

TUBERCULOSIS CONTROL IN INDONESIA 2022

Directorate General of Prevention and Disease Control



MINISTRY OF HEALTH
REPUBLIC OF INDONESIA

Background

a) History of TB (Major milestones 2019-2022)

Tuberculosis (TB) is a communicable disease that is a major cause of ill health and one of the leading causes of death worldwide. Until the coronavirus (COVID-19) pandemic, TB was the leading cause of death from a single infectious agent, ranking above HIV/AIDS. The problem of TB is a challenge for us and the whole world community. TB is one of the 10 leading causes of death in the world. Currently, Indonesia is the second largest contributor to TB cases in the world, after India.

2018: UN High Level Meeting, the first ever UN General Assembly high level meeting on tuberculosis which was held on 26 September 2018 supports ending TB.

2020:

- The Ministry of Health issued a TB Service Protocol during the Covid-19 Pandemic to ensure TB services continued to run well.
- The #BersamaKitaSehat campaign invites the public to "Together Towards Eliminating TB and Fighting Covid-19".
- There is a TB Information System (SITB) which is a recording and reporting application that is used by all stakeholders starting from health service facilities, District Health Offices / Province and Ministry of Health, to record and report cases of Sensitive TB, Drug Resistant TB, laboratories and logistics in one integrated platform.

2021:

- The Ministry of Health and the Ministry of Education, Culture, Research and Technology have jointly prepared a guideline, namely "TBC care school guidelines".
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- This guideline is part of the implementation carried out by cross-sectors with the spearhead of course the coaches school health enterprises both at the province and district levels in supporting and participating in the promotion and prevention of TB transmission.
- There was a launch of Presidential TB Initiative No. 67 of 2021 concerning Tuberculosis Control. In the context of the initial launch of Presidential TB Initiative No. 67 of 2021, the Coordinating Minister for Human Development and Culture, Minister of Health, Minister of Home Affairs, Minister of Bappenas are jointly committed to accelerating the elimination of TB in accordance with the direction of the President of the Republic of Indonesia which is also contained in the text of Presidential TB Initiative No. 67 of 2021.

2022:

- UN General Assembly Indonesia and WHO co-hosted a high-level UN General Assembly side event entitled "Progress and multisectoral action towards achieving the global target to end tuberculosis".
- The Tuberculosis Prevention Partnership Forum (WKPTB) launched an action to increase the role of the community & partners in TB control with a focus on advocacy, promotive, preventive and complementary, curative, rehabilitative efforts based on the principle of partnership with a target of receiving benefits, namely PROTECTION Action.
- As the 2022 G20 presidency, Indonesia through the Indonesian Ministry of Health supported by STPI and the Stop TB Partnership held a

Tuberculosis side event at the first meeting of the Health Working Group. Indonesia is encouraging global leaders to increase investment to end the tuberculosis epidemic as they strengthen their health systems to cope with the new pandemic.

- Active detection of tuberculosis cases is carried out using the Chest X-Ray method.

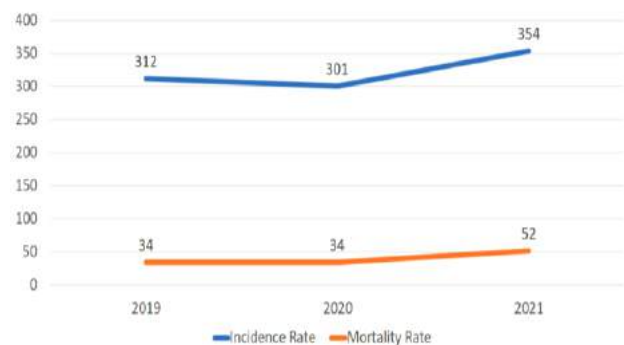
- The Global Fund collects and invests funds in a three-year cycle, this activity is known as Replenishment. In September 2022, the Global Fund launched the 7th replenishment fundraising cycle which will take place from 2023 – 2025. In this meeting, the Minister of Health emphasized several important matters in the handling of HIV, TB and Malaria, especially in Indonesia.

TB Burden in Indonesia

Based on WHO estimation, Indonesia is ranked as the 2nd country with the highest TB burden. In 2021, TB incidence rate is 354 per 100.000 populations; TB incidence rate among HIV+ is 8 per 100.000 populations; DR-TB incidence rate is 10 per 100.000 populations; TB mortality rate is 52 per 100.000 populations; and TB mortality rate among HIV+ is 2 per 100.000 populations.

