PBMEF Core Indicators: Standard Indicator Reference Sheets (IRS)

Table of Contents

10 Core Indicators

Indicator name and number	DT_RT: TB Detection Rate *Previously [DT-3]*
Definition	Percent of people with new and relapse TB and with unknown previous TB treatment history (all forms) who were notified during the reporting period, out of the estimated number of people with incident TB for that year. Calculation: (Numerator/Denominator) x 100
Numerator	Number of people with new and relapse TB (and with unknown previous TB treatment history), all forms (bacteriologically confirmed plus clinically diagnosed, pulmonary and extra pulmonary), who were notified in the reporting period.
Denominator	Estimated incidence of TB (all forms) in the same reporting period.
Category	REACH
Indicator type	Core outcome
Level	Core
Unit of measure	Percent of estimated TB
Data type	Percentage
Disaggregate by	Age (<15, 15+), sex
Reporting level	All core PBMEF indicators should be reported at national level; data may also be collected subnationally for more granular monitoring.

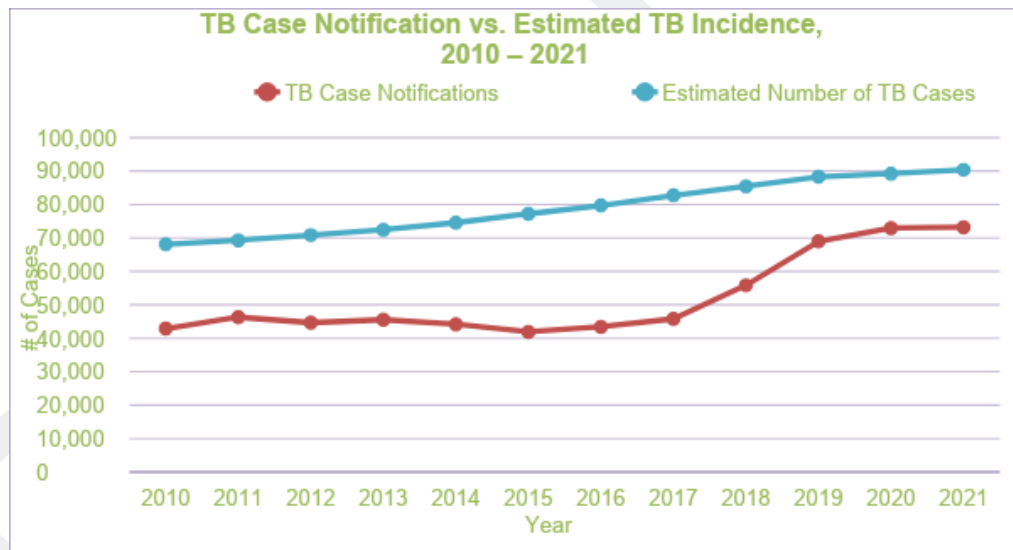| Reporting frequency	This indicator should be reported on a semi-annual basis at minimum. More frequent monitoring on a quarterly or monthly basis is recommended.
Data sources	The numerator is reported from national TB program (NTP) official records. *Quarterly report on TB case registration in the basic management unit.*
	This indicator is related to incident TB; therefore, the following category of patients should not be included in the data reported:
	1) Treatment after failure patients (previously been treated for TB and whose treatment failed at the end of their most recent course of treatment)
	2) Treatment after loss to follow-up patients (previously been treated for TB and were declared lost to follow-up at the end of their most recent course of treatment)
	3) Other previously treated patients
	The denominator is available from the current World Health Organization (WHO) Global TB Report for the 30 TB high-burden countries and on the WHO country profile for all countries published on the WHO website. It is an estimation calculated annually based on a mathematical model.
	This is a standard WHO indicator. Referring to the WHO database, the variable for the numerator is *c_newinc* and the variable for the denominator is *e_inc_num*.
Importance	Case-finding is a fundamental principle of effective TB programming. However, one-third of the people who are estimated to fall ill with TB each year are not reached with proper screening, detection, and treatment, or are under-reported. The inability to find and treat the "missing" cases hampers efforts to make further progress in TB care. This indicator measures country-level progress in finding and diagnosing people with TB. Globally, the TB detection rate was 61% in 2021, down from 71% in 2019. The COVID-19 pandemic continues to reverse gains made in access to TB diagnosis and treatment and progress achieved in the years up to 2019 has slowed, stalled or reversed, and global TB targets are off track. The most obvious and immediate impact was a large global drop in the reported number of people newly diagnosed with TB, from a peak of 7.1 million in 2019, this fell to 5.8 million in 2020 (–18%), back to the level last seen in 2012. In 2021, there was a partial recovery, to 6.4 million (the level of 2016–2017). Overall, there is a large gap between the estimated number of people with incident TB and the number of people with new TB diagnoses reported due to a combination of under-reporting of detected TB and under diagnosis.
	Country national strategic plans for TB set annual targets for the number of TB notifications. This target will vary by country, but each country should be trying to achieve the End TB Strategy and United Nations High Level Meeting target of 90% or more case detection by 2025 to close the gap between estimated incidence and actual notifications. The USAID TB strategy (2023-2030) also sets the same target that 90% of people with incident TB are diagnosed and initiated on treatment, and specifies that at least 75% of people with TB should be tested with molecular WHO-recommended rapid diagnostic tests (mWRDs) in each USAID priority country. A high detection rate means more TB patients will be put on treatment and cured, thereby breaking the transmission by undiagnosed infectious TB patients, leading to less TB disease and death in the population.
	TB case detection is also used as a planning tool for the NTP. For example, forecasting TB notifications needed to meet detection targets will help in procuring sufficient procurement of TB diagnostic platform supplies and ensure that they are available to all in need of TB diagnosis.

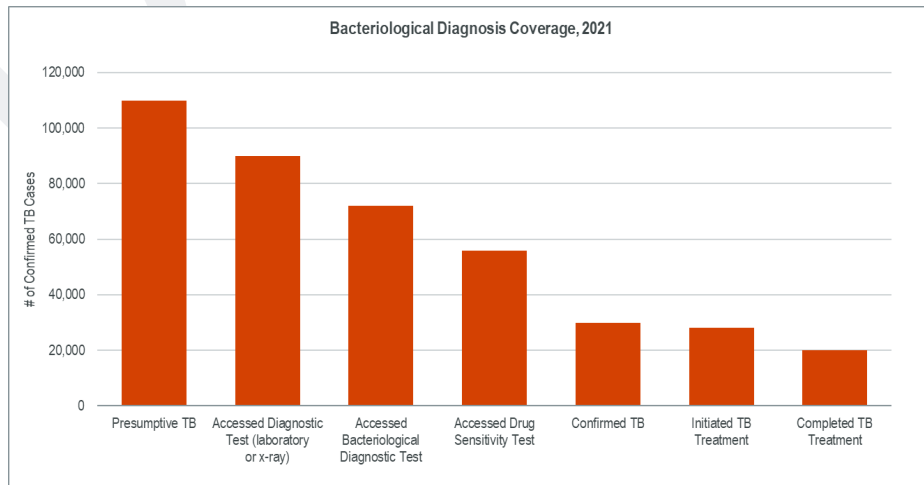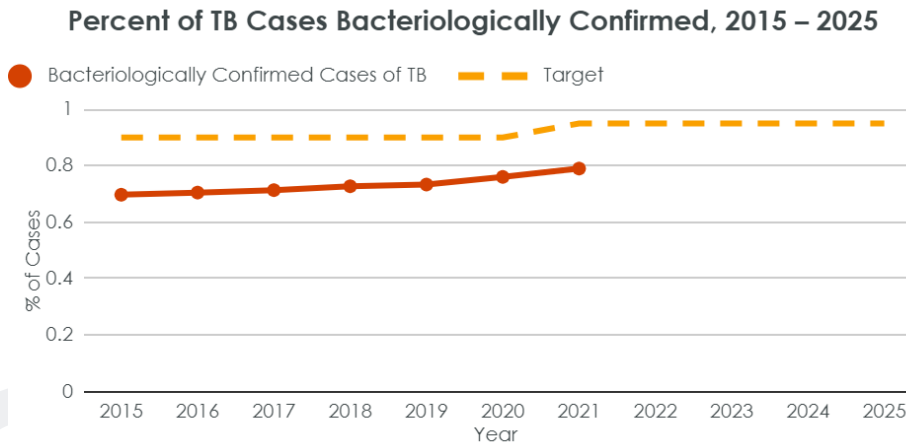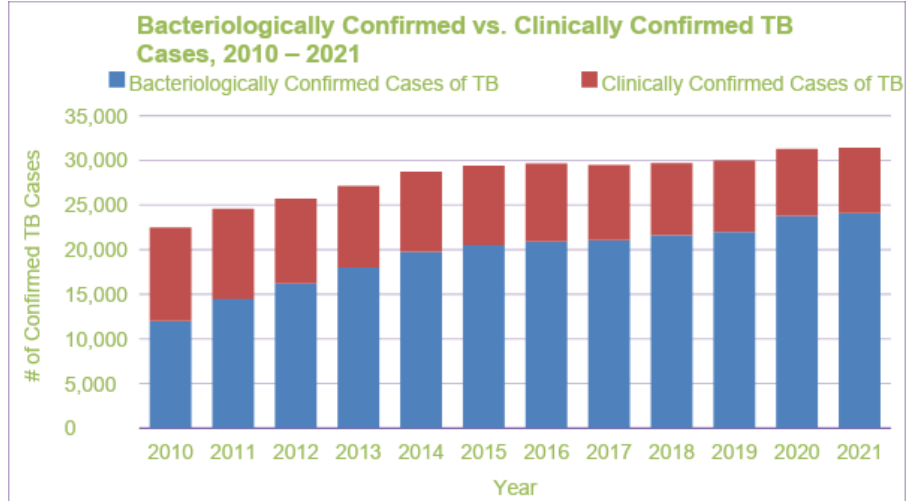| Data use and visualization	Reaching all people with TB with quality diagnostic services is an important goal for national and global policymakers. The numerator, total number of new and relapse TB case notifications, can be analyzed as a trend over time on its own. However, it is more powerful when compared to the estimated TB incidence to determine the magnitude of the gap between the number of people with TB expected and the number detected.
	Trends in TB case detection can be used to monitor progress toward achieving national targets to eliminate TB, assess access to WHO-recommended diagnostics, and identify weaknesses in recording and reporting systems.
	Marked changes in the trend should be reviewed in conjunction with any specific events that may have occurred (e.g., increase/decrease in active case finding, establishment of new diagnostic facilities, expanding TB services through private sector or natural disasters that disrupt TB services) and the impact of other disease outbreaks, like COVID-19.
	This indicator, in conjunction with other indicators, especially bacteriological confirmation and treatment success rate, will provide a picture of the cascade of TB care in the country which will help stakeholders to understand the extent to which the TB program is 'losing' people with TB along the care pathway. This indicator is limited to the national level only because the denominator is a national-level estimate, however the numerator can be collected at subnational levels.
	Below are examples (for illustrative purposes only) one can use when presenting this indicator. These charts provide important information but will provide more insight if viewed along with additional contextual information, including age, sex, and key program activities.

