

Analysis of NTP Indicators

1) Case Detection Rate (CDR):

A high CDR (**percent detected of estimated cases in the population**) will mean that transmission by undiagnosed infectious TB patients is minimized, leading to less TB disease and less TB mortality in the population. Influencing factors include: identification of TB suspects by clinicians, laboratory services that are adequate (in terms of equipment, staffing, geographical distribution, and quality control), and completeness of reporting.

Reasons for low TB CDR countrywide include limited access or utilization of health facilities, insufficient clinical suspicion and referral of TB suspects for diagnosis, incomplete disease reporting within a given information system, and lack of coordination among parallel disease reporting systems (e.g., dispensary system versus that of hospitals or private practitioners, or prisons or other institutions). Incomplete and/or uncoordinated reporting often accounts for a large gap in detection.

Reasons for low TB CDR under DOTS specifically include all of the above plus incomplete implementation of DOTS.

Though no longer a priority since TB all forms became the main thrust of the program, noting the bacteriologically confirmed (BC) TB CDR may provide an additional perspective to the actual situation. Reasons for low BC TB CDR may include all of the above, plus possible limited bacterial confirmation due to inadequate use or poorly functional smear microscopy services, over-reliance on chest x-ray and poor access to Xpert MTB/RIF that leads to over-diagnosis of active TB. For example, a sufficient number of sputum samples may not be obtained, a smear examination may not be requested on sputum samples submitted for Xpert MTB/RIF and/or culture, laboratories may not be equipped with all reagents to perform the smear, or laboratory staff may not be sufficiently trained to identify a positive smear.

On the other hand, the BC TB CDR may be high if there is some secondary motive or “gain” involved (e.g., incentives paid to clinicians for BC cases only). BC TB CDR may also be high if laboratory staff is not adequately trained in the staining and reading of slides and/or not participating in EQA activities (i.e., high false positive cases).

The TB CDR (whether all forms or BC cases) may exceed 100% during the first few years of rapid DOTS implementation/expansion because of diagnoses among a backlog of prevalent new cases (never diagnosed previously) and perhaps also a backlog of “relapse” cases (previous episode of TB presumably cured but sub-optimally treated outside the DOTS program) with intensified case finding activities. In a more “steady-state” scenario, the TB case detection rate may exceed 100% because of over-diagnosis of TB (a large proportion of extra-pulmonary cases is sometimes a clue in this regard). It is also possible for the TB case detection to exceed 100% if TB incidence has been underestimated by WHO.

Limitation of the CDR is that **it can only be used at the national level** and that it can only be used **on an “annualized” basis**. The real danger is for subnational units being congratulated for having met the target (or, worse, admonished for not having met the target), leading to laxity or despondency (respectively), when in fact the truth is simply not known. In short, **subnational units are obliged to focus not on absolute levels but rather on trends**—of whatever they choose to monitor (absolute number of cases, cases divided by the population, or cases divided by a potentially meaningless constant).

Currently, the NTP target for CDR is 90%.

Indicator	Issue(s)	Recommended Intervention(s)
Target = 90%		
Low CDR ❖All forms ❖NSP	<ul style="list-style-type: none"> ❖Low demand for TB services <ul style="list-style-type: none"> ● Low awareness of TB symptoms ● Strong stigma associated with TB resulted in denial, avoidance for consultation ● Public health services perceived to be of poor quality <ul style="list-style-type: none"> ○ Long waiting time ○ Unprofessional behavior among health workers <ul style="list-style-type: none"> ▪ Low regard for confidentiality ▪ Lack of personal touch ○ Poor quality medicines ● Preference for private MD consultations, therefore unreported, and usually already on anti-TB treatment ● Low awareness of available free services in public facilities and/or discounted services in some PPMD units – i.e., high rate of self-medication ● Low local prevalence/incidence compared to national prevalence/incidence ● Internally displaced population due to calamities or armed conflicts ● “Mobile” population (e.g., going out of locality to work elsewhere) 	<ul style="list-style-type: none"> ❖ Do ACSM activities <ul style="list-style-type: none"> ● Increase community awareness of TB symptoms, DOTS treatment and focus on other key messages (e.g., TB is curable). ● Address key issues of service delivery (e.g., IPCC training for frontline TB health workers) ● Engage private healthcare providers ● Increase community awareness of available quality TB services in health centers and PPMD units ● Focus on CNR trends and set realistic targets ● Track TB patients among internally displaced populations; coordinate with other health centers ● Emphasize treatment duration and importance of compliance to treatment to facilitate transfer-outs if necessary; consider the use of MOU or treatment “contract” to “formalize” agreements regarding treatment
	<ul style="list-style-type: none"> ❖Low coverage by health facilities <ul style="list-style-type: none"> ● Low number of health facilities ● Poor access to DSSM and/or Xpert MTB/RIF – i.e., Geographically isolated, depressed areas (GIDAs) 	<ul style="list-style-type: none"> ❖Consider strategies to expand health service coverage <ul style="list-style-type: none"> ● Mobilize CBOs, community health teams/ volunteers, CHWs/BHWs ● Promote frontloading approach to sputum collection; consider pooling of sputum specimen for batch submission,