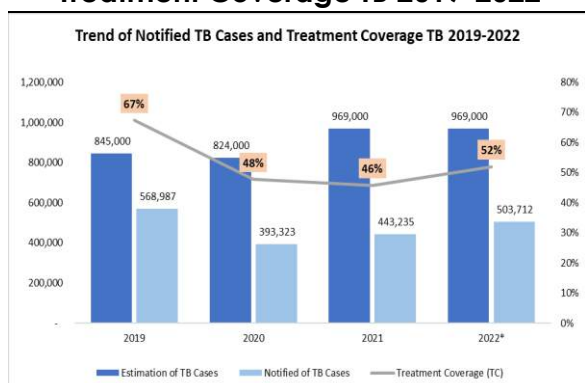
Graph 1. Trend of Estimated Burden of TB in Indonesia 2019-2021

(Source: Global TB Report 2020-2022)



Treatment Coverage and Treatment Success Rate 2019-2022

Graph 2. Trend of Notified TB cases and Treatment Coverage TB 2019-2022

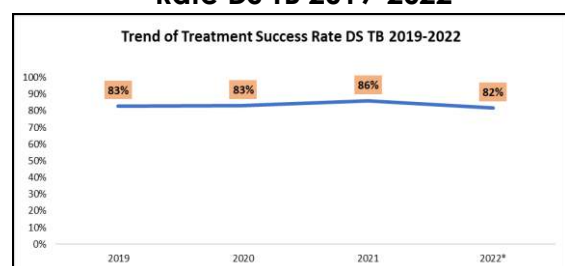


Based on the absolute value, the number of TB case notifications decreased in 2020 by 175,664 cases from 2019. 2020 was the start of the COVID-19 pandemic so that the detection of TB cases decreased. Efforts to find cases will be carried out in 2021 so that there will be an increase in case detection in 2021 of 49,912, but this number is not optimal enough to accelerate TB case detection. The decrease in the number of case findings during the pandemic has led to a fairly high increase in estimated incidents from 2020 of 824,000 to 969,000 in 2021. Until October 2022 TB case detection was

503,712, this figure indicates an increase in case detection of 60,477 compared to 2021. The number of increased cases is also greater when compared to the number of increased cases from 2020 to 2021.

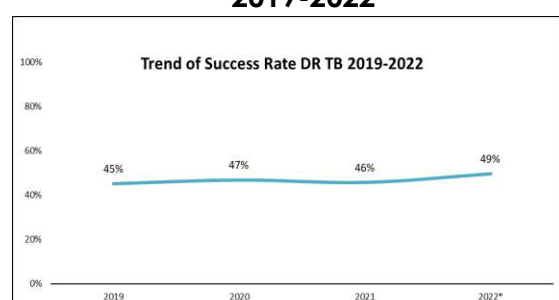
Treatment Coverage (TC) describes how many tuberculosis cases are found and can be reached by the Tuberculosis Control program compared to the estimated existing TB cases. Based on the graph above, there was a decrease in TC in 2020 and 2021 but it started to increase in 2022. Until 1st November 2022 TC in 2022 is 52% of target 90%.

Graph 3. Trend of Treatment Success Rate DS TB 2019-2022

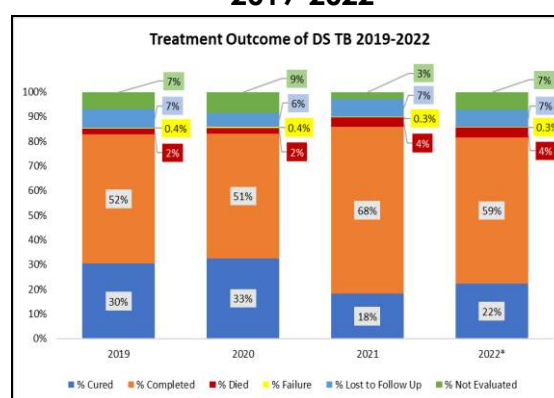


There has been an increase in the Treatment Success Rate (TSR) in 2021, but until October 2022 TSR for 2022 is still 82% of target 90%.

Graph 5. Trend of Success Rate DR TB 2019-2022

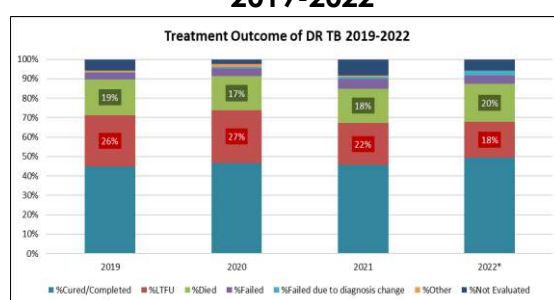


Graph 4. Treatment Outcome of DS TB 2019-2022



The graph above shows trends of Treatment Outcomes TB patients in 2019-2022. There was a 15% decrease of cured in treatment outcome 2021 and 10% increase in the completed of treatment outcome. In 2021 treatment outcome of death was decrease from 2% to 4%. In 2022 until 1st November 2022, the death of treatment outcome is 4% while not evaluated is 7%, this figure has increased compared to the previous year.

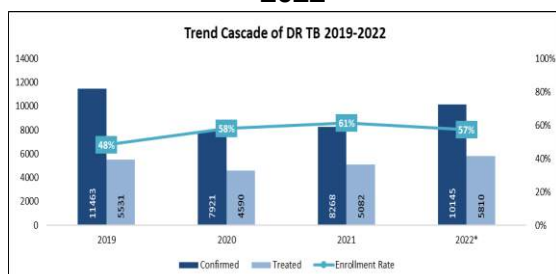
Graph 6. Treatment Outcome of DR TB 2019-2022



The target of Treatment Success Rate DR-TB in 2021 was not achieve 75%. The TSR of DR TB still low due to high proportion of died and lost to follow up during DR TB treatment. In 2022 until 1st November 2022 TSR of DR TB is quite higher than the last year.