TB Case Notification vs. Estimated TB Incidence, 2010 – 2021

- TB Case Notifications
- Estimated Number of TB Cases

Gap between Estimated Incidence of TB and TB Cases Identified, 2010 – 2021

- % of Estimated Cases Identified
- Gap

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
37%	33%	37%	37%	41%	46%	46%	45%	35%	22%	18%	19%

Indicator name and number	**BAC_CON: Percent Bacteriologically Confirmed** *Previously [DT-12]*
Definition	Percent of people with new and relapse pulmonary TB who are bacteriologically confirmed. Bacteriologically confirmed: Smear positive for TB or culture positive for TB or positive for TB by a World Health Organization-recommended rapid diagnostics test (WRD) (Xpert MTB/RIF™ and Ultra™, Truenat™, TB-LAMP™, Abbott™, BD™, Roche™, Hain™ or LF-LAM™). Calculation: (Numerator/Denominator) x 100
Numerator	Number of new and relapse bacteriologically confirmed pulmonary TB notifications (smear positive or culture positive or positive by WHO-recommended rapid diagnostics test (WRD)) during the reporting period.
Denominator	Number of people with new and relapse pulmonary TB (bacteriologically confirmed plus clinically diagnosed) during the reporting period.

Category	REACH
Indicator type	Core outcome
Level	Core
Unit of measure	Percent of people
Data type	Percentage
Disaggregate by	Age (0-4, 5-14, 15+), sex
Reporting level	All core PBMEF indicators should be reported at national level; data may also be collected subnationally for more granular monitoring.
Reporting frequency	This indicator should be reported on a semi-annual basis at minimum. More frequent monitoring on a quarterly, monthly, or real-time basis is recommended.
Data sources	Both the numerator and denominator are reported from national TB program (NTP) official records. *Quarterly report on TB case registration in the basic management unit.* This standard WHO indicator can also be calculated using data from the WHO TB database. The variables for the numerator are: *new_labconf* plus *ret_rel_labconf*. The variables for the denominator are: *new_clindx* plus *ret_rel_clindx* plus *new_labconf* plus *ret_rel_labconf*.
Importance	As countries intensify efforts to improve TB diagnosis and treatment and close case detection gaps, the percent of people with notified TB that are bacteriologically confirmed should be monitored to ensure that people are correctly diagnosed and initiated on the most effective treatment regimen as early as possible. This indicator measures the strength of the diagnostic and laboratory system, and the TB program's capacity to establish TB diagnosis by bacteriological confirmation of *Mtb*. Specifically, USAID is supporting introduction, scale up and quality implementation of new and existing diagnostic methods, including access to WRDs in countries that receive TB funding. Globally, in 2021, only 75% of pulmonary TB was bacteriologically confirmed, an increase from 57% in 2019 and 56% in 2017. The End TB Strategy has set a target of 90% bacteriological confirmation of new TB diagnoses and 95% of relapse diagnoses by 2025. Greater efforts are needed to improve the availability and use of the most sensitive diagnostic tests for TB and to ensure that international standards for TB care are met to avoid missed diagnoses of people who have TB, overtreatment of people who do not have TB, and efficient use of resources.
Data use and visualization	A high bacteriological diagnosis coverage reflects multiple processes, including availability and access to adequate bacteriological diagnostic services (trained staff, equipment, etc.), quality of laboratory testing, and adherence to TB guidelines. Bacteriological diagnosis coverage expresses the number of people with new and relapsed bacteriologically confirmed pulmonary TB as a percentage of the total number people with new and relapsed notified pulmonary TB. This analysis can be used to identify what percent of people with pulmonary TB are laboratory confirmed compared to clinically diagnosed. As the use of WHO-recommended rapid diagnostics is expanded to confirm all new pulmonary diagnoses, one should see an increase in bacteriological confirmation over time. By measuring bacteriological confirmation in people with new and previously treated TB, countries can track the rollout and use of WHO-recommended rapid diagnostic (WRD). Additionally, the percent of people with bacteriological confirmation can be compared against national and global standards or targets as a proxy for measuring laboratory performance or capacity within a country. This is also an important indicator of drug susceptibility testing (DST) coverage and drug-resistant TB (DR-TB) detection, as both require bacteriological testing to have documented results for resistance to at least rifampicin. As mentioned above, the expectation is not to have 100% bacteriological confirmation; there will continue to be instances of clinically diagnosed patients. However, if the percent falls below 50% in a given setting, a review of the diagnostic tests being used and the validity of clinical diagnoses would be warranted (e.g., via a clinical audit). Low reported bacteriological diagnosis coverage may be due to several contributing factors, including gaps in referral for specimen

testing, weak sample transport networks, breakdown of diagnostic platforms, stockout of consumables required for testing, and weaknesses in the system for reporting results to providers. Improved supervision and training, as well as improved supply chain and specimen transport systems, can help address these issues and improve performance of this indicator.

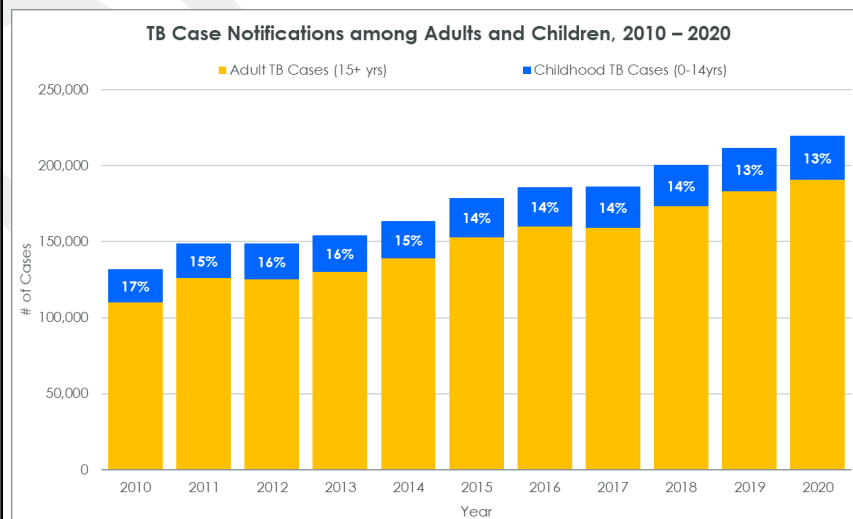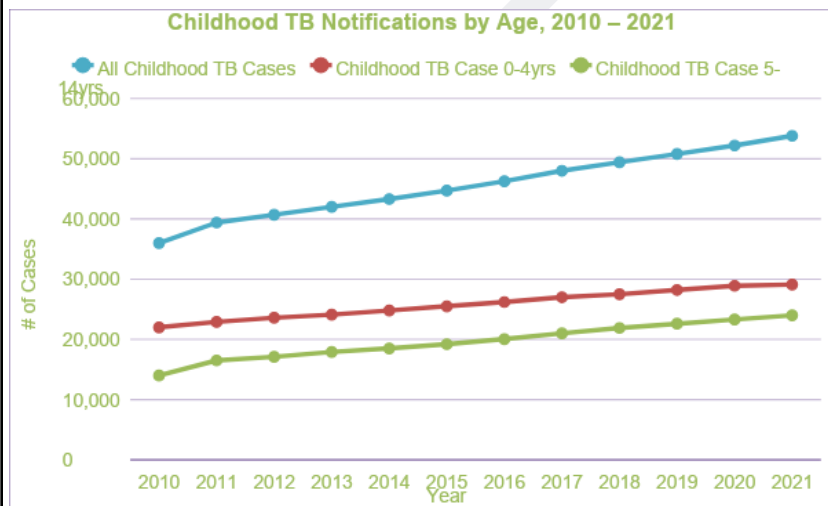Below are illustrative examples one can use when presenting this indicator.