Indicator	Issue(s)	Recommended Intervention(s)
	<ul style="list-style-type: none"> ● Unengaged health facilities (e.g., hospitals, private clinics), therefore unreported <ul style="list-style-type: none"> ○ No referral system ● Low ratio of TB health workers to population ● Inadequate LGU support <ul style="list-style-type: none"> ▪ No local TB plan ▪ Limited/no funding to support TB activities ● Low motivation among health workers to perform ● Fixed clinic schedule cannot accommodate those who are working 	<ul style="list-style-type: none"> establishing remote smearing stations (RSS) or transporting patients to testing sites in groups ● Engage all health facilities as referring or DOTS providing units; formalize referral system ● Lobby to LCEs and LHBs for additional plantilla/job order positions to beef-up staffing; and/or to provide incentives (especially non-monetary) to attract more volunteers and minimize attrition ● Consider local recognitions (e.g., Manuel L. Quezon Awards during National TB Day) for best performing TB health workers as additional incentive ● Consider extending clinic hours or establishing hospital DOTS as alternative since such facilities are open even after office hours.
	<p><i>(NOT A PRIORITY but for consideration in Low BC TB CNR)</i></p> <ul style="list-style-type: none"> ❖ Poor access to DSSM and/or Xpert MTB/RIF – i.e., Geographically isolated, depressed areas (GIDAs) ❖ Low utilization of Xpert MTB/RIF ❖ Non-functional Xpert MTB/RIF center ❖ Substandard bacteriologic diagnosis for smear-positive cases <ul style="list-style-type: none"> ● Untrained MT/microscopists <ul style="list-style-type: none"> ○ False negative cases ○ Poor quality/collection of smears ● Non-functional microscopy center <ul style="list-style-type: none"> ○ Non-functional/no microscope ○ Interrupted supply of lab supplies and reagents 	<ul style="list-style-type: none"> ❖ (See prior recommendations above) ❖ Review indications for Xpert MTB/RIF (i.e., to include children and Sm+/CXR+ presumptive TB adults) ❖ Improve laboratory services ● Address key issues appropriately (e.g., pursue DSSM training for microscopists, avoid stockouts in lab supplies and reagents, maintenance program for lab equipment) ● Participate in EQA activities