DR TB Case Finding 2019-2022

Graph 7. Trend Cascade of DR TB 2019-2022*

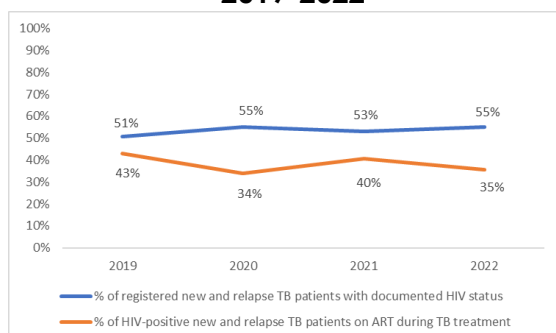


*data 2022 per 1st Nov 2022

The enrollment rate of DR TB has increased in the last four years. The enrollment rate of patients to start DR TB Treatment is strengthened by eliminating the barrier from the patient through expanding DR TB referral hospitals and providing enablers for patients when diagnostic tests result's Rif Res.

TB HIV Case Notification 2019-2022

Graph 8. Trend TB HIV Case Notification 2019-2022*



Source data:

2019-2021: Final Global TB Report

2022: TB.03 SITB+WIFI TB data as of Oct 18th, 2022

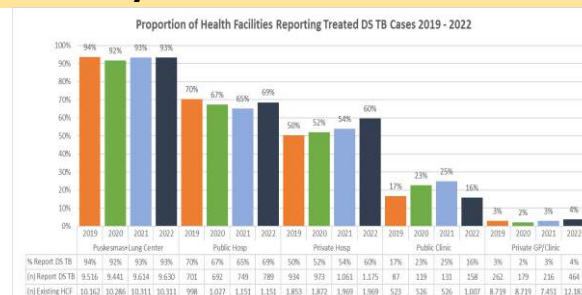
in 2020 and 2022 of 55%. In addition, the number of confirmed TB-HIV cases receiving ARVs also fluctuated from the 2019-2022 period with the highest achievement of TB-HIV cases confirmed to receive ARVs in 2019 at 43%.

The achievement of HIV testing among TB patients and ARV in TB-HIV patients remains a challenge. Several reasons are difficult to achieve targets such as stigma, the COVID-19 pandemic starting in early 2020 so that TB-HIV patients were reluctant to come to health care facilities to take medicine because they were fear to be transmitted by COVID-19, under reporting, and SITB and SIHA have not been integrated as well

TB Service

1. Fasyankes lapor berdasarkan jenis fasyankes tahun 2019-2022

Graph 9. Proportion of Health Facilities treated DS TB Cases 2019-2022*



Source data:

2019-2021: Final Global TB Report
 2022: TB.03 SITB+WIFI TB data as of Oct 18th, 2022

The proportion of healthcare facilities reporting treated DS TB cases tends to increase from 2020-2022 at Puskesmas & Lung Center, Public Hospital, and Private

Hospital. In absolute numbers, the number of all healthcare facilities reporting DS TB in 2022 has at least exceeded the number in 2019 (year before the COVID-19 pandemic). The contribution of Private GP/Clinic and Public Clinic in reporting TB cases needs to be increased.

2. DR TB Referral Hospital and Satellite Facilities

DR-TB services are available at 383 hospitals in 350 districts and 5.733 satellite facilities in 461 districts established by October 18th 2022. Number of facilities are expanded to enhance access to DR TB treatment.



Figure 1. Mapping of DR TB Referral Hospital



Figure 2. Mapping of DR TB Satellite Facilities

3. Implementation of universal access to drug susceptibility testing (DST)

The global strategy for TB prevention, care and control for 2015–2035, known as the End TB Strategy calls for the early diagnosis of TB and universal DST. In order to meet the End TB Strategy targets, WHO-recommended molecular rapid TB diagnostics (WRDs) should be made available to all individuals with signs or symptoms of TB, all bacteriologically confirmed TB patients should receive DST at least for rifampicin (RIF) and all patients with RR-TB should receive DST at least for fluoroquinolones (FQs). Indonesia has utilized GeneXpert for diagnosis of DR TB since 2012. At the beginning, GeneXpert was prioritized for diagnosis of DR TB and HIV TB only. However, after the number

of GeneXpert machines increased, NTP then updated the policy that GeneXpert was also being used to diagnose all types of presumptive TB.

