**: dexamethasone or prednisolone tapered over 6–8 weeks is recommended.
- In **tuberculous pericarditis**: corticosteroid therapy may be considered.

Current guidelines for treating DR-TB emphasize the importance of reliable, quality-assured DST provided by national TB programs (NTPs) and associated laboratories (WHO, 2022c). This testing is crucial for guiding the use of WHO-recommended treatment regimens. Rapid molecular testing is enhancing the ability of NTPs to quickly identify MDR-TB and RR-TB, allowing for informed treatment decisions. Therefore, access to rapid molecular testing is essential, particularly for rifampicin, isoniazid, and fluoroquinolones, as it helps select the most appropriate initial DR-TB regimen.

Mandatory DST for rifampicin applies to all cases, while DST for fluoroquinolones is required when rifampicin resistance is present (WHO, 2022c). As new regimens are recommended, DST for these drugs becomes increasingly critical. Local DRS data can provide baseline resistance prevalence estimates and track trends that inform DST algorithms and local policy decisions. Drug-resistance surveillance (DRS) can be conducted through routine diagnostic DST or special surveys representing the entire TB patient population.

Tuberculosis preventive treatment (TPT)

TPT is offered to individuals who are believed to have tuberculosis infection and are at risk of progressing to active TB disease (WHO, 2024b). It is often referred to as treatment for latent TB infection, TB infection, or simply TB preventive therapy. Because all medical interventions come with potential risks and costs, TPT should be directed toward those most likely to benefit, specifically, individuals with the highest likelihood of developing active TB. Targeting preventive treatment to these priority groups ensures that the intervention is both clinically effective and a responsible use of resources. WHO's 2024 consolidated guidelines on TB preventive treatment recommend two core short-course regimens:

1. 3HP (weekly isoniazid + rifapentine for 3 months)
2. 3HR (daily isoniazid + rifampicin for 3 months)—as preferred options for all settings.

Two additional regimens are offered as alternative choices:

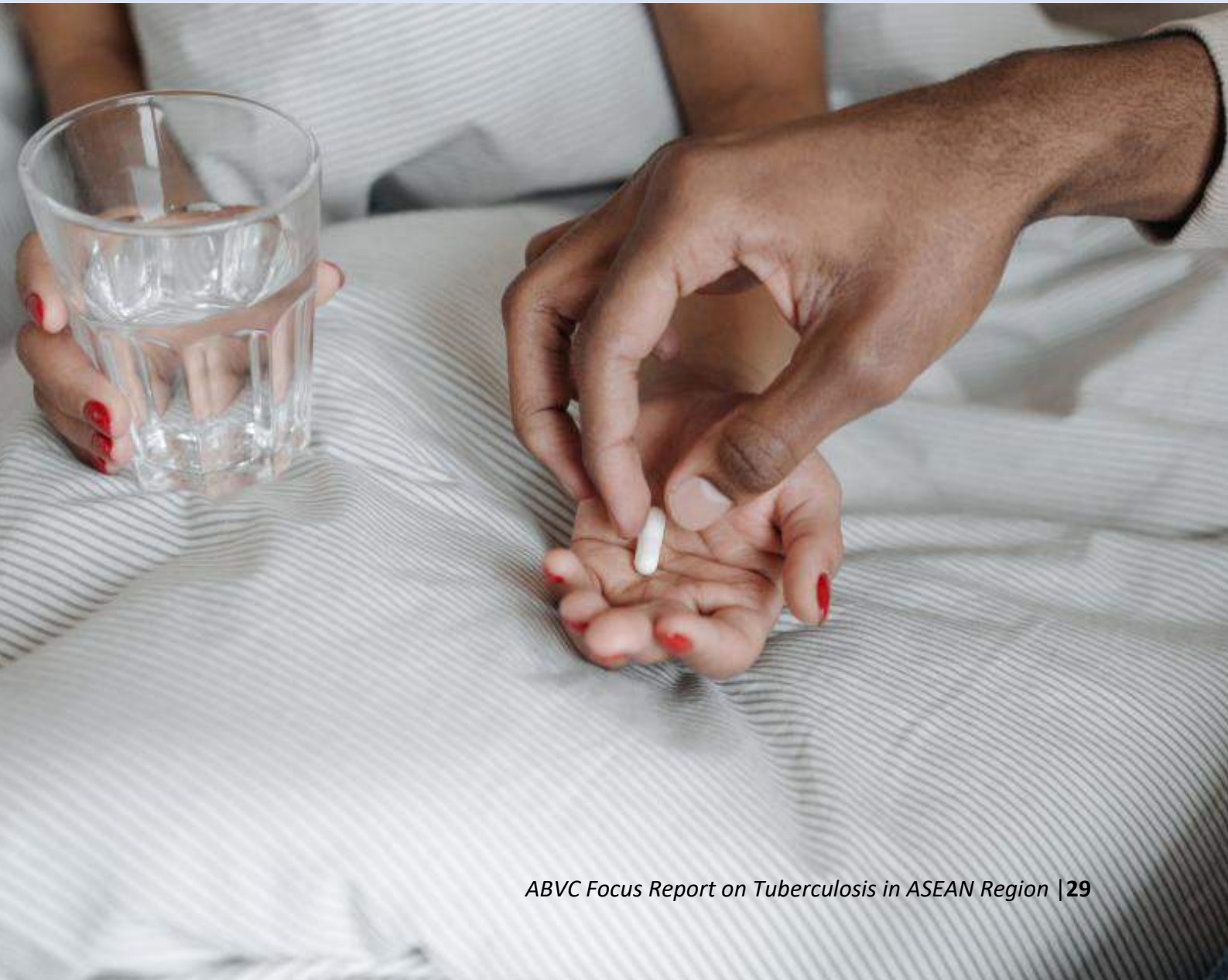
1. 1HP (1 month of daily isoniazid + rifapentine)
2. 4R (4 months of daily rifampicin).