Indicator	Issue(s)	Recommended Intervention(s)
	<ul style="list-style-type: none"> ▪ Substandard lab reagents (e.g., expired or diluted) ● Other lab services add to the MT's workload ❖ Substandard diagnosis for EPTB and childhood TB cases <ul style="list-style-type: none"> ● Limited access to a good quality CXR facility (e.g., in a hospital) ● Limited access to a hospital clinical and/or anatomic pathology laboratory ● Interrupted supply of TST supplies and reagents 	<ul style="list-style-type: none"> ● DSSM-dedicated MT or microscopist ❖ Improve access to diagnostic services <ul style="list-style-type: none"> ● Link with private providers/suppliers; consider outsourcing ● Review 5 criteria for diagnosing TB in Children and promote the use of Xpert MTB/RIF for childhood TB
	<ul style="list-style-type: none"> ❖ Lost cases due to delayed disposition for smear-negative cases <ul style="list-style-type: none"> ● Poorly/no functional TBDC <ul style="list-style-type: none"> ○ Long turnaround time from consultation to decision <ul style="list-style-type: none"> ▪ Poor quality CXR submitted, leads to request for repeat CXR by TBDC ○ Irregular TBDC meetings ○ Incomplete line-up of TBDC members ● Physician not competent to read CXR and/or confidently decide on disease activity 	<ul style="list-style-type: none"> ❖ Facilitate faster turn-around time for smear-negative cases <ul style="list-style-type: none"> ● Provide incentives for TBDC participation if necessary, even as simple as community recognition for services rendered ● Screen out poor quality chest x-ray plates early on and request only from quality CXR facilities ● Undergo training for disease activity assessment among smear-negative cases
	<ul style="list-style-type: none"> ❖ Poor recording and reporting <ul style="list-style-type: none"> ● Poor data encoding <ul style="list-style-type: none"> ○ Untrained NTP staff ● Late/no report submitted ● Inconsistent data at all levels ● Significant "increase" in population estimates compared to previous year ● Irregular conduct of monitoring, supervision and evaluation (MSE) <ul style="list-style-type: none"> ○ Data not analysed 	<ul style="list-style-type: none"> ○ Improve recording and reporting <ul style="list-style-type: none"> ● Anticipate computerization with ITIS and ensure compliance with encoding ● Improve monitoring, supervision and evaluation (MSE) at all levels, focusing on on-the-job mentoring ● Conduct periodic Data Quality Check (DQC) ● Always try to analyze reasons behind NTP data – display charts of performance
	<ul style="list-style-type: none"> ❖ Missed opportunities <ul style="list-style-type: none"> ● No focused cased finding activities in congregate settings and vulnerable populations <ul style="list-style-type: none"> ○ Prisons 	<ul style="list-style-type: none"> ❖ Take advantage of available opportunities <ul style="list-style-type: none"> ● Consider expanding services once basic DOTS services are highly functional and NTP targets are met

Indicator	Issue(s)	Recommended Intervention(s)
	<ul style="list-style-type: none"> o Children, especially in schools, orphanages, feeding programs o HIV/AIDS o Other clinical risk groups (e.g., DM, CA, etc.) o Military personnel o Work place ● No contact investigation among index cases 	<ul style="list-style-type: none"> ● Do intensified case finding through contact investigation among index cases within family units
<p>High CDR</p> <ul style="list-style-type: none"> ❖ All forms ❖ NSP 	<ul style="list-style-type: none"> ❖ Poor quality of lab services for DSSM results in over-diagnosis <ul style="list-style-type: none"> ● Untrained MT/microscopists <ul style="list-style-type: none"> o high false positive cases ● Not participating in EQA <ul style="list-style-type: none"> o Contaminated lab reagents o Poor lab practices ● Poor data quality ● Irregular conduct of MSE ● Other lab services add to the MT's workload ❖ Backlog of cases from a previous poor performance <ul style="list-style-type: none"> ● Issues related to low CDR (see possible related issues with low CDR for previous years) ❖ Internally displaced populations (IDPs) contribute to the artificially increased incidence/prevalence without being accounted for in the population estimates ❖ "Mobile" population (e.g., going into a locality to work but originally from elsewhere) ❖ Significant "decline" in population estimates compared to previous years 	<ul style="list-style-type: none"> ● Improve quality of laboratory services <ul style="list-style-type: none"> ● Address key issues (e.g., DSSM training for microscopists, participate in EQA activities, improve MSE implementation at all levels, DSSM-dedicated MT) ● Target higher CNR based on trends and always note possible explanations of "improved" NTP performance – for as long as trends can be explained, then there is no problem ● Note the presence of IDPs to explain artificially increased NTP performance and adjust targets once IDP issue is resolved ● Emphasize treatment duration and importance of compliance to treatment to facilitate transfer-outs if necessary; consider the use of MOU or treatment "contract" to "formalize" agreements regarding treatment ● Validate population estimates ● Continue high quality DOTS

Indicator	Issue(s)	Recommended Intervention(s)
	<ul style="list-style-type: none"> ❖ High local prevalence compared with national prevalence ● High HIV/AIDS incidence/prevalence 	

2) Case Notification Rate (CNR):

The indicator (**no. of cases detected per 100,000 population**) provides information on the burden of disease, number of cases to be treated, and resources required. **Trends over time in case notification usually indicate changes in program coverage and capacity to detect TB cases;** at high levels of case detection, the indicator reflects changes in the prevalence of TB in the community. **An upward trend in case notification rates can reflect an improvement in program performance** or, in some cases, the impact of the HIV/AIDS epidemic.