MoH officially established rapid molecular test (GeneXpert) as the main diagnostic tool for tuberculosis through the Circular Letter (surat edaran/SE) of the Director General for Disease Prevention and Control No. HK .02.02/III.1/936/2021 concerning Update on TB Diagnosis Algorithm and Treatment in April 2021. As of September 2022, 1.812 Xpert machines were distributed to 1683 health facilities (725 hospitals + 33 laboratories + 925 puskesmas) in 500

(97%) districts and 34 (100%) provinces in Indonesia. It means additional 896 GeneXpert machines deployed since the previous JEMM in 2020 and 682 of them placed in puskesmas. In addition, the proportion of presumptive TB diagnosed using GeneXpert also reached 69%.



Figure 3. Mapping of GeneXpert distribution as of September 2022

Graph 10. Utilization of GeneXpert 2017 – August 2022



Utilization rate of GeneXpert nationally improved from year to year to reach 50% in 2019, but experienced a significant decline during the COVID-19 pandemic to 32% and 31% respectively in 2020 and 2021. During January – September 2022 period, GeneXpert utilization rate is starting to rebound 47%. Specimen transportation was also strengthened to link health facilities with GeneXpert sites. 63 % specimens tested with GeneXpert in 2022 (Jan – September) come from external linkage both from public and private providers.

No	Indikator dan target utama lab TB	Baseline 2018	Target 2020	Target 2021	Target 2022	Target 2023	Target 2024
1	Persentase laboratorium Mikroskopis yang mengikuti FME (Percentage of Microscopic laboratories participated in EQA)	42%	70%	75%	80%	85%	90%
2	Jumlah laboratorium rujukan biakan TBC (Number of TB culture reference laboratories)	21	28	34	38	42	46
3	Jumlah laboratorium rujukan uji kepekaan TBC (Number of TB DST reference laboratories)	12	16	20	22	24	24
4a	Jumlah fasilitas kesehatan yang dilengkapi dengan GeneXpert sebagai pemeriksaan awal TBC (Number of health facilities equipped with GeneXpert for TB initial diagnostic)	834	1.244	1.744	2.107	2.107	2.107
4b	Jumlah kebutuhan mesin TCM (Number of rapid molecular test machine requirements)	890	1.2%	1.7%	2.133	2.133	2.133
5	Jumlah fasilitas TBC RO yang dilengkapi dengan modul XDR (H, FQ, S/I) (Number of DR TB health facilities equipped with XDR modules (H, FQ, S/I))	0	0	89	134	340	549
6	Jumlah Kab/Kota dengan sistem transportasi spesimen (Number of districts with specimen transportation system)	203	292	344	420	514	514
7	Taraf cakupan uji kepekaan universal (Universal DST coverage)	20%	45%	45%	70%	70%	75%

Figure 4. Main TB laboratory target and indicator in National Strategic Plan 2020-2024

According to National Strategic Plan 2020-2024, NTP is targeting to have at least 2,133 GeneXpert machines at 2,107 health facilities and 75% of presumptive TB diagnosed using GeneXpert by 2024.

Following are activities that support implementation of universal access to DST:

- NTP continues to deploy more Xpert machines in the country. Procurement of 375 Xpert machines through national funding (APBN) and 100 machines under Global Fund.
- Updating Xpert technical guideline to accommodate the latest WHO recommendation, GeneXpert technology and NTP policy. The previous edition was published by the Ministry of Health in 2018.
- Xpert Workshop/training for the new Xpert sites. Following are training materials which were delivered during the workshop:
 1. National Tuberculosis Control Program Policy
 2. GeneXpert technology
 3. TB diagnosis algorithm
 4. Logistics Management
 5. Global Fund operational financing
 6. Specimen transportation system
 7. Recording and reporting system

8. Xpert connectivity
9. TB information system (SITB)
10. TB laboratory biosafety
11. Specimen handling & laboratory procedures (pre-analysis)
12. GeneXpert test procedure (analysis and post analysis).
13. GeneXpert maintenance and troubleshooting



Figure 5. Xpert workshop for the new sites

- Implementation of Xpert MTB/RIF Ultra cartridges which is more sensitive compared to the existing Xpert MTB/RIF cartridge. In addition, Cepheid was informed NTP that they will replace Xpert MTB/RIF with Xpert MTB/RIF Ultra cartridge in 2023.
- Implementation of Xpert service contract. In order to ensure broken Xpert machines can be repaired quickly and yearly calibration can be done on time, warranty of 973 GeneXpert machines whose expires in 2021 already extended for 3 years until 2025.
- Implementation of Xpert connectivity software (GxAlert). The expansion of GxAlert continues. In 2021, additional 171 GeneXpert machines were installed with GxAlert in 161 Xpert sites in 141 districts and 33 provinces. Therefore, a total of 357 Xpert machines have been installed with GxAlert in 302 health facilities in 197 districts and 33 provinces in 2021. As of mid-November 2022, 428 GeneXpert machines are already equipped with the connectivity software.
- Preparation for Implementation of GeneXpert Xpert MTB/XDR cartridge. Xpert MTB/XDR is able to detect resistance to INH, fluoroquinolone, second-line injectable drugs (Amikacin, Kanamycin, Capreomycin) and ethionamide. Therefore, Xpert MTB/XDR, apart from being a follow-on test for rifampicin resistance, it also can be used to examine INH resistance for patients with history of TB treatment who are still susceptible to rifampicin.
- Preparation for Implementation of other molecular diagnostic tools for TB. WHO through Rapid Communication: Molecular assays as initial tests for the diagnosis of tuberculosis and rifampicin resistance stated that Truenat's performance was comparable to the GeneXpert for the diagnosis of tuberculosis and detection of resistance to Rifampicin. Procurement of 30 units of Truenat through national funding (APBN) is in progress.