These regimens are designed to prevent progression from TB infection to active disease and form a flexible, evidence-based menu that countries can adopt according to feasibility and patient needs.

TPT for MDR/RR-TB, however, requires a different approach, primarily with levofloxacin.

The guidelines **offer** 21 recommendations which cover all the essential components of programmatic management of TB preventive treatment (PMTPT) and the full cascade of preventive care. These steps include:

1. identifying individuals at increased risk: people living with HIV as part of routine HIV care, household contacts of TB patients, and other vulnerable groups
2. screening for and ruling out active TB disease,
3. testing for TB infection (TBI),
4. initiating appropriate preventive treatment with accompanying patient support, and
5. managing adverse drug reactions and monitoring for side effects, and
6. ensuring adherence and completion of the treatment regimen.



Treatment Outcomes

WHO has long relied on standardized treatment outcome definitions to monitor the effectiveness of TB care, prevent relapses, and limit the emergence of drug resistance. Definitions for DS-TB have been used for over three decades, while those for DR-TB were introduced in 2005 and updated in 2013 to reflect evolving treatment practices (WHO, 2025b).

In 2020, WHO issued revised treatment outcome definitions that apply to both DS-TB and DR-TB (WHO, 2025b). These updates were designed to accommodate regimens of different durations, reduce dependence on intensive versus continuation phases, and establish clearer microbiological criteria for determining cure, treatment completion, or failure. Routine monitoring, however, continues to focus on assigning outcomes at treatment completion. Table 6 describes the new definitions of TB treatment outcomes for both DS-TB and DR-TB.

Table 6. Definitions of TB treatment outcomes for both DS-TB and DR-TB

Outcome	Description
Treatment failed	A patient whose treatment regimen needed to be terminated or permanently changed to a new regimen or treatment strategy.
Cured	A patient with pulmonary TB with bacteriologically confirmed TB at the beginning of treatment who completed treatment as recommended by the national policy, with evidence of bacteriological response and no evidence of failure.
Treatment completed	A patient who completed treatment as recommended by the national policy, but whose outcome does not meet the definition for cure or treatment failure
Died	A patient who died before starting treatment or during the course of treatment.
Lost to follow-up	A patient who did not start treatment or whose treatment was interrupted for 2 consecutive months or more.
Not evaluated	A patient for whom no treatment outcome was assigned.
Treatment success	The sum of all patients cured and treatment completed.

Prevention

To reduce the risk of TB infection and transmission, the WHO recommends the following measures (WHO, 2025c):

- **Seek Medical Attention promptly** when experiencing symptoms such as persistent cough, fever, or unexplained weight loss. Early diagnosis and treatment are critical to preventing further transmission and improving recovery outcomes.
- **Get Tested** if persons at elevated risk, such as those with HIV or those living or working with TB patients, should undergo testing for the disease.
- **Take TPT** can reduces the likelihood of progression from latent infection to active disease. Patients prescribed TPT should complete the full course to ensure effectiveness.
- **Practice Good Hygiene**, including wearing masks, covering mouth and nose when coughing or sneezing, minimizing close contact, and safely disposing of sputum and tissues. These measures help limit airborne transmission.
- Implement Special Measures in healthcare and institutional settings, infection control measures such as use of respirators and adequate ventilation systems are essential to reduce exposure risk.

Control Measures Strategy

In order preventing TBI and stopping its progression to active disease are critical steps toward meeting the goals of the End TB Strategy. A key intervention for this purpose is TPT, recommended by the World Health Organization for people living with HIV, individuals who have had close contact with TB patients, and other groups at elevated risk. TPT is commonly implemented alongside screening programmes designed to identify and treat TB cases earlier, which helps reduce transmission and improves treatment outcomes. Other important preventive measures include infection prevention and control practices and administering the Bacille Calmette-Guérin (BCG) vaccine to children.