Bacteriologically Confirmed vs. Clinically Confirmed TB Cases, 2010 – 2021

■ Bacteriologically Confirmed Cases of TB   ■ Clinically Confirmed Cases of TB

Percent of TB Cases Bacteriologically Confirmed, 2015 – 2025

● Bacteriologically Confirmed Cases of TB   – – Target

Bacteriological Diagnosis Coverage, 2021

Definition	Number of children and adolescents (0-14 years) with new and relapse TB or with unknown previous TB treatment history, all forms, who were notified in a reporting period.
Numerator	Number of children and adolescents (0-14 years) with new and relapse TB or with unknown previous TB treatment history, all forms, who were notified in a reporting period.
Denominator	N/A
Category	REACH
Indicator type	Core outcome
Level	Core
Unit of measure	Number of children/adolescents
Data type	Integer
Disaggregate by	Age (0-4, 5-9, 10-14), sex, HIV status
Reporting level	All core PBMEF indicators should be reported at national level; data may also be collected subnationally for more granular monitoring.
Reporting frequency	This indicator should be reported on a semi-annual basis at minimum. More frequent monitoring on a quarterly, monthly, or real-time basis is recommended.
Data sources	This indicator is reported from national TB program (NTP) official records. *Quarterly report on TB case registration in the basic management unit.* This standard WHO indicator can also be calculated using the WHO database variables: *newrel_f014* plus *newrel_m014* plus *newrel_sexunk014.*
Importance	The number of children with TB is an important indicator of recent transmission in a community. Comprehensive information about childhood TB enables NTPs to address the needs of children with TB and mobilize appropriate resources. TB is very challenging to diagnose in children due to the historical reliance on sputum, which may be difficult for children to produce without invasive procedures and may not have a high bacillary load, leading to false negatives and the limitations of diagnosing on a clinical basis only. This indicator measures TB notifications in children ages 0-14 years, which can be used to assess how well the country as a whole is providing appropriate screening and diagnosis services for children with TB. On average, among people with new TB diagnoses the percent contributed by children and adolescents is between 5%-15% in low- and middle-income countries and <10% in high-income countries. These thresholds can be used to identify major outliers where under- or overdiagnosis of TB among children may be of concern. Of the global total number of people with TB notified in 2021, 6.9% were children under 15 years old. Improvements in reaching children and adolescents are needed to reach the United Nations High Level Meeting targets to provide TB diagnosis and treatment with the aim of successfully treating 3.5 million children with TB, and 115,000 children with drug-resistant TB by 2022. The USAID TB strategy (2023-2030) highlighted that USAID will work to strengthen TB diagnosis in children and other vulnerable populations by increasing access to innovative rapid molecular testing and improving capacity for clinical diagnosis. Mandatory notification policies calling for collaboration between NTPs, other non-NTP public health facilities, and private sector facilities and pediatric associations will help ensure comprehensive and age-disaggregated reporting of TB notifications. This is important for monitoring progress and focusing interventions and resources for children.

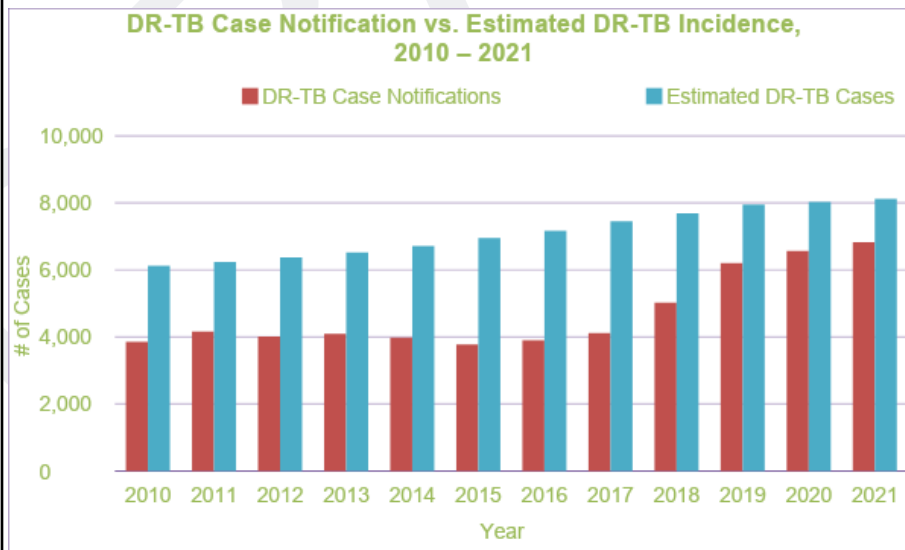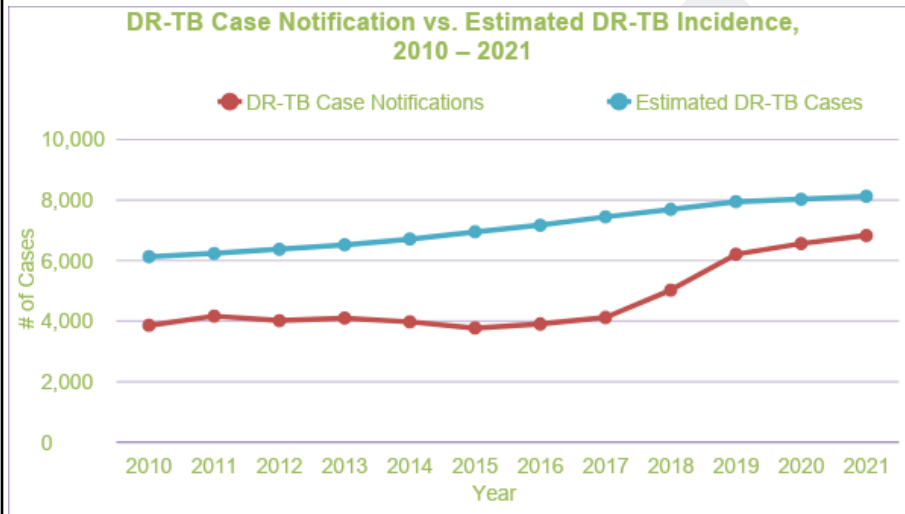| Data use and visualization	Childhood TB notifications should be analyzed for trends over time and as a percentage of total notifications to assess whether or not a country is on track in terms of reaching children with TB with appropriate screening and diagnosis services. Globally, children represent about 10% of all people with TB. This varies from country to country, but a percent of children that is too low (ex. <5%) or too high (ex, >15%) would merit further analysis to assess under- or overdiagnosis. A low percent of childhood TB detection often indicates that providers need to improve TB screening among children and may highlight a need for changes in the diagnostic algorithm to ensure children are referred appropriately for TB testing. A very high percent may indicate an over-reliance on clinical diagnosis and potential overtreatment of TB among children. Data analysis at subnational levels will help identify areas where children are potentially under or overdiagnosed,and this analysis can be used to prioritize efforts to expand diagnosis services such as stool-based testing and implement updated clinical algorithms included in the 2022 WHO guidelines on the management of TB among children and adolescents. Data should be reported annually at a minimum but semiannually or quarterly reporting will improve the timeliness of data for decision making The number of childhood TB notifications can further be broken down by age categories to show the percent of childhood TB occurring in children under five years of age, between five and nine, and children between the ages of 10 and 14 years old. Below are examples one can use when presenting this indicator.