4. TB Laboratory mapping and strengthening of culture/drug susceptibility testing (DST) laboratory network

Molecular rapid test (MRT) have been established as the main diagnostic tool for tuberculosis, but in conditions where health care facilities experience problems accessing MRT services such as transportation difficulties, distance and

geographical constraints, the diagnosis can still be done by AFB microscopy. In addition, the role of AFB microscopy is still needed and has not been replaced, especially for treatment monitoring which

cannot be carried out with molecular based technology.

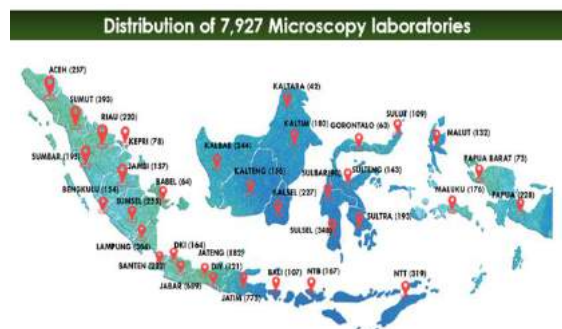


Figure 6. Distribution of 7,927 Microscopy health facilities/laboratories

There are total of 7,927 microscopy health facilities in Indonesia. Central Java, East Java and West Java are the provinces with the highest number of microscopy health facilities with 882, 775 and 689 health facilities respectively. North Kalimantan, Gorontalo and Bangka Belitung are the 3 provinces with the least number of microscopy health facilities with 42, 63 and 64 health facilities respectively.

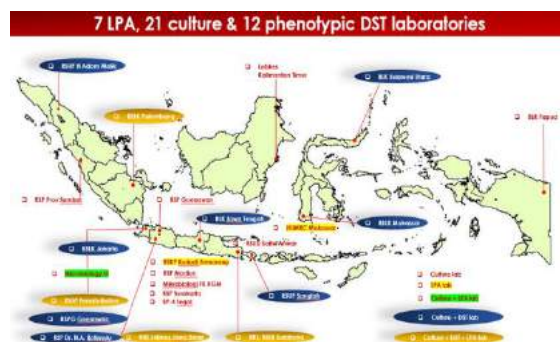


Figure 7. Mapping of LPA, Culture and phenotypic DST laboratories

NTP continues to strengthen phenotypic drug susceptibility testing (DST) laboratory networks since genotypic DST such as Xpert and SL LPA has not been able to accommodate DST for all TB drugs especially for the new TB drugs (Bedaquiline, Linezolid, Clofazimine, Delamanid etc). As of September 2022, there are 7-line probe assay (LPA)

reference laboratories, 21 culture laboratories, 12 phenotypic DST laboratories available in Indonesia. All those reference laboratories cover services nationwide through the specimen transport system. As stated in the National Strategy Plan for Tuberculosis Control in Indonesia 2020-2024, NTP is committed to support expansion of phenotypic DST laboratories and targets to have 24 laboratories by 2024.



Figure 8. Coverage of SL LPA and DST 2014 - 2022

Coverage of SL LPA and DST was also influenced by the proportion of DR-TB patients who started treatment as specimen is collected when the patient comes to the DR TB health facility to start treatment. During January – September 2022, there were 6,725 TB patients who were confirmed to be resistant to rifampicin and 2,922 (43%) patients had phenotypic DST results and 5,239 (78%) had SL LPA results.

Following are some activities for strengthening and expansion of phenotypic DST laboratory network:

- Updating culture/DST technical guideline.
- ❖ The previous edition was published by the Ministry of Health in 2018. Updating the technical guidelines is required to accommodate culture and DST using liquid method (MGIT), culture and DST using non-sputum specimens and DST using new second-line drugs such as

Bedaquiline, Linezolid and Clofazimine.

- TB laboratory renovation
 - ❖ 4 TB culture laboratories and 4 DST laboratories will be renovated through GF ATM funding in 2022-2023 to meet BSL-2 and BSL-2 plus standard respectively. Basic laboratory design is available for all 8 (eight) laboratories and development of detailed lab designs, specifications and draft budgets (RAB) for above DST lab candidates are in progress.
 - ❖ 4 (four) DST lab candidates as follow:
 1. Balai Kesehatan Paru Masyarakat Cirebon, Jawa Barat
 2. BP-4 Kota Tegal, Jawa Tengah
 3. RSUD Moewardi Solo, Jawa Tengah
 4. RSUD dr. Saiful Anwar Malang, Jawa Timur
 - ❖ Following are 4 (four) Culture Lab candidates:
 1. RSUD Provinsi NTB
 2. Balai Laboratorium Kesehatan Provinsi Lampung
 3. Laboratorium Kesehatan Provinsi Sulawesi Tengah (BLK Palu)
 4. RSUD Doris Sylvanus Palangkaraya, Kalimantan Tengah