In alignment with **SDGs Target 3.3—aimed at ending the epidemics of AIDS, TB, malaria, and other major infectious diseases by 2030,** the World Health Assembly endorsed the End TB Strategy in 2014. This strategy envisions a world free from TB, with no deaths, illness, or suffering caused by the disease. It is structured around three core pillars supported by four guiding principles, forming a comprehensive framework to accelerate progress toward TB elimination (WHO, 2022d).

Pillar 1	Pillar 2	Pillar 3
INTEGRATED, PATIENT-CENTRED CARE AND PREVENTION	**BOLD POLICIES AND SUPPORTIVE SYSTEMS**	**INTENSIFIED RESEARCH AND INNOVATION**
• Early diagnosis of TB including universal drug- susceptibility testing, and systematic screening of contacts and high-risk groups • Treatment of all people with TB including drug- resistant TB, and patient support • Collaborative TB/HIV activities, and management of co-morbidities and TB- associated impairment and disability • Preventive treatment of persons at high risk, and vaccination against TB	• Political commitment with adequate resources for TB care and prevention • Engagement of communities, civil society organizations, and public and private care providers • Universal health coverage policy, • and regulatory frameworks for case notification, vital registration, quality and rational use of medicines, and infection control • Social protection, poverty alleviation add 'other social determinants of TB'	• Discovery, development and rapid uptake of new tools, interventions and strategies • Research to optimize implementation and impact, and promote innovations
Principles		
• Government stewardship and accountability, with monitoring and evaluation • Strong coalition with civil society organizations and communities • Protection and promotion of human rights, ethics, and equity • Adaptation of the strategy and targets at country level, with global collaboration		

ASEAN Strategy to End Tuberculosis by 2035

Marking World TB Day 2025 under the theme **"Yes! We Can End TB—Commit, Invest, Deliver!"** ASEAN emphasized the importance of collective regional action to eradicate the disease commitments into concrete actions by focusing on three key areas (ASEAN, 2025):

1. Commit: Strengthening Policies and Multisectoral Collaboration
2. Invest: Advancing Innovation and Sustainable Financing
3. Deliver: Implementing Tangible Actions for Impact

The strategy of the commitments includes targeting **a 90% reduction in TB incidence and a 95% reduction in TB deaths by 2035** (ASEAN, 2025)**.** To reach these goals, AMS plans to strengthen multisectoral collaboration, expand access to TB services, and address the underlying social determinants influencing TB vulnerability. Their regional strategy is aligned with the three pillars of the WHO End TB Strategy: integrated, people-centered care and prevention, bold supportive policies, and intensified research and innovation. Efforts will also focus on adopting advanced tools such as digital radiography, computer-aided diagnostic systems, and preparing for the rollout of next-generation TB vaccines. Collectively, these initiatives aim to achieve the overarching target of ending tuberculosis in ASEAN by 2035.

Control Measures in ASEAN Member States

Brunei Darussalam

According to the February 2025 Airborne Infection Defence Platform (AIDP) landscape assessment compiled by the Stop TB Partnership (Geneva and Indonesia) and USAID, Brunei Darussalam's TB programme operates within a robust legal and organizational structure (Stop TB, 2025). The Infectious Diseases Act (Cap 204) classifies TB as a notifiable condition, ensuring mandatory reporting and enabling enforcement of measures such as isolation and treatment. TB services are centralized at the National Tuberculosis Coordinating Centre (NTCC) in Kiarong, which oversees clinical management, supplies TB medications, and administers both Directly Observed Therapy (DOTS) and Video Observed Therapy (VOT), in addition to providing Mantoux testing.

The country's Guidelines for Tuberculosis Control (2013) set a national goal of eliminating TB by 2050, with a focus on timely diagnosis, treatment adherence, and public education; these guidelines are currently being revised to align with updated WHO recommendations. TB control efforts are aligned with Wawasan Kesihatan 2035, which aims to advance

healthcare quality, population health outcomes, and sustainable health financing.

Supporting systems include enhanced laboratory and diagnostic capacity, the National IPC Policy (2020), and the Bru-HIMS digital health platform, which facilitates real-time surveillance and mandatory case notification. Key priorities moving forward include finalizing updated TB guidelines, strengthening digital surveillance tools, expanding community-based DOTS and VOT, securing uninterrupted access to diagnostics and medicines. Programme resilience is enhanced to sustain progress toward TB elimination by 2050 while improving preparedness for future airborne infectious disease threats.

Cambodia

The National Centre for Tuberculosis and Leprosy Control (CENAT), together with its partners, is implementing Cambodia's National Strategic Plan (NSP) to End TB 2021–2030, with the long-term goal of achieving a TB-free country by 2035 (CENAT, 2021). Building on the progress made under the 2014–2020 NSP, the current plan intensifies national efforts to curb TB and offers a comprehensive framework to guide stakeholders in executing strong elimination strategies.