Indicator name and number	MDR_NOTIF: RR/MDR-TB Notifications *Previously [RN-1]*
Definition	Number of people with rifampicin-resistant (RR) and multidrug-resistant (MDR) tuberculosis notified during the reporting period. RR/MDR TB: RR-TB is TB caused by Mycobacterium Tuberculosis (M. tuberculosis) strains that are resistant to rifampicin; MDR-TB strains are resistant to at least both rifampicin and isoniazid. Note: This indicator no longer includes pre-XDR and XDR TB; these data should be reported separately under the core plus indicator for XDR. Values for these indicators should not be added together.
Numerator	Number of people with rifampicin-resistant (RR) and multidrug-resistant (MDR) tuberculosis notified during the reporting period.
Denominator	N/A
Category	REACH
Type	Core outcome
Unit of measure	Number of people
Data type	Integer
Disaggregate by	Age (<15, 15+), sex
Reporting level	All core PBMEF indicators should be reported at national level; data may also be collected subnationally for more granular monitoring.
Reporting frequency	This indicator should be reported on a semi-annual basis at minimum. More frequent monitoring on a quarterly or monthly basis is recommended.
Data sources	This indicator is reported from national TB program (NTP) official records. *Quarterly report on TB case registration in the basic management unit.* The WHO equivalency for this indicator is: *conf_rr_nfqr (lab confirmed RR/MDR)*
Importance	This DR-TB indicator has been modified to report pre-XDR and XDR-TB in a separate indicator. pre-XDR/XDR notifications should not be added to RR/MDR notifications to avoid double counting of DR-TB notifications. People who are diagnosed with pre-XDR and XDR-TB will already have been identified and recorded as having RR/MDR-TB. The number of RR/MDR-TB notifications should therefore equal the total number of DR-TB notifications. Note that when assessing treatment success rate, all people on DR-TB treatment will be monitored together. Ongoing analysis of RR/MDR-TB notification data is critical to understanding transmission dynamics and to ensure accurate planning for second line TB drugs and the human resources needed to manage DR-TB. These people account for a much higher percent of overall TB deaths, and the number of people with DR-TB has been increasing over time. DR-TB notification measures a country's ability to detect drug resistance among the TB-infected population and initiate TB patients in appropriate treatment. Data on DR-TB notification are also valuable for planning drug logistics and supervision. The global number of people with MDR/RR-TB notified in 2021 was 142,131 of the estimated 450,000 incident MDR/RR-TB cases that year. Closing this large detection gap will require improvements in diagnostic capacity. Point-of-care (or near point-of-care) rapid diagnostic tools that detect TB and drug resistance are the new standard of care. Early detection of resistance to rifampicin and isoniazid ensures that an appropriate drug regimen can be prescribed from the outset to increase the likelihood of treatment success, and to reduce the chance of acquiring additional resistance.
Data use and visualization	Understanding DR-TB notification trends is important to gauge the overall performance of the NTP in preventing the emergence of DR cases, either due to issues with adherence to treatment regimens or due to direct transmission of DR-TB. Drug-resistant TB notification can be analyzed

on its own as a trend over time to see the total number of people with notified DR-TB within a given country. It can also be compared to the estimated incidence of DR-TB to determine the magnitude of the gap between the estimated number of people with DR-TB and those that have been detected. These gaps should also be reviewed in the context of availability of diagnostic services for DR-TB. The number of diagnostic facilities per 100,000 population can also give some indication of how accessible these services are to the population. The geographical distribution of the diagnostic facilities can help to understand the level of accessibility in different regions. Regional comparisons of this indicator could be helpful.
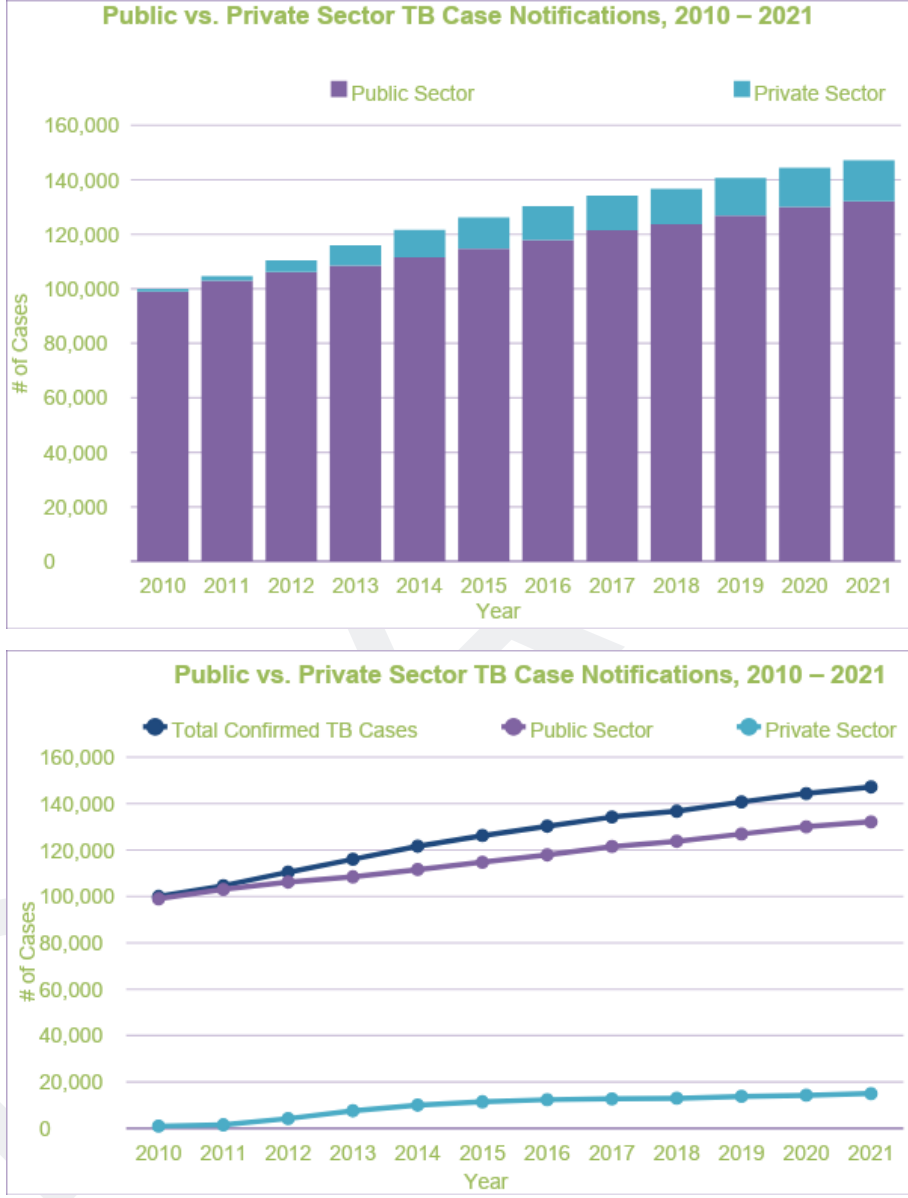
DR-TB diagnosis and notification is an important step in the DR-TB treatment cascade. Data can also be collected at the subnational level and used to learn from the geographic distribution of cases and detect outbreaks. Data should be reported annually at a minimum but semiannually or quarterly reporting will improve the timeliness of data for decision making.

Below are examples one can use when presenting this indicator.

DR-TB Case Notification vs. Estimated DR-TB Incidence, 2010 – 2021

DR-TB Case Notification vs. Estimated DR-TB Incidence, 2010 – 2021

Indicator name and number	**PR_NOTIF: Private Sector TB Notifications** *Previously [PR-1]*		
Definition	Number of people with new and relapse TB of all forms (bacteriologically confirmed plus clinically diagnosed) notified by private non-national TB program (NTP) providers in the reporting period. Per the WHO's definition/database, private non-NTP providers include private individual and institutional providers, corporate/business sector providers, mission hospitals, and other clinics or hospitals managed by nongovernmental organizations and faith-based organizations.
Numerator	Number of people with new and relapse TB of all forms (bacteriologically confirmed plus clinically diagnosed) notified by private non-NTP providers in the reporting period.
Denominator	N/A
Category	REACH
Indicator type	Core outcome
Level	Core
Unit of measure	Number of people
Data type	Integer
Disaggregate by	Age (<15, 15+), sex
Reporting level	All core PBMEF indicators should be reported at national level; data may also be collected subnationally for more granular monitoring.
Reporting frequency	This indicator should be reported on a semi-annual basis at minimum. More frequent monitoring on a quarterly or monthly basis is recommended.
Data sources	This indicator is reported from NTP official records. Some NTPs may include private sector notifications in their quarterly report on TB case registration, but this may vary country to country. This standard WHO indicator can also be calculated using the WHO database variable *priv_new_dx*.
Importance	Over one-third of people estimated to have developed TB in 2021 were not detected and notified by NTPs, and there are considerable delays in people reaching a provider who could reliably diagnose their TB. Both issues can be addressed in part by engaging with private providers, since ~50% of people with TB symptoms in sub-Saharan Africa and ~75% in Asia, first seek care from private providers. This indicator measures the number of TB patients notified by private providers—which is the starting point for ensuring that TB patients identified by private providers will receive quality diagnosis and care. Engaging with private sector healthcare providers is essential to achieve universal access to TB prevention and care services. Countries that have prioritized private sector engagement show increases in the contribution of the private sector to overall TB case notifications. Global and national goals in TB cannot be achieved unless private providers are engaged on a large scale. Contributions from private facilities and care providers to the total number of TB notifications should be regularly monitored. Introducing and using simplified case reporting for the private sector through electronic reporting or app-based reporting are some of the interventions to encourage private sector reporting, but intermediary agencies who can engage with diverse private providers are typically also necessary.
Data use and visualization	Private sector TB notifications can be analyzed over time and/or between subregions. They can also be compared to the total number of TB notifications to determine the percent of all TB notifications that are coming from the private sector. A further analysis of this indicator using granular data can also provide valuable insights into who these private providers are in terms of their geographic and institutional locations, as well as their share in private sector notifications. It may be possible that the majority of all private sector notifications come from just a few regular private sector institutions. Better understanding of these high and low performers may help to expand the private sector notification base. For countries with large contributions from private providers, a richer set of standard indicators could

be used to distinguish contributions from (a) private for-profit vs. private not-for-profit; (b) providers at different levels of the healthcare system (pharmacies vs. primary care vs. secondary/tertiary care); and (c) private referrals vs. private case management.