Figure 9. Onsite assessment for preparation of TB Lab renovation

- Maintaining DST external quality assurance (EQA).
 - ❖ 12 laboratories were successfully passed the EQA panel test and certified to conduct DST for following drugs and concentrations (standardized DST package/ SDP):
 1. Isoniazid (H) low concentration (0.1)
 2. Isoniazid (H) high concentration (0.4)
 3. Moxifloxacin (Mfx) high concentration (1.0)
 4. Bedaquiline (BDQ)
 5. Linezolid (Lzd)
 6. Clofazimine (Cfz)
 7. Levofloxacin (Lfx)
 8. Pyrazinamide (Z)
 - ❖ The kind of drugs included in the Standardized DST packages (SDP) are adjusted according to the need of PMDT, referring to the drugs to be given to the DR TB patients.

Lesson Learned

1. Tuberculosis Control Efforts during the COVID-19 Pandemic

As an effort to tackle TB during the Covid-19 pandemic, the Ministry of Health issued a circular letter number PM.01.02/1/840/2020 about Continuity of Tuberculosis Services during the Covid-19

pandemic. It contains several guidelines, including:

a) Precautions

- Every TB patient will receive a surgical mask that must be worn when the patient is taking control

- of treatment or doing activities outside the home
- TB patients are strongly advised to limit activities outside the home to avoid the possibility of being exposed to the SARS Cov-2 virus that causes COVID-19.
- The queuing process in TB services must be avoided or minimized, especially in places where patients gather, such as registration counters, queues for supporting laboratory tests and drug collection at pharmacies.

b) Management and planning

- The provision of patient-centered TB services including prevention, diagnosis, and treatment must be ensured that they are carried out together with efforts to tackle COVID-19.
- Planning and monitoring the availability of appropriate logistics is very important to ensure that the procurement and supply of TB drugs and diagnostic facilities are not disrupted.
- Change the modality of the campaign through communication channels that are safe and do not gather the masses, for example through radio, billboards, social media and print media.
- TB program managers are expected to make a contingency plan for TB management by making;
 - ❖ Plans for the need for TB drugs and other logistics including masks
 - ❖ Mapping and appointment of a temporary DR TB referral health facility (separate from the COVID-19 health facility) signed by the head of the local health office

- ❖ Plans to monitor TB patients' treatment using digital technology or WA numbers, hotlines according to local capabilities
- ❖ Mapping in the involvement of the local community for patient assistance

c) Human Resources

- Specialist Doctors and Doctors who have been trained in TB as well as other health workers who work in primary and secondary health care facilities can be ordered by local health authorities to become health workers who provide treatment for patients with pulmonary complications due to COVID-19 and must follow the Guidelines for Prevention and Infection Control issued by the Ministry of Health and WHO's latest recommendations on supportive treatment and efforts to reduce the spread of COVID-19.
- Early detection and effective supportive treatment can reduce morbidity and mortality from COVID-19 as occurs in most TB diseases.

d) Care and Treatment

- Health workers involved in TB control programs have experience and capacity in active case finding and contact tracing so that they can become a referral source for sharing knowledge and expertise and can be empowered to provide technical support and logistical management in overcoming the COVID-19 Pandemic.
- The recommended principle is that TB treatment continues without the patient having to visit

the TB health facility too often to take OAT. Availability of drug stocks to deal with side effects of treatment must also be guaranteed.

- Treatment monitoring can be carried out electronically using non-face-to-face methods, for example through video call facilities from mobile applications that have been proven to be able to help patients complete their TB treatment.
- TB services should not be stopped, including if TB service facilities (especially DR TB referral services) are also places for COVID-19 referral services.
- District TB program managers need to establish TB service hotlines in their respective areas to anticipate patients/families who need further information about the continuation of their treatment.

e) Laboratory Services

- Continue to collect and examine sputum according to the applicable SOP referring to Infection Prevention Procedures.
- All TB examinations such as smear microscopy, TCM, LPA, culture

and TB sensitivity tests are carried out in appropriate laboratories and meet the requirements for the level of security and safety for each type of TB examination, including the use of appropriate PPE.

- The referral network for culture, sensitivity testing and second-line LPA has not changed and still refers to the Circular Letter of the Director of P2PML concerning the Division of Tuberculosis Inspection Referral Areas issued on August 29, 2019.
- If there are special conditions that require adjustments to the referral laboratory for culture examination, sensitivity testing and second-line LPA, the TB Sub-Directorate will inform the Provincial Health Office and the relevant Referral Laboratory.
- Delivery of sputum must continue to be carried out, if there are problems with the applicable system, immediately make changes and adjustments taking into account the conditions and resources in the area. It is not recommended to send patients directly to other health facilities for TB diagnostic laboratory tests.