Following the FIND–TREAT–PREVENT–BUILD, STRENGTHEN, AND SUSTAIN (FTPB) approach, the NSP prioritizes early detection and effective treatment, alongside preventive measures such as managing latent TB infection (LTBI) in high-risk populations. It also highlights the importance of securing sufficient funding and strengthening surveillance, monitoring, evaluation, and research systems to create a supportive environment for achieving its goals with the Key planned actions include:

1. TB notification to be made mandatory
2. To secure and sustain enhanced funding to End TB in Cambodia
3. The End TB interventions will be aligned with the broader Universal Health Coverage (UHC) movement
4. A high-level mechanism for coordinated national multisectoral approaches to End TB to be setup
5. Provide universal access to quality chest X-ray and rapid tests for LTBI and TB case detection
6. Engage private care providers and strengthen involvement of hospitals
7. Ensure social protection for people with TB and their families
8. Address the special need of migrants, both cross-country and internal migrants and cross-border issues which is projected to increase

Indonesia

The Ministry of Health of Indonesia has developed a national roadmap outlining the country's plan to eliminate tuberculosis between 2020 and 2030 (Ministry of Health Republic of Indonesia, 2023). This roadmap sets a target of lowering TB incidence to 65 cases per 10,000 population by 2030. To achieve this goal, Indonesia has introduced six key strategies for TB prevention and control for the period 2020–2024, forming the foundation for the nation's broader TB elimination efforts by 2030:

1. Strengthening commitment and leadership of central, provincial, and district government to support the acceleration towards tuberculosis elimination in 2030;
2. Increasing access to high-quality and patient-centered tuberculosis diagnosis and treatment services;
3. Optimization of promotion and prevention efforts, provision of tuberculosis preventive therapy, and infection control;
4. Utilization of research findings and technologies for screening, diagnosis, and management of Tuberculosis'
5. Increasing communities, partners, and multisectoral participation in TB elimination efforts; and
6. Strengthening program management through health system strengthening In 2022.

Lao People's Democratic Republic

Lao PDR's National Tuberculosis Strategic Plan (NSP) 2024–2028 reasserts the country's goal of ending TB as a public health threat and achieving a generation free from infection and disease, with zero deaths, morbidity, and suffering due to TB (Ministry of Health Lao PDR, 2023). Originally designed for 2021–2025 and later extended to 2024–2028, the NSP outlines seven strategic objectives aligned with the three pillars of the Global End TB Strategy and the WHO Western Pacific Regional Framework to End TB (2021–2030):

1. Decentralise and integrate TB prevention at the primary health care level
2. Decentralise and integrate TB detection and reach the unreached
3. Improve patient centred management of drug sensitive and drug-resistant TB treatment
4. Strengthen TB/HIV collaborative activities
5. Ensure essential cross-cutting management functions
6. Contribute to resilient and sustainable system for health and social protection

7. Operational Research

This alignment ensures policy coherence with global and regional targets and provides a comprehensive framework to guide national TB prevention, detection, treatment, and system strengthening efforts over the current strategic period.

Malaysia

Malaysia has set a national target to achieve tuberculosis elimination by 2035 and aims to reduce TB-related mortality by 50%. Bring the TB notification rate down to 30 cases per 100,000 population by 2030 (Ministry of Health Malaysia, 2021). The country's TB control efforts focus on lowering disease incidence through the provision of universal, timely, and high-quality diagnostic and treatment services for all forms of TB, alongside measures to prevent the development and spread of drug-resistant tuberculosis. These targets are being pursued through the implementation of six strategic approaches:

1. Strategy 1. Enhance Case Detection of TB & Co-Morbidity Management
2. Strategy 2. Enhance Programmatic Management of Drug-Resistant TB
3. Strategy 3. Enhance Programmatic Management of Latent TB Infection
4. Strategy 4. Enhance Control of TB among Children
5. Strategy 5. Enhance Supportive Environment and Systems for Effective TB Control
6. Strategy 6. Research & Innovation

Myanmar

Guided by the End TB Strategy framework, the Myanmar National Strategic Plan (NSP) addresses persistent programmatic challenges while setting out updated strategic priorities (Ministry of Health and Sports Myanmar, 2020). The NSP articulates a long-term vision of tuberculosis elimination in Myanmar by 2050, with a milestone target of reducing TB incidence to fewer than 10 cases per 100,000 population by 2035. Under the current phase of the NSP, a key objective is to achieve a 50% reduction in TB incidence by 2025 compared with the 2015 baseline. The specific objectives of the NSP include:

1. To expand TB services as part of UHC and strengthen partnerships
2. To minimize TB transmission by intensifying preventive efforts and reaching high-risk populations
3. To achieve a faster decline in TB burden through an accelerated multisectoral TB response