Limitations in data use include inconsistent reporting on private sector notifications from countries and non-disaggregated data on nonprofit and for-profit private providers.

Below are examples one can use when presenting this indicator.

Public vs. Private Sector TB Case Notifications, 2010 – 2021

■ Public Sector ■ Private Sector

Public vs. Private Sector TB Case Notifications, 2010 – 2021

● Total Confirmed TB Cases ● Public Sector ● Private Sector

| Indicator name and number	**CON_SCRN: Percent of Contacts Screened for TB** *Previously [CI-1]*
Definition	Percent of contacts of people with bacteriologically confirmed pulmonary TB (index cases) who were screened for active TB disease, among all contacts identified during the reporting period. Contact investigation (CI) is a systematic process to identify people (contacts) who were exposed to active pulmonary TB disease; assess contacts for signs or symptoms of active TB disease,

12

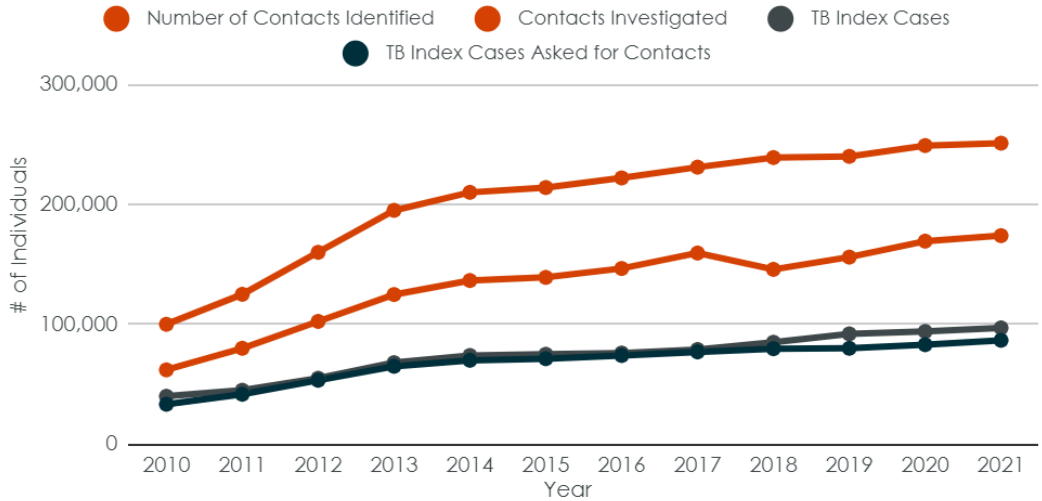|	
	provide diagnostic testing to confirm or exclude active disease or diagnose TB infection, and, provide contacts with treatment for TB disease or infection. Contact investigation consists of identification of contacts, prioritization of contact at highest risk, clinical evaluation and diagnostic testing and treatment as clinically indicated.
	Calculation: (Numerator/Denominator) x 100
Numerator	Number of contacts of people with notified new and relapse bacteriologically confirmed pulmonary TB who were screened for active TB disease during the reporting period.
Denominator	Number of contacts of people with notified new and relapse bacteriologically confirmed pulmonary TB identified during the reporting period.
Category	REACH
Indicator type	Core outcome
Level	Core
Unit of measure	Percent of contacts
Data type	Percentage
Disaggregate by	Age (0-4, 5-14, 15+), sex
Reporting level	All core PBMEF indicators should be reported at national level; data may also be collected subnationally for more granular monitoring.
Reporting frequency	This indicator should be reported on a semi-annual basis at minimum. More frequent monitoring on a quarterly or monthly basis is recommended.
Data sources	This indicator is reported on national TB program (NTP) official records, such as contact registers. If these registers do not exist, data can be collected from implementing partners supporting contact investigation interventions. The denominator can also be estimated by taking the estimated average household size, assuming the index cases come from different households. See indicator CI-2 for more information.
	This indicator was introduced in the WHO 2020 Global Data Collection Form and can be calculated using the WHO database. The variable for the numerator is *newinc_con_screen* and the denominator is *newinc_con*.
Importance	Contact investigation is an important first step both for active case finding and TPT. CI identifies people recently exposed to TB with a high risk of developing TB disease or TB infection and can help reduce the spread of TB in a community. As much as 5% of the contacts of people with TB can have active TB disease. This indicator measures the ability of NTPs to systematically identify and evaluate contacts of bacteriologically confirmed pulmonary TB patients for active TB and TBI.
	Contact investigation coverage is one of the top 10 indicators of the WHO End TB Strategy with a recommended target level of 90% by 2025.
	Increases in CI coverage will result in greater detection of people with TB and provision of appropriate anti-TB therapy (for people with confirmed TB) or TPT (for those without TB disease). Moreover, CI is a good public health practice and essential for tracking several infectious diseases with similar routes of transmission (such as COVID-19).
Data use and visualization	The total number of contacts identified can be compared to the number of contacts investigated to determine the gap in overall CI coverage among identified contacts. This is something that can be analyzed as a trend over time or compared between regions to better understand contact-tracing performance. Comparisons with a country's CI targets will provide the impetus to further strengthen the implementation of CI strategies within an NTP. This trend should be considered in the context of the percentage of bacteriologically confirmed TB cases for whom contacts were identified (national level indicator "TB cases with contact investigations initiated"). For example, a country that reaches 100% contact investigation coverage but only conducts CI for 20% of bacteriologically confirmed cases may not be performing as well as a country that achieves 75% CI coverage and conducts CI for 50% of people with bacteriologically confirmed TB.

Another comparison could be made between the number of contacts investigated per index case. Charting the trend of the average number of contacts investigated per index case can also give an understanding about how effective contact investigation efforts are.
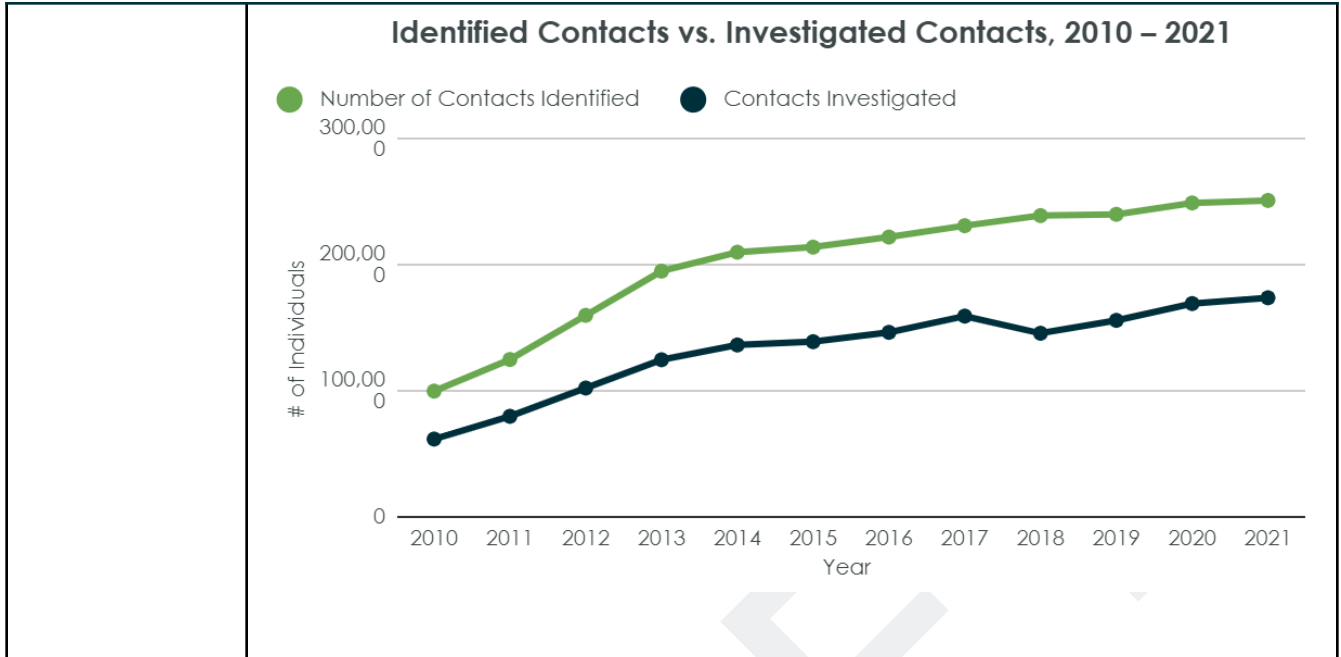
Data on CI coverage will also help countries monitor efforts to initiate eligible contacts on TPT. For example, CI coverage among contacts data can be viewed in conjunction with the number of people with active TB detected among the contacts (contact yield) and the number of eligible contacts put on TPT. Data can also be collected at the subnational level and used to learn from the geographic distribution of contacts. Data should be reported annually at a minimum but semiannually or quarterly reporting will improve the timeliness of data for decision making.