Often, it does not include cases managed by the private sector. Although case notifications underrepresent the true burden of disease, they represent the most useful data **for estimating incidence**.

The number of total TB cases is influenced by the capacity to diagnose extra-pulmonary and smear-negative pulmonary cases (availability of culture and other diagnostic methods), by clinician skill in interpreting chest X-ray abnormalities, by the capacity and criteria to diagnose TB in children, and by the coverage of reporting of TB in children.

CNRs may become artificially low with poor case finding. As of 2015, the estimated incidence of TB all forms in the country is 288/100,000 population and the goal of the NTP is to decrease this by 75% by 2035.

Indicator	Issue(s)	Recommended Intervention(s)
All Forms CNR Target = 288/100,000		
Persistently low/declining CNR (in a low CDR setting) ❖ All forms	<ul style="list-style-type: none"> ❖ Poor case finding results in artificially low CNR or its drastic decline (see possible issues related to low CDR) <i>Note: incidence/ prevalence not likely to significantly change from year to year.</i> ❖ Truly declining prevalence resulting from good continuing NTP performance, therefore lower disease transmission 	<ul style="list-style-type: none"> ❖ Improve case finding activities (see possible recommendations related to low CDR) ❖ Continue the good work! If consistent trend of decline over 3 years, consider expanding to other TB services – e.g. TB in prisons, other vulnerable populations and congregate settings, and active case finding activities.
Persistently low/declining CNR (in an “acceptable” CDR setting) ❖ All forms	<ul style="list-style-type: none"> ❖ Poor case finding results in artificially low CNR or its drastic decline (see possible issues related to low CDR even if CDR target is met) <i>Note: incidence/</i> 	<ul style="list-style-type: none"> ❖ Improve case finding activities (see possible recommendations related to low CDR even if CDR target is met)

Indicator	Issue(s)	Recommended Intervention(s)
	<p><i>prevalence not likely to significantly change from year to year.</i></p> <ul style="list-style-type: none"> ❖ Truly declining prevalence resulting from good continuing NTP performance, therefore lower disease transmission 	<ul style="list-style-type: none"> ❖ Continue the good work! If consistent trend of decline over 3 years, consider intensified case finding activities and expanding to other TB services – e.g. TB in prisons, other vulnerable populations and congregate settings
Persistently high/increasing CNR ❖ All forms ❖ NSP	(See possible issues related to high CDR)	(same recommended interventions as high CDR)

The quality of case finding activities may somehow be reflected by the proportions of infectious or smear-positive cases; and the less/non-infectious childhood TB cases and/or extra-pulmonary cases to the rest of the notified cases. In view of the current thrust for TB-all forms, it is possible to concentrate on finding the latter set of cases and meet targets for TB-all forms while missing out on the former – the ones likely to be associated with disease transmission within the community. It is therefore recommended that there be reasonable proportions of these cases. Sub-analyses of the notified cases may therefore be done to provide additional evaluation of the quality of case finding activities.

Percent of childhood TB cases among all cases of TB-all forms: This proportion assesses the level of effort exerted in finding childhood TB cases within the community. The NTP target is not less than 5% but not more than 20% of the total cases of TB-all forms. A very low proportion of childhood TB cases may imply either poor case finding or minimal disease transmission within the community due to low smear-positive cases. A high proportion of childhood TB cases imply ongoing disease transmission from a significant number of infectious adolescent/adult cases within the community. Remember, childhood TB cases are usually non-infectious as they are often limited to hilar lymph nodes (i.e., the Ghon’s complex) and with no communication to the airways; hence, pauci-bacillary.