Philippines

The Philippines Acceleration Action Plan for TB 2023–2035 sets out the national direction for tuberculosis elimination under the leadership of the Department of Health of the Philippines. The Plan operationalizes TB commitments by incorporating them into existing mandates, policy instruments, and programme activities. It brings together a wide range of stakeholders to advance a strengthened multisectoral response and is grounded in the Philippine Strategic TB Elimination Plan (PhilSTEP) formulated in 2018. Within this framework, PAAP TB defines a set of sector-specific strategic objectives to guide implementation (The Philippines Department of Health, 2024):

1. The Labor Protection Sector will guarantee employees continuous access to essential primary care services protecting workers' right to good health and healthy workplace.
2. The Education, Public Information and Community Engagement sector will provide a gateway for comprehensive access to primary care in the learning institutions and lead the promotion of healthy habits among children, adolescents, young adults and the education workforce.
3. The Social Protection sector will ensure vulnerable populations access to comprehensive, coordinated and essential healthcare services and social protection packages, including those to combat TB.
4. The Support for Service Delivery sector will enable province- and city-wide health systems with contracted primary care networks to deliver comprehensive primary care across settings and accelerate TB elimination campaigns.

Singapore

To strengthen national efforts in tuberculosis prevention and control, The National Tuberculosis Programme (NTBP) was established by the Ministry of Health (MOH) (NCID, 2025). The programme aims to protect the population from tuberculosis through timely diagnosis and appropriate case management, comprehensive contact tracing and screening, strong multisectoral partnerships, and the implementation of sustainable strategies. Formerly known as the Singapore TB Elimination Programme (STEP).

The National Tuberculosis Care Centre (NTBCC), which serves as the clinical arm of the NTBP, functions as the national referral centre for TB assessment and treatment and manages approximately 80% of TB cases nationally, the majority of

which are treated under DOT. The registry oversees the national tuberculosis notification system and monitors treatment progress and outcomes for all notified TB cases nationwide.

Thailand

Under the Operational Plan to End Tuberculosis, Phase 2 (2023–2027), Thailand aims to address the tuberculosis epidemic by reducing TB incidence from 143 per 100,000 population in 2021 to 89 per 100,000 population by 2027 (Ministry of Public Health Thailand, 2023). In line with WHO recommendations, the Operational Plan is designed to be fully aligned with the Global End TB Strategy and is structured around five strategic pillars, each accompanied by defined strategic objectives and corresponding interventions:

1. Strategy 1. Intensify TB case finding and the diagnosis of TB and drug-resistant TB
2. Strategy 2. Enhance the care and treatment of TB patients and drug-resistant TB patients according to international standards.
3. Strategy 3. Enhance the effectiveness and accessibility of diagnosis and treatment of latent TB infection and TB infection control
4. Strategy 4. Strengthen the support system for implementing the TB program
5. Strategy 5. Promote research and innovation in TB prevention and control

Timor-Leste

Timor-Leste's accelerated TB plan for 2021–2025 is essentially a push to regain momentum after COVID-19 slowed down progress (WHO, 2023). The plan builds on the country's existing TB strategy and WHO guidance but adds a stronger focus on reaching people earlier and more efficiently. Timor-Leste's TB plan consists of five pillars which cover seven objectives:

1. Detect at least 90% of incident cases by 2025
2. Ensure successful treatment for more than 90% of the enrolled TB patients by 2025, and improve management of DR-TB cases through country-wide implementation of the shorter DR-TB treatment regimen
3. Provide DR TB diagnostic services for 100% of the estimated persons with presumptive DR TB by 2025; successfully treat at least 90% of the diagnostic MDR patients.

4. Timely and accurate recording and reporting from all of reporting centres by 2025: Case based electronic recording and reporting system.
5. Availability of quality TB services provided by qualified and trained personnel at 100% by 2025
6. Scale up patient support system to all TB patients including DS-TB with an intent to reduce catastrophic cost at least by 100% by 2025: Patient support system to be expanded.
7. Ensure adequate support for operational research to foster innovation: ensure adequate support for operational research to foster innovation.

Viet Nam

On March 17, 2014, the Government of the Socialist Republic of Viet Nam, though the Prime Minister, issued Decision No. 374/QD-TTg on the National Strategy for Tuberculosis Prevention to 2020 with a Vision towards 2030. This decision provides the national policy framework guiding tuberculosis (TB) prevention and control efforts in Viet Nam over the medium and long term. The Vision towards 2030 aims to reduce TB mortality and incidence to fewer than 20 cases per 100,000 population, with the goal of eliminating tuberculosis as a public health threat in Viet Nam. To achieve this vision, the Strategy adopts several key strategic approaches, including:

1. Strengthening policies and legislative frameworks to ensure alignment with the evolving TB situation and to encourage multisectoral participation;
2. Enhancing communication and health education to improve public awareness, reduce stigma, and promote early health-seeking behaviour, particularly among vulnerable and hard-to-reach populations;
3. Improving the quality and coverage of TB prevention, early detection, diagnosis, and effective treatment services;
4. Expanding international cooperation in research, clinical trials, technical assistance, and cross-border TB control;
5. Ensuring sustainable financing through state budget allocations, health insurance mechanisms, and domestic and international funding sources;
6. Developing and strengthening the TB workforce through training, capacity building, and appropriate incentive policies; and
7. Reinforcing inspection, monitoring, and evaluation systems to ensure effective implementation of TB control activities at all levels.