Below are examples one can use when presenting this indicator.

Contact Investigation Cascade, 2021
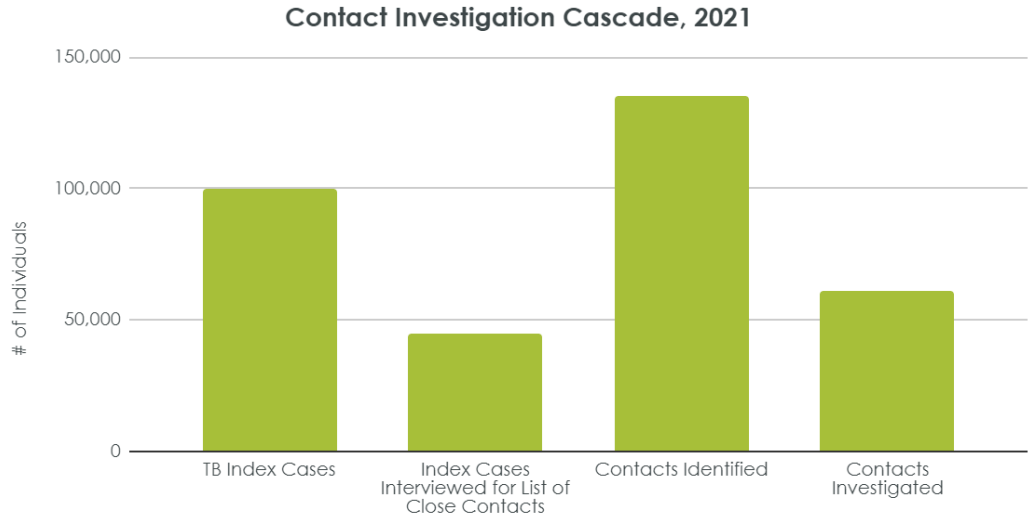
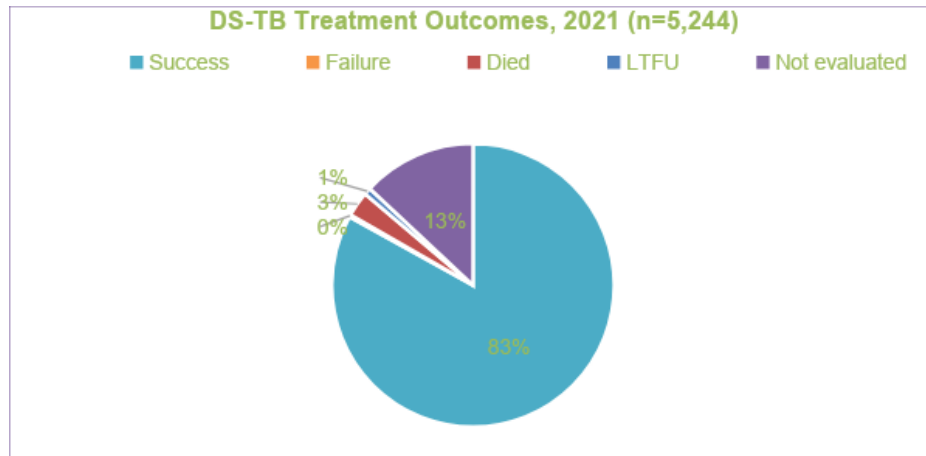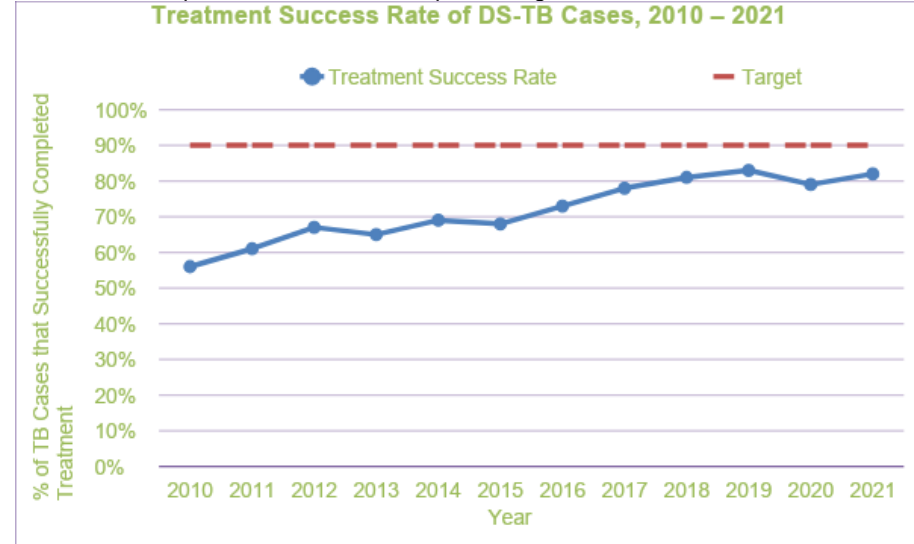**TB Index Cases vs. TB Index Cases asked for Contacts and Contacts Identified vs. Contacts Investigated, 2010 – 2021**

Identified Contacts vs. Investigated Contacts, 2010 – 2021

● Number of Contacts Identified   ● Contacts Investigated

(Chart: # of Individuals vs. Year, 2010–2021)

Indicator name and number	DS_TSR: Treatment Success Rate *Previously [SS-1]*
Definition	Percent of people with new and relapse DS-TB (bacteriologically confirmed or clinically diagnosed, pulmonary or extrapulmonary) who were notified in a specified period that were cured or treatment completed, among the total people with new and relapse TB who were initiated on treatment during the same reporting period (excluding those moved to RR-TB treatment cohort). Treatment outcomes are defined by the time period of initiation on treatment; e.g., "2018 cases successfully treated" reflect those who were initiated on treatment in 2018, even though treatment may have extended into 2019. For this reason, reports of treatment outcome data lag by one year. Calculation: (Numerator/Denominator) x 100
Numerator	Number of people with new and relapse DS-TB (bacteriologically confirmed or clinically diagnosed, pulmonary or extrapulmonary), who were registered in a specified period that were cured or treatment completed.
Denominator	Number of people with new and relapse DS-TB (bacteriologically confirmed or clinically diagnosed, pulmonary or extrapulmonary) who initiated treatment in the same period.
Category	CURE
Indicator type	Core outcome
Level	Core
Unit of measure	Percent of people
Data type	Percentage
Disaggregate by	Age (<15, 15+), sex
Reporting level	All core PBMEF indicators should be reported at national level; data may also be collected subnationally for more granular monitoring.
Reporting frequency	This indicator should be reported on a semi-annual basis at minimum. More frequent monitoring on a quarterly, monthly, or real-time basis is recommended.
Data sources	This indicator is reported by national TB program (NTP) official records. *Quarterly report on TB treatment outcomes in the basic management unit* and *Form 07: Combined annual outcomes report for basic TB and for RR-/multidrug-resistant (MDR)-TB.* This standard World Health Organization (WHO) indicator can also be calculated using the WHO database. The variable for the numerator is *newrel_succ* and the denominator is *newrel_coh.*
Importance	Treatment success is an important indicator of the quality of TB services, as it measures the NTP's capacity to support patients through a complete course of treatment with a favorable outcome. Successful treatment requires a stable supply of TB medications, management of side effects and various efforts to support people with TB so they can complete the full course of treatment. This indicator measures the successful treatment of a cohort of people with TB, which is essential to prevent the spread of the infection. The treatment success rate allows countries to monitor progress towards meeting global and national targets and to determine whether more resources are required to improve treatment outcomes by reducing death, loss to follow-up (LTFU), and the percent of people with an outcome that is not evaluated. The latest global treatment outcome data from 2020 show success rates of 95% for TB, just above the End TB Strategy target of 90% by 2025. Detecting and successfully treating a large percent of people with TB should have an immediate impact on TB prevalence and mortality. Low treatment success rates may indicate problems with the treatment regimens being administered, poor treatment management, adverse side effects, or comorbidities leading to death or LTFU. An understanding of why treatment success may be low is important to be able to implement solutions for improving patient care.
Data use and visualization	TB treatment success rate can be analyzed as a trend showing whether treatment success is stable, improving or decreasing over time, and to compare the rate to national and global treatment success rate targets. A comparison of TB patients initiated on treatment and successfully completing treatment using a cascade of care will highlight the gap in the cascade where some patients were lost during the treatment phase. The gap between treatment initiation

and treatment success can be further broken down to understand why patients were unsuccessful with treatment (e.g., death, LTFU, treatment failure, or unknown outcomes). Treatment success rates can also be compared between DS and drug-resistant TB (DR-TB) and TB/HIV. but differences in treatment outcomes among these cohorts should be interpreted with caution; differences in TB epidemiology at national level, resistance profile, HIV program context and other factors should be considered.