Indicator	Issue(s)	Recommended Intervention(s)
Target = Not less than 5%/Not more than 20%		
Low proportion of childhood TB cases	<ul style="list-style-type: none"> ❖ Poor case finding for childhood TB cases <ul style="list-style-type: none"> ● Poor quality of diagnostic services <ul style="list-style-type: none"> ○ Improper technique of tuberculin skin test (TST) – e.g., subcutaneous injection instead of intradermal ○ Poor quality of PPD solution for TST – i.e., expired or not properly stored ○ Stockout of PPD solution and/or tuberculin syringes 	<ul style="list-style-type: none"> ❖ Improve case finding activities for childhood TB by addressing key issues <ul style="list-style-type: none"> ● Improve quality of diagnostic services <ul style="list-style-type: none"> ○ Have HW trained on TST and, if needed, increase the number of standard readers ○ Proper cold storage of PPD solution and disposal of expired reagents ○ Proper logistical support to avoid stockouts – i.e., good case load

Indicator	Issue(s)	Recommended Intervention(s)
	<ul style="list-style-type: none"> o Overdependence on TST for TB diagnosis; health worker (HW) not familiar with approach to presumptive TB cases among children even in the absence of PPD for TST o Limited access to CXR services ● Low/minimal screening rates for TB among children <ul style="list-style-type: none"> o Understaffed or lack of manpower o Unable to deal with the many health program initiatives o Health workers often unavailable due to various trainings/responsibilities o Overemphasis on other forms of TB that childhood cases are overlooked since more tedious and/or health workers with low motivation ❖Low demand for childhood TB services <ul style="list-style-type: none"> ● Low awareness of TB symptoms and available childhood TB services ● Perception of poor quality of services for childhood TB ● Parents' preference for private MD consultations ● Private healthcare providers see most of the childhood TB cases ❖Low incidence/prevalence among children due to minimal disease transmission associated with low infectious or smear-positive cases within the community 	<ul style="list-style-type: none"> projections, coordination with resource provider, LGU counterpart fund for own procurement o Review 5 criteria for diagnosing TB in Children and promote the use of Xpert MTB/RIF for childhood TB o Network with private CXR facilities ●Set case finding targets for childhood TB cases o Lobby to LCEs and LHBs for additional plantilla/job order positions to beef-up staffing; and/or to provide incentives to attract more volunteers and minimize attrition o Consider local recognitions (e.g., Manuel L. Quezon Awards during National TB Day) for best performing TB health workers in childhood TB screening as additional incentive and set targets for childhood TB ❖Increase demand for childhood TB services <ul style="list-style-type: none"> ● Increase community awareness of TB symptoms and available service for TB, including pediatric cases ● Improve quality of childhood TB services ● Do ACSM/behavior change interventions ● Engage private healthcare providers for referrals ❖Continue high quality DOTS

Indicator	Issue(s)	Recommended Intervention(s)
High proportion of childhood TB cases	<ul style="list-style-type: none"> ❖ Overemphasis on childhood cases that other forms of TB are overlooked since easier to find and a “captured market” ❖ High prevalence of infectious or smear-positive cases cause disease transmission to children 	<ul style="list-style-type: none"> ❖ Set targets for the various forms of TB ❖ Work for greater TB control with increased focus on limiting disease transmission – identify and treat smear-positive cases under DOTS

Percent of new bacteriologically confirmed TB cases among adult TB (all forms) cases: This proportion assesses the adequacy of bacteriologic diagnosis for TB suspects, specifically the utilization of laboratory services by diagnosing clinicians for determining whether a TB suspect has infectious TB.

In program conditions in countries with medium or high TB burden, over two-thirds of pulmonary TB in adults should present with positive smears. Under program conditions, when microscopy laboratory services are available and diagnostic criteria are properly applied, pulmonary TB smear-positive cases represent at least 65% of the total pulmonary TB cases in adults and 50% or more of all TB cases. Utilization of Xpert MTB/RIF, however, further improves bacteriologic confirmation.