2. Efforts to follow up Presidential Regulation No. 67 Year 2021

- a) In August 2021, socialization of presidential regulation number 67 of 2021 was carried out which was



attended by the Coordinating Minister for Human Development and Culture, Minister of Health, Minister of Bappenas, House of Representatives Commission IX, and Chair of the Stop TB Partnership Indonesia Advisory Board. At this meeting, they are jointly committed to accelerating the elimination of TB in accordance with the direction of the President of the Republic of Indonesia which

is also contained in the text of Presidential Decree No. 67 of 2021.

Figure 10. Socialization of presidential regulation number 67 of 2021

b) The Ministry of Health together with related Ministries have held the 2021 TB Summit on 20-23 October 2021 at The Stones Hotel - Legian Bali by inviting 19 Ministries and Institutions that are members of the Team for the Acceleration of TB Control (TP2TB). The TB Summit activities produced outputs including:

- In terms of increasing the role of the community, stakeholders and other multi-sectors, pay close attention to:
 - ❖ The need to be open to cooperation in various



efforts with various parties and stakeholders

- ❖ Formation of a partnership forum for accelerating TB control with members consisting of various stakeholder organizations/institutions and community



groups/communities as a bridge with the team for accelerating TB control.

- In efforts to provide services, it is necessary to build a Public Private Community Partnership (PPCP), collaboration between public health services provided by the government, private health services and supported by the community.
- In terms of research and innovation, it is necessary to create favorable infrastructure and climate for research and innovation to support tuberculosis control efforts, including:
 - ❖ Inexpensive, fast and accurate diagnostic tool;
 - ❖ Drug regimens that are more effective, more affordable, have fewer side effects and allow for shorter durations of treatment;
 - ❖ Vaccines to prevent infection (preventive) or prevent disease progression (therapeutic).
- Increased budget for tuberculosis control that is correlated with performance.

Figure 11. TB Summit 2021

c) On 8-11 November 2022, High Level Meeting (HLM) TB 2022 was held.

- HLM 2022 carries the theme TP2TB Action (Team for the



Acceleration of Tuberculosis Control) Towards TB Elimination: Efforts to Follow Up on Presidential Decree Number 67 of 2021. 17 Ministries and Agencies will present progress on TB Elimination 2030 achievements in accordance with their roles and duties.

- Also at this meeting, 12 companies will declare the implementation of Permenaker No. 13 of 2022 concerning TB Control in the Workplace, the launch of domestically made daily doses of drugs, and the inauguration of ACF Screening activities in 25 districts/cities in 8 provinces.
- The purpose of the High Level Meeting is to evaluate and take inventory of the performance of ministries/agencies, civil society organizations and communities in achieving the national TB target and strategy.



Figure 12. High Level Meeting (HLM) TB 2022

d) **29 - 30 March 2022** a G20 Side Event on Financing for TB Response.

- During the Indonesia Presidency in G20, one of the agenda within the Health Working Group is discussing a Financing for TB Response as the side event with the G20 countries and relevant stakeholders.
- This meeting discusses the urgency to raise commitment through financing for TB, particularly for innovation of the Vaccine, Therapeutic, and Diagnostic.
- The result of this meeting is the G20 countries release The Call to Action on Financing for TB Response which G20 members call every stakeholders and other countries to have more commitment on TB and the call to action is one of the Annex in the G20 Leaders Declaration 2022



Figure 13. G20 Side Event on Financing for TB Response

e) The Ministry of Health and the WHO jointly organized a UN General Assembly high-level side event titled - "Progress and multisectoral action towards achieving global targets to end TB" on 20 September 2022 at Harvard Club New York City.

- The meeting is being attended by Minister of Health of South Africa, Minister of Health of Malawi, French Ambassador for Global Health, Assistant Secretary for Global Affairs (OGA), United States Department of Health and Human Services, Assistant Minister for Global Health and Welfare of Japan.
- The leaders attending to this meeting showcased progress and commitments towards achieving the 2022 TB targets committed to by Heads of State at the 2018 UN High Level Meeting on TB, especially in the context of the COVID-19 pandemic, and key actions taken to build multisectoral engagement and accountability to end TB. The perspectives of countries looking forward to the 2023 UN High Level Meeting on TB were also shared

Figure 14. UN General Assembly high-level side event

f) The Ministry of Health and the Ministry of



Education, Culture, Research and Technology have jointly drafted the TB Care School Guidelines. This guideline is a cross-sectoral collaboration with the spearhead of UKS coaches (School Health Units) both at the province and district/city levels in supporting and participating in the promotion and prevention of TB transmission.



Figure 15. TB Care School Guidelines

The TBC Care Schools Program (Sekolah Peduli TBC) have been launched in the city of Tangerang and Central Jakarta, namely at SMP Negeri 4 Tangerang City and at SMPN 280 Jakarta. The activity of TBC Care Schools Program is guided by health center staff and teachers.