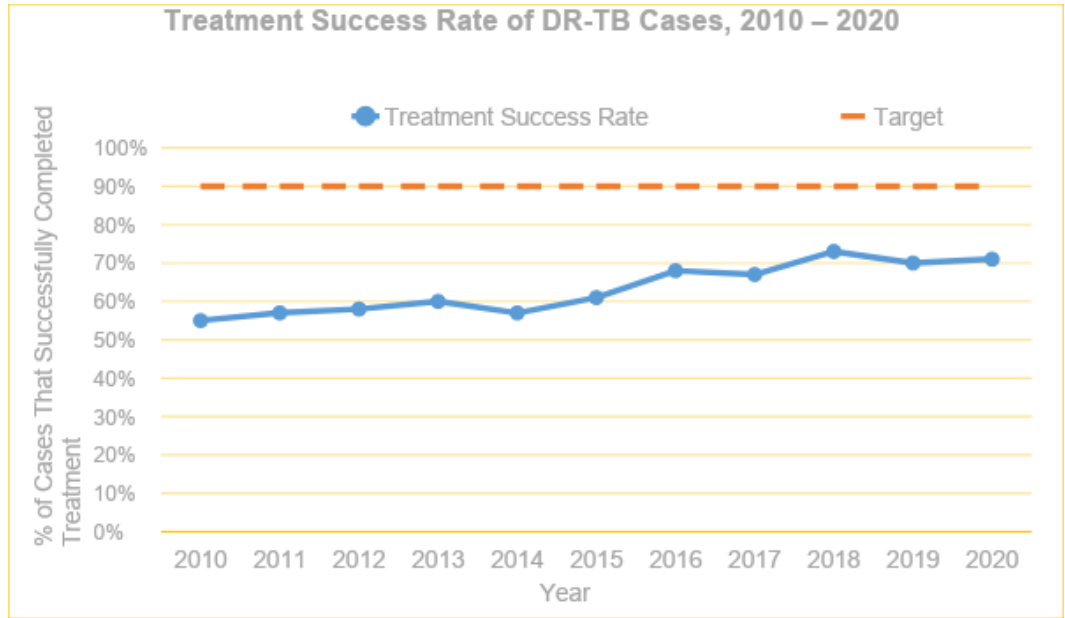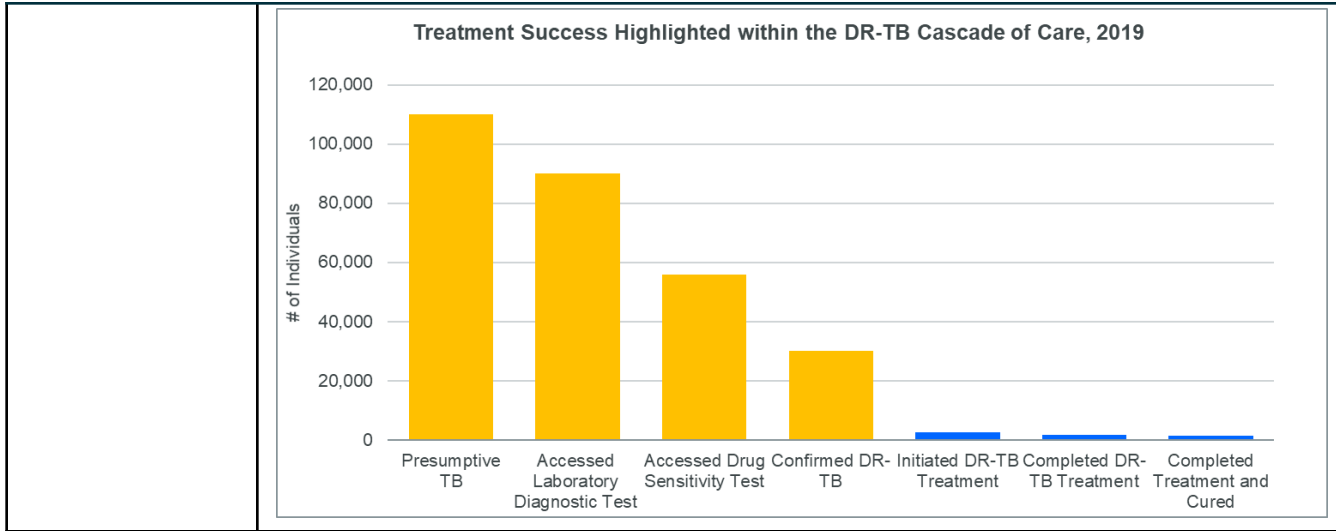Below are examples one can use when presenting this indicator.

Treatment Success Rate of DS-TB Cases, 2010 – 2021

DS-TB Treatment Outcomes, 2021 (n=5,244)

Treatment Success Highlighted Within the DS-TB Cascade of Care, 2019

Y-axis: # of Individuals (0 to 120,000)

- Presumptive TB: ~110,000
- Accessed Laboratory Diagnostic Test: ~90,000
- Confirmed TB: ~30,000
- Initiated TB Treatment: ~28,000
- Completed TB Treatment: ~23,000

DS-TB Treatment Success Rates by Region, 2016 – 2021

Legend: Region A, Region B, Region C

Y-axis: Treatment Success Rate (0% to 100%), X-axis: Year

Year	Region A	Region B	Region C
2016	86%	71%	86%
2017	88%	69%	87%
2018	82%	68%	88%
2019	80%	72%	89%
2020	85%	73%	89%
2021	83%	75%	89%

Indicator name and number	**DR_TSR: DR-TB Treatment Success Rate** *Previously [RS-1]*
Definition	Percentage of people with drug-resistant tuberculosis (DR-TB) (rifampicin-resistant [RR]/multidrug-resistant [MDR]-TB, pre-extensively drug-resistant [pre-XDR]-TB, and extensively drug-resistant [XDR]-TB) successfully treated (cured or treatment completed) among all people with DR-TB who were initiated on treatment during the reporting period. Treatment outcomes are defined by the time period of initiation on treatment; e.g., "2018 cohort successfully treated" reflect those who were initiated on treatment in 2018, even though treatment may have extended into 2020. For this reason, reports of treatment outcome data lag by two years. Calculation: (Numerator/Denominator) x 100
Numerator	Number of people with DR-TB who were cured or treatment completed during the reporting period.
Denominator	Number of people with DR-TB who were initiated on DR-TB treatment during the same reporting period.
Category	CURE
Indicator type	Outcome
Level	Core
Unit of measure	Percent of people
Data type	Percentage
Disaggregate by	Age (<15, 15+), sex
Reporting level	All core PBMEF indicators should be reported at national level; data may also be collected subnationally for more granular monitoring.
Reporting frequency	This indicator should be reported on a semi-annual basis at minimum. More frequent monitoring on a quarterly or monthly basis is recommended.
Data sources	This indicator is reported by national TB program (NTP) official records. *Quarterly report on TB treatment outcomes in the basic management unit* and *Combined annual outcomes report for basic TB and for MDR-TB/RR-TB.* This standard World Health Organization (WHO) indicator can also be calculated using the WHO database. The variable for the numerator is *mdr_succ* plus *xdr_succ* and the denominator is *mdr_coh* plus *xdr_coh*.
Importance	DR-TB treatment success measures a TB program's ability to initiate DR-TB patients on appropriate treatment and support patients throughout the entire course of DR-TB treatment. This final outcome is the most important measure of the effectiveness of the DR-TB program in terms of patient care. Therefore, it is also a performance indicator for the NTP as a whole. Although improving in some countries, the treatment success rate reported in 2021 for DR-TB globally remains low at 71% for MDR-TB/RR-TB. Access to costly drugs, poor treatment adherence, poor treatment management, adverse side effects, and comorbidities leading to death or loss to follow up are all factors that contribute to low DR-TB treatment success. However, the wider use of more effective, shorter, and "all oral" DR-TB treatment regimens, as well as more patient-centered models of care, are expected to improve treatment success rates. The USAID TB strategy (2023-30) targets for 90% of DR-TB patients to be successfully treated. Improvements in DR-TB treatment success can help to reduce the overall TB mortality rate. High treatment success coupled with high treatment coverage among those diagnosed with DR-TB are both critical to interrupting transmission of DR-TB and reducing morbidity and mortality due to DR-TB in a country.