Implementation of the Strategy follows a whole-of-government and whole-of-society approach, with clearly defined roles across sectors. The Ministry of Health leads coordination, planning, implementation, and monitoring, while the Ministry of Finance and the Ministry of Planning and Investment oversee resource mobilization and allocation. Other relevant ministries contribute to line with their mandates. Provincial People's Committees are responsible for sub-national implementation, integration of TB targets into development plans, and routine supervision and reporting.

Through coordinated multisectoral action and sustained commitment, the Strategy aims to accelerate progress toward TB elimination and improve population health outcomes in Viet Nam.

References

Alzayer Z, Al Nasser Y. (2023) Primary Lung Tuberculosis, in StatPearls. Treasure Island (FL): StatPearls Publishing. Available at: https://www.ncbi.nlm.nih.gov/books/NBK567737/ (Accessed: 12 January 2025).

Andrews, J. R., Morrow, C., Walensky, R. P., & Wood, R. (2014). Integrating social contact and environmental data in evaluating tuberculosis transmission in a South African township. The Journal of infectious diseases, 210(4), 597–603. https://doi.org/10.1093/infdis/jiu138

Armstrong, G. L., MacCannell, D. R., Taylor, J., Carleton, H. A., Neuhaus, E. B., Bradbury, R. S., Posey, J. E., & Gwinn, M. (2019). Pathogen Genomics in Public Health. The New England journal of medicine, 381(26), 2569–2580. https://doi.org/10.1056/NEJMsr1813907

Association of Southeast Asian Nations (ASEAN) (2025) World TB Day 2025: ASEAN World TB DAY Message: A Unified Commitment to Ending TB In ASEAN. ASEAN. Available at: https://asean.org/world-tb-day-2025/ (Accessed: 15 January 2025).

Barberis, I., Bragazzi, N. L., Galluzzo, L. and Martini, M. (2017) 'The history of tuberculosis: from the first historical records to the isolation of Koch's bacillus', Journal of Preventive Medicine and Hygiene, 58(1), pp. E9–E12. Available at: https://pmc.ncbi.nlm.nih.gov/articles/PMC5432783/ (Accessed: 12 January 2025).

Centers for Disease Control and Prevention (CDC) (2019) Self-Study Module 1: Transmission and Pathogenesis of Tuberculosis. National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention; Division of Tuberculosis Elimination; U.S. Department of Health and Human Services. Available at: https://www.cdc.gov/tb/media/pdfs/Self_Study_Module_1_Transmission_and_Pathogenesis_of_Tuberculosis.pdf (Accessed: 20January 2025).

Centers for Disease Control and Prevention (2024a) TB 101. Centers for Disease Control and Prevention. Available at: https://www.cdc.gov/tb/webcourses/tb101/ (Accessed: 20January 2025).

Centers for Disease Control and Prevention (CDC) (2024b) Clinical signs and symptoms of tuberculosis (TB). U.S. Department of Health and Human Services. Available at: https://www.cdc.gov/tb/hcp/clinical-signs-and-symptoms/index.html (Accessed: 20 January 2025).

Hanifa, Y., Grant, A. D., Lewis, J., Corbett, E. L., Fielding, K., & Churchyard, G. (2009). Prevalence of latent tuberculosis infection among gold miners in South Africa. The international journal of tuberculosis and lung disease : the official journal of the International Union against Tuberculosis and Lung Disease, 13(1), 39–46.

Kurtuluş, Ş., Can, R., & Sak, Z. H. A. (2020). New perspective on rise of tuberculosis cases: communal living. Central European journal of public health, 28(4), 302–305. https://doi.org/10.21101/cejph.a6016

Martinez, L., Cords, O., Horsburgh, C. R., Andrews, J. R., & Pediatric TB Contact Studies Consortium (2021). The risk of tuberculosis in children after close exposure: a systematic review and individual-participant meta-analysis. Lancet (London, England), 395(10228), 973–984. https://doi.org/10.1016/S0140-6736(20)30166-5.

Ministry of Health Republic of Indonesia (2023) Revised National Strategy of Tuberculosis Care and Prevention in Indonesia 2020–2024 and Interim Plan 2025–2026. Ministry of Health Republic of Indonesia. Available at: https://www.tbindonesia.or.id/wp-content/uploads/2024/02/Revised-NSP-TB-2020-2024-and-interim-plan-2025-2026_final_ttd-1.pdf (Accessed: 18January 2025).