Figure 16. The TBC Care Schools Program at SMPN 4 Tangerang City

community and partners in TB control with a focus on effort advocacy, promotive, preventive and complementary curative, rehabilitative based on the principle of partnership with the target beneficiary, namely Action PROTECTION. The focus on protecting populations in 7 priority provinces with TB burden national highest. PROTECTION Action with the theme “Spirit of Collaboration **for Acceleration of Elimination of TB** through PROTECTION, TB can healed and back to being productive” and the tagline “Find, Heal, Awaken and Be Productive”, with convey evidence of real action as the performance of



Figure 17. The TBC Care Schools Program at SMPN 280 Jakarta



- g) Tuberculosis Prevention Partnership Forum or Wadah Kemitraan Penanggulangan Tuberkulosis (WKPTB) launched an action to increasing the role of the

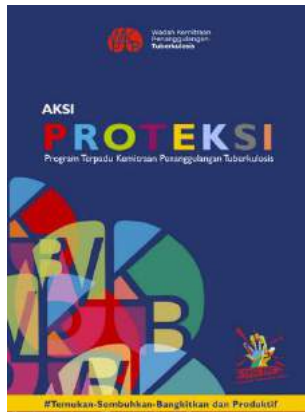


Figure 18. Action PROTECTION

3. Active Case Finding Activity

a) Symptom and X-Ray Screening for Working Population and High Risk in 2020

In 2020, symptom screening and X-rays have been carried out in the certain working population and high risk in 3 districts such as Karawang, Garut, and Brebes with the results of screening TB cases found as many as 158 people (4.2%) out of a total of 3,696 people who were diagnosed with TB screened.



Figure 19. Symptom screening using a questionnaire



Figure 20. Chest X-ray examination using a X-Ray car

b) Symptom and X-Ray Screening for General population 2021

In 2021, symptom screening has also been carried out in the general population in 7 districts/cities, namely Tangerang Regency, Depok City, Bekasi Regency, Bandung City, Cirebon Regency, Karawang Regency, and Surabaya City. Based on the results of the screening, 125 people (0.3%) TB cases were found out of a total of 41,960 people who

were screened. In the same year, symptom screening and X-Ray were also carried out in 3 regencies/cities namely Bandung Regency, Bekasi City, and Bogor Regency which resulted in 73 people (2.2%) and 238 (7.3%) confirmed cases of TB. TB cases diagnosed clinically from the number of TB screened as many as 3,246 people.



Figure 21. Symptom screening using a questionnaire



Figure 22. X-Ray Car

c) TB Screening for People with Diabetes Mellitus (DM)

NTP has conducted ACF with systematic screening using mobile CXR since 2020. NTP plans to develop a guideline for systematic screening. Currently, CXR is focused on people with DM in 38 districts/cities out of 334 TB priorities. Technical guidelines related to TB DM at health facilities already exist along with the SOP for TB DM Screening as a reference for implementation. Based on SITB data as of October 3, 2022, it is known that in 2022 as many as 3,628 people with

DM were screened for TB from 214,105. Of the people with DM who were screened, it was found that the largest suspect was 944 people and those who were positive for TB were 448 people.

d) X-Ray Screening on Household Contacts by Zero TB Yogyakarta

X-Ray screening activities with AI have been carried out by Zero TB Yogyakarta. The results of the screening on April 14 - May 31, 2022 in 2 districts/cities, found 499 cases of tuberculosis with 140 confirmed cases of bacteriological tuberculosis. The population in 2 sub-districts has a yield of 0.3%.

e) TB Screening and Provision of Tuberculosis Preventive Treatment (TPT) to Household Contacts

TB screening activities for household contacts are ongoing from November 2022 to April 2023. This screening activity is carried out in 25 selected regencies/cities with high TB burden. Collaboration with the community is also emphasized to increase the mobilization of household contacts. If the household contacts are eligible to get TPT, they will be given TPT.



Figure 23. Symptom screening using a questionnaire



Figure 24. X-Ray examination results reading



Figure 25. Tuberculin skin test



Figure 26. Sputum collection for TCM examination

4. Public Private Mix

a) Big Chain Hospital

- Big Chain Hospitals Engagement is an approach to optimize the contribution and commitment of private hospitals under a big chain management in the implementation of TB Program. In particular, the objectives of this intervention are to optimize: 1) TB case finding, treatment, record and reporting to TB information system, 2) the quality of TB service, 3) implementation of internal and external linkage in TB Service, 4) the quality of human resources (health care workers) in the hospitals through capacity building.
- The intervention targeted six Big Chain Hospitals with 255 hospitals in total, throughout 30 provinces and 125 districts in Indonesia. The Memorandum of Understanding (MoU) has been signed between MoH and four big chain hospitals

management in Indonesia (MPKU PP Muhammadiyah, Hermina, Pertamina Bina Medika IHC, and Mitra Keluarga) on June 13th 2022, while the MoU of the other two chain hospitals management (Primaya and Siloam) are in finalization process and estimated to be signed in November 2022.

- Compared to the achievement in 2021, six Big Chain Hospitals have made an increase in achievement in 2022 with details as follow (2021 vs 2022 as per 1 November):
 - ❖ Number of TB Cases found