Data use and visualization	Drug-resistant treatment success rate can be analyzed as a trend over time and compared to national and global DR-TB treatment success rate targets. A cascade can also be constructed to highlight gaps in care where some patients could be lost. The gap between treatment initiation and treatment success can be further broken down to understand why patients were unsuccessful with treatment (e.g., death, treatment failure, moved to pre-XDR treatment, or unknown outcomes). Below are examples one can use when presenting this indicator. **Treatment Success Rate of DR-TB Cases, 2010 – 2020** *% of Cases That Successfully Completed Treatment* (y-axis) vs *Year* (x-axis) Legend: ● Treatment Success Rate — Target Treatment Success Rate: 2010 ~55%, 2011 ~57%, 2012 ~58%, 2013 ~60%, 2014 ~57%, 2015 ~61%, 2016 ~68%, 2017 ~67%, 2018 ~73%, 2019 ~70%, 2020 ~71%. Target: 90% **DR-TB Treatment Outcomes, 2019 (n=298)** Success 70.1%, Failure 3.4%, Died 9.7%, LTFU 10.7%, Not evaluated 5.7%, Moved to pre_XDR 0.3%

Treatment Success Highlighted within the DR-TB Cascade of Care, 2019

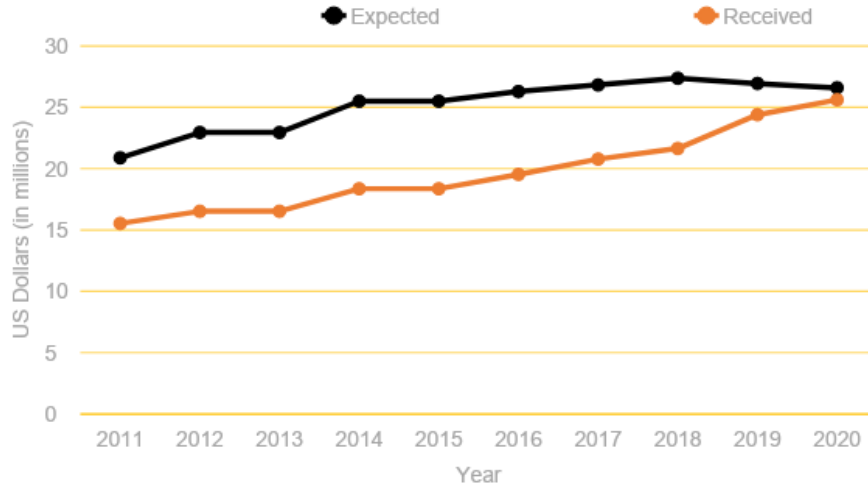| Indicator name and number	**TPT_ENROLL: TPT Initiations** *Previously [PT-1]*
Definition	Number of people who were initiated on TB preventive treatment (TPT). This includes: (1) household and other close contacts of people with notified, bacteriologically confirmed pulmonary TB (adults, adolescents, and children <5 years), and (2) people living with HIV (PLHIV). According to WHO TPT guidelines: Household contact: a person who shared the same enclosed living space as the index case for one or more nights or for frequent or extended daytime periods during the three months before the initiation of current treatment. Close contact: a person in the household, or a social, workplace, or school setting who had shared indoor airspace with an index case for an extended period (>15 hours per week during 1 or more weeks or a total of more than 180 hours during the infectious period of the index case) or as per national TB program guidelines.
Numerator	Number of people who were initiated on TPT during the reporting period, which includes: 1) Household and other close contacts of people with notified, bacteriologically confirmed pulmonary TB (adult and children and adolescents aged 0-14) 2) PLHIV
Denominator	N/A
Category	Prevent
Indicator type	Core outcome
Level	Core
Unit of measure	Number of people initiated on TPT
Data type	Integer
Disaggregate by	Age (0-4, 5-14, 15+), sex, risk group (contacts, PLHIV)
Reporting level	All core PBMEF indicators should be reported at national level; data may also be reported subnationally for more granular monitoring.
Reporting frequency	This indicator should be reported on a semi-annual basis at minimum. More frequent monitoring on a quarterly or monthly basis is recommended.

21

Data sources	National TB program (NTP) official records report on this indicator. Some NTPs may include TPT initiation on the quarterly report on TB case registration or quarterly report on TB treatment outcomes, but this may vary country to country. In other settings, this data is available at the individual (case-based) levels through the NTP for contacts and the HIV/AIDS program for PLHIV.
	This standard WHO indicator can also be calculated using the WHO database variable: *newinc_con_prevtx* plus *hiv_ipt_reg_all*
Importance	Prevention of new TB infections and of progression from TB infection to active disease is critical to reduce TB morbidity and mortality, and to achieve the End TB Strategy targets set for 2030 and 2035. This indicator, when measured over time, provides information on the trends in TPT scale-up and helps assess progress towards United Nations High Level Meeting (UNHLM) targets. Additionally, the USAID TB strategy (2023-2030) has set a target to provide TPT to 30,000,000 contacts (excluding PLHIV) by 2030.
	TPT initiation data will help NTP managers and other stakeholders monitor TB prevention efforts among people who are exposed to TB disease and are at risk of developing TB infection and progressing to TB disease. Interventions to scale up TPT to all people at risk will prevent the development of active TB disease, and thus, reduce transmission at community level. This indicator will track the extent to which programs are achieving high TPT initiation and are likely to be reducing this source of TB burden. TPT initiation levels will also indicate the success of a country's implementation of the TPT strategy and robustness of programmatic management of TPT.
Data use and visualization	A trend analysis of this indicator can track progress over time as TPT interventions scale up. A cascade of care can also highlight the gaps between contact investigations, identifying individuals who are eligible for TPT and ensuring those who are eligible are initiated on TPT. TPT initiations can further be broken down to understand what percent of the people initiated on TPT is made up of PLHIV, contacts under 5 years of age, and contacts 5 years of age and up for reporting against UNHLM targets.
	More information on calculating the number of people eligible for TPT can be found in the WHO Operational Handbook on Tuberculosis: Module 1: Prevention: Tuberculosis Preventive Treatment https://www.who.int/publications/i/item/9789240002906.
	Below are examples one can use when presenting this indicator.
	 TB Preventive Treatment (TPT) Cascade among Household Contacts, 2021

TPT Coverage, 2010 - 2021

Definition	Percent of a national tuberculosis program (NTP's) budget received from domestic sources during the reporting period. Calculation: (Numerator/Denominator) x 100
Numerator	The amount of NTP's budget received from domestic sources (including loans) during the reporting period (in US dollars).
Denominator	The amount of NTP's budget received from all sources (domestic, the Global Fund to Fight AIDS, Tuberculosis and Malaria, USAID, and other sources) during the reporting period (in US Dollars).
Category	SUSTAIN
Indicator type	Core outcome
Level	Core
Unit of measure	Percent of funding
Data type	Percentage
Reporting level	All core PBMEF indicators should be reported at national level.
Reporting frequency	Annual

Data sources	NTPs report this indicator on an annual basis to the WHO; where missions are not able to get a direct value from the NTP, the value included in the most recent WHO Global TB Report should be used for reporting purposes. The World Health Organization (WHO) indicator for the numerator is *rcvd_tot_domestic (funding received from domestic sources, including loans [US dollars])*, and the denominator is *rcvd_tot_sources (total funding received from all sources [US dollars])*.
Importance	A key measurement of a country's sustainability of resources is how it implements its national TB strategic plan. While international donor funding is still critical for low- and middle-income countries, increasing the share of funding from domestic sources is necessary for sustainability. This indicator measures the amount of funding that is expected to be mobilized from domestic sources out of all available sources. It is a good planning tool for the country to gauge how much it can and should plan to mobilize in the next budget cycle to reduce the level of dependency on international donors. According to the 2022 WHO Global TB Report, most of the USD$5.4 billion available in 2021 is from domestic sources (79% of the total). However, the high volume of funding in the BRICS group of countries (Brazil, the Russian Federation, India, China, and South Africa) influences this figure. In other low- and middle-income countries, international donor funding remains crucial. This indicator is also a measure of a national government's level of financial commitment to TB.
Data use and visualization	Percentage of received domestic financing for TB can be analyzed as a trend over time either on its own or against country and/or global targets, such as the total budget required to fund a national strategic plan. Indeed, a comparison between the total budget required (*budget_tot*) versus the amount received *(rcvd_tot_sources)* will give a picture of the budget shortfall that the NTP faces, and therefore help in deciding domestic resource mobilization to meet those shortfalls. Further, received funds can be compared to budgeted or expected funds to highlight gaps in utilization of domestic funding either within a given year or budget cycle, or as a trend over time. Thus, analyzing the general trend of funding received from domestic sources, including loans (US dollars) [*rcvd_tot_domestic*] as a percentage of expected funding from domestic sources, including loans (US dollars) [*cf_tot_domestic*] can help to understand the chronic deficiency the country is facing in fulfilling its budgetary commitment to NTP. This could be reviewed in the context of overall budget shortfall/over-budgeting by comparing total funding received for all budget line items (US dollars) *[rcvd_tot]* versus total budget required (US dollars) *[budget_tot]*. Below are examples one can use when presenting this indicator. **TB Financing Expected and Budget Required by Source**

Expected vs. Received TB Financing, 2011 – 2020

TB Funding by Source, 2011 – 2021