Ministry of Health, Lao People's Democratic Republic (2023) Lao PDR National Strategic Plan for Tuberculosis 2024–2028. Ministry of Health, Lao People's Democratic Republic. Available at: https://extranet.who.int/cpcd/sites/default/files/public_file_repository/LAO_Lao-PDR_National-Strategic-Plan-TB_2024-2028.pdf (Accessed: 18January 2025).

Ministry of Health Malaysia (2021) Buku Garis Panduan NSPTB 2021-2023: National Strategic Plan to End TB (2021-2030). Ministry of Health Malaysia. Available at: https://www.moh.gov.my/moh/resources/Penerbitan/Penerbitan%20Utama/Buku_Garis_Panduan_NSPTB_2021-2023.pdf (Accessed: 2 February 2026).

Ministry of Health and Sports, Republic of the Union of Myanmar/WHO (2020) National Strategic Plan for Tuberculosis 2021–2025. Ministry of Health and Sports, Republic of the Union of Myanmar & World Health Organization. Available at: https://roasiapacific.iom.int/sites/g/files/tmzbdl671/files/documents/Myanmar%20-%20NSP%202021-2025.pdf (Accessed: 8 February).

Ministry of Public Health Thailand (2023) Thailand Operational Plan to End Tuberculosis: Phase 2 (2023–2027). Ministry of Public Health, Thailand. Available at: https://www.tbthailand.org/download/Manual/AW_Eng%20%E0%B9%81%E0%B8%9C%E0%B8%99%E0%B8%9B%E0%B8%8F%E0%B8%B4%E0%B8%9A%E0%B8%B1%E0%B8%95%E0%B8%B4%E0%B8%81%E0%B8%B2%E0%B8%A3%E0%B8%A3%E0%B8%B0%E0%B8%94%E0%B8%B1%E0%B8%9A%E0%B8%8A%E0%B8%B2%E0%B8%95%E0%B8%B4%20new.pdf (Accessed: 10 February 2025).

National Centre for Tuberculosis and Leprosy Control (CENAT) (2021) National Strategic Plan to End Tuberculosis in Cambodia 2021–2030. National Centre for Tuberculosis and Leprosy Control (CENAT), Ministry of Health, Kingdom of Cambodia. Available at: http://www.cenat.gov.kh/cenat/sites/default/files/files/documents/files/2021_CENAT_NSP_2021-2030_English.pdf (Accessed: 18 January 2025).

National Centre for Infectious Diseases (Singapore) (2025) National Tuberculosis Programme. National Centre for Infectious Diseases, Singapore. Available at: https://www.ncid.sg/About-NCID/OurDepartments/Pages/National-Tuberculosis-Programme.aspx (Accessed: 22 January 2025).

Nwoke, Chukwuebuka Emmanuel (2022) Critical Appraisal Focusing on Tuberculosis Risks among Displaced Persons: Do We Have a Smoking Gun?. ResearchGate. Available at: https://www.researchgate.net/publication/362701191_Critical_Appraisal_Focusing_on_Tuberculosis_Risks_among_Displaced_Persons_Do_We_Have_a_Smoking_Gun (Accessed: 15 January 2025)

Socialist Republic of Vietnam, Ministry of Health (2014) Vietnam National Strategy for Tuberculosis Prevention and Control to 2020, with a View to 2030. Ministry of Health, Vietnam. Available at: https://www.tbdiah.org/resources/publications/vietnam-national-strategy-for-tuberculosis-prevention-and-control-2020-with-a-view-to-2030/ (Accessed: 21 January 2025).

Stop TB Partnership (2025) Brunei Darussalam — Stop TB Partnership country page. Stop TB Partnership. Available at: https://www.stoptb.org/brunei-darussalam (Accessed: 28 January 2025).

The Philippines Department of Health (2024) National Tuberculosis Control Program: Vision, Mission, Goals, Organizational Structure, and TB Burden. National Tuberculosis Control Program, Department of Health, Philippines. Available at:

http://www.ntp.doh.gov.ph/downloads/ntp_data/ntp_vmg_and_org_and_tb_burden.pdf (Accessed: 21 January 2025)

World Health Organization (2010) Treatment of tuberculosis: guidelines, 4th edition. World Health Organization. Available at: https://iris.who.int/bitstream/handle/10665/44165/9789241547833_eng.pdf (Accessed: 28 January 2025).

World Health Organization (2020) Definitions and reporting framework for tuberculosis – 2013 revision (updated December 2014 and January 2020). Available at: https://iris.who.int/bitstream/handle/10665/79199/9789241505345_eng.pdf?sequence=1 (Accessed: 15 January 2025).

World Health Organization (2021) TB determinants — Section 6.3 of the Global Tuberculosis Report 2021. World Health Organization. Available at: https://www.who.int/publications/digital/global-tuberculosis-report-2021/uhc-tb-determinants/determinants (Accessed: 18 January 2025).