Indicator	Issue(s)	Recommended Intervention(s)
Target = at least 50%		
Low proportion of BC cases	<ul style="list-style-type: none"> ❖ Poor detection of infectious cases <ul style="list-style-type: none"> ● Poor quality of laboratory services (see same issue in low CDR) ❖ Overemphasis on TB all forms that infectious cases are overlooked ❖ Overdependence on CXR for TB diagnosis ❖ Hospital-based DOTS clinic tend to see more EPTB cases as referral centers ❖ High prevalence of HIV (mostly Sm-neg) 	<ul style="list-style-type: none"> ❖ Improve case finding activities for infectious cases <ul style="list-style-type: none"> ● Improve quality of laboratory services (see same issue in low CDR) ❖ Promote DSSM as diagnostic modality of choice for PTB <ul style="list-style-type: none"> ● Improve access to DSSM ❖ Promote Xpert MTB/RIF for children, Sm+/CXR+ presumptive TB adults and HIV/AIDS
High proportion of BC cases	<ul style="list-style-type: none"> ❖ High false positive cases due to poor quality of laboratory services (see same issue in high CDR) ❖ Selection bias for cases submitted for DSSM limited to frank/highly suspected TB cases ❖ High prevalence of infectious or smear-positive cases 	<ul style="list-style-type: none"> ❖ Improve quality of laboratory services by addressing key issues (see same issue in high CDR) ❖ Offer DSSM also for those who meet criteria for presumptive TB ❖ Continue high quality DOTS

Percent of retreatment cases among all TB cases: This proportion represents the percentage of TB patients who require more extensive treatment and should be suspected of having acquired drug resistance. Ineffective treatment or incorrect administration of medication may result in a large proportion of retreatment cases, which points to deficiencies in the medication used and/or non-adherence to DOTS on the part of patients and providers. This indicator indirectly reveals the effectiveness of the NTP, since under a well-functioning TB control program, re-treatment cases should make up a smaller proportion than new cases.

This proportion is reduced by 10 to 20% with good program quality, particularly because of a reduction in defaulters.

Indicator	Issue(s)	Recommended Intervention(s)
Target = not more than 20%		
Low proportion of retreatment cases	<ul style="list-style-type: none"> ❖ Overemphasis on other forms of TB that retreatment cases are overlooked ❖ Good case holding <ul style="list-style-type: none"> ● Low defaulters requiring retreatment ● Low prevalence of TB, including retreatment cases 	<ul style="list-style-type: none"> ❖ Equal focus of case finding activities among the various forms of TB based on projected rates ❖ Continue high quality DOTS
High proportion of retreatment cases	<ul style="list-style-type: none"> ❖ Poor case holding of new cases <ul style="list-style-type: none"> ● Poor awareness of patients on recommended treatment duration, the importance of compliance and risk of DRTB with retreatment ❖ Unengaged private medical practitioners <ul style="list-style-type: none"> ● Poor awareness of free TB treatment for their indigent patients leads to referrals of partially treated cases 	<ul style="list-style-type: none"> ❖ Improve case holding by addressing key issues appropriately <ul style="list-style-type: none"> ● Hold patient education sessions ● Improve IPCC ❖ Engage private medical practitioners as referring MDs or DOTS providers <ul style="list-style-type: none"> ● Increase awareness among private medical practitioners of quality DOTS services

Percent of new extra-pulmonary TB (EPTB) cases among all TB cases: Typically, extra-pulmonary TB cases should make up the minority of TB cases (10 to 15%). This may be reported at higher rates in hospitals equipped with appropriate anatomic and clinical laboratory, imaging facilities and other special ancillary modalities due to selection bias for the health facility capable of special diagnostics.

Indicator	Issue(s)	Recommended Intervention(s)
Target = not more than 15%		
High proportion of EPTB cases	<ul style="list-style-type: none"> ❖ Hospital is a referral center for EPTB due to availability of diagnostic services ❖ DOTS facility as the recipient of referred EPTB cases from such a hospital or specialists 	<ul style="list-style-type: none"> ❖ Continue high quality DOTS

3) EQA concordance of DSSM interpretation:

This indicator reflects the quality of microscopy services with ideally less than 5% major errors (or >95% agreement or concordance). NTRL ratings of EQA concordance are as follows -

Excellent	- 90% agreement and above
Good	- 60 to 89% agreement
Needs improvement	- less than 50% agreement

This is influenced by the skills and training of the microscopists, their workload (i.e., WHO recommends 20-25 slides read per day while NTP accepts up to 30 slides for light microscopy), the quality of sputum and smear preparation, quality of equipment and reagents, and staffing requirements.