World Health Organization (2022a) WHO operational handbook on tuberculosis: module 4: treatment: drug-resistant tuberculosis treatment, 2022 update. World Health Organization. Available at: https://iris.who.int/items/d5bbdb27-9669-4975-b368-82ede7d1ac8c (Accessed: 22 January 2025).

World Health Organization (2022b) WHO consolidated guidelines on tuberculosis: Module 5 — management of tuberculosis in children and adolescents. World Health Organization. Available at: https://www.who.int/publications/i/item/9789240046764 (Accessed: 24 January 2025).

World Health Organization (2022c) WHO Operational Handbook on Tuberculosis: Module 4 — Treatment: drug-resistant tuberculosis treatment, 2022 update. World Health Organization. Available at: https://iris.who.int/bitstream/handle/10665/365333/9789240065116-eng.pdf (Accessed: 24 January 2025).

World Health Organization (2022d) Implementing the End TB Strategy: the essentials, 2022 update. World Health Organization. Available at: https://www.who.int/publications/i/item/9789240065093 (Accessed: 12 February 2025).

World Health Organization (2023) National Plan for Accelerated Actions for Ending TB: Timor-Leste (2021-2025). World Health Organization. Available at: https://www.who.int/timorleste/publications/national-plan-for-accelerated-actions-for-ending-tb--2021-2025 (Accessed: 4 February 2025).

World Health Organization (2024a) Consolidated guidance on tuberculosis data generation and use: module 1: tuberculosis surveillance. World Health Organization. Available a: https://iris.who.int/items/68583f8b-1c1f-42d3-9cb8-e1b9a58c97d1 (Accessed: 5 February 2025).

World Health Organization (2024b) WHO Consolidated guidelines on tuberculosis: Module 1 — prevention: tuberculosis preventive treatment, 2nd edition. World Health Organization. Available at: https://www.who.int/publications/i/item/9789240096196 (Accessed: 5 February 2025).

World Health Organization (2024c) Global tuberculosis report 2024. World Health Organization. Available at: https://www.who.int/teams/global-programme-on-tuberculosis-and-lung-health/tb-reports/global-tuberculosis-report-2024 (Accessed: 22 January 2025).

World Health Organization (2024d) WHO consolidated guidelines on tuberculosis: Module 3 — Diagnosis: rapid diagnostics for tuberculosis detection, 3rd edition. World Health Organization. Available at: https://iris.who.int/bitstream/handle/10665/376221/9789240089488-eng.pdf (Accessed: 26 January 2025).

World Health Organization (2025a) Global tuberculosis report 2025. World Health Organization. Available at: https://www.who.int/teams/global-programme-on-tuberculosis-and-lung-health/tb-reports/global-tuberculosis-report-2025 (Accessed: 11 February 2025).

World Health Organization (2025b) WHO consolidated operational handbook on tuberculosis: Module 4 — treatment and care. World Health Organization. Available at: https://www.who.int/publications/i/item/9789240108141 (Accessed: 9 February 2025).

World Health Organization (2025c) Tuberculosis: fact sheet. World Health Organization. Available at: https://www.who.int/news-room/fact-sheets/detail/tuberculosis (Accessed: 26 January 2025).

World Health Organization (2025d) WHO boosts Nepal's disease detection capacity with RT-PCR machine handover to NPHL. WHO Nepal news release. Available at: https://www.who.int/nepal/news/detail/22-05-2025-who-boosts-nepal-s-disease-detection-capacity-with-rt-pcr-machine-handover-to-nphl (Accessed: 28 January 2025).

World Health Organization (2025e) WHO operational handbook on tuberculosis. Module 3: diagnosis. Geneva. World Health Organization. Available at: https://tbksp.who.int/en/node/3087 (Accessed 15 January 2025)

World Health Organization (2025f) WHO publication: The use of loop-mediated isothermal amplification (TB-LAMP) for the diagnosis of pulmonary tuberculosis: policy guidance. World Health Organization. Available at: https://www.who.int/publications/i/item/9789241511186 (Accessed: 26 January 2025).

World Health Organization (2025g) Global Tuberculosis Programme — data page. World Health Organization. Available at: https://www.who.int/teams/global-tuberculosis-programme/data (Accessed: 4 February 2025).

World Health Organization (2025h) TB Profiles interactive dashboard (country charts). World Health Organization. Available at: https://worldhealthorg.shinyapps.io/tb_profiles/?_inputs_&tab=%22charts%22&lan=%22EN%22&iso3=%22AFG%22&entity_type=%22country%22 (Accessed: 15 January 2025).

World Health Organization (2026) Global tuberculosis data dashboard. Available at: https://app.powerbi.com/view?r=eyJrIjoiZDhjNDM0YmMtOGExOS00ODIxLWEzMjktZDk0NmI4YTAwODgwIiwidCI6ImY2MTBjMGI3LWJkMjQtNGIzOS04MTBiLTNkYzI4MGFmYjU5MCIsImMiOjh9 (Accessed: 6 February 2025).

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