Indicator	Issue(s)	Recommended Intervention(s)
Target = more than 95%		
Low concordance	❖ Poor quality of laboratory services for DSSM (see same issue in low CDR)	❖ Improve the quality of laboratory services for DSSM (see same issue in low CDR)

4) Sputum conversion rate:

Sputum smear conversion after 2 or 3 months of treatment is a good predictor of eventual cure if treatment is completed.

The majority of new smear-positive pulmonary TB patients should convert their smear to negative after 2 or 3 months of treatment. However, at 2 months, good laboratory technicians can often detect low grades of positivity, and the positivity rate can still be as high as 25%, even if the initial phase of treatment is well supervised and the drugs are of good quality. If adherence to treatment is poor or if sputum is not collected at the end of the initial phase, this indicator will be low. Other reasons for a low value could be a slow rate of progress with smear conversion because of extensive cavitation and a heavy initial bacillary load or, rarely, drug resistance that does not respond to first-line therapy.

Low rates of smear conversion after the initial phase of treatment among retreatment patients are an indication of possible drug resistance.

Indicator	Issue(s)	Recommended Intervention(s)
Target = at least 90%		
Low conversion rates after the intensive phase	❖ Poor case holding <ul style="list-style-type: none"> ● No actual DOTS done – i.e., mere drug distribution without observed drug intake by patients ● Poor patient compliance when not reporting to the clinic ❖ Poor quality anti-TB drugs	❖ Improve case holding by addressing key issues appropriately <ul style="list-style-type: none"> ● Observe DOT strictly ● Choose treatment partners wisely ❖ Report if quality of anti-TB drugs is questionable <ul style="list-style-type: none"> ● Submit sample for quality check

5) Cure rate:

Evaluation of treatment outcomes of patients is used to determine NTP quality and effectiveness. WHO has recommended that NTPs achieve at least 85% treatment success (defined as the proportion of registered patients who were cured plus the proportion who completed treatment) to curtail the TB epidemic. Cured patients are the preferable contribution to the numerator of treatment success.

The current NTP target is 90%, up from the previous 85%.

Indicator	Issue(s)	Recommended Intervention(s)
Target = 90%		
Low cure rates	<ul style="list-style-type: none">❖ Poor case holding<ul style="list-style-type: none">● No follow-up sputum exams● Poor cohort analysis due to inaccurate data	<ul style="list-style-type: none">❖ Improve case holding by addressing key issues appropriately<ul style="list-style-type: none">● Complete all follow-up sputum exams as recommended● Do regular MSE at all levels, focusing on on-the-job mentoring

6) Treatment completion rate:

This indicator measures the success of the NTP in ensuring that TB patients who cannot be classified as cured actually complete their course of treatment.

When cure cannot be established, treatment completion is the best means of ensuring that patients have been adequately treated. However, cure is always a preferable outcome to treatment completion.

7) Treatment success rate:

This indicator measures a program's capacity to retain patients through a complete course of chemotherapy with a favorable clinical result. It is the only outcome indicator that can (and should) be used at all levels (e.g., from operational level to international level). It is influenced by a variety of factors (e.g., uninterrupted drug supply, supportive environment for the patient).

For new smear-positive cases, there is a target of 90% treatment success, assuming the combined death, failure and default rates to be about 10%.

For pulmonary smear-positive cases, the cure rate is more trustworthy—or more valuable—than the success rate because patients who completed treatment but who do not have bacteriological confirmation of cure could conceivably still have smear-positive TB disease.

Success among retreatment case types is normally lower than that for new patients — more so for treatment-after-failure (because previous failure may have been due to drug resistance) and treatment-after-lost-to-follow-up cases (because cases that defaulted previously are likely to have poor compliance and/or drug resistance) than for relapse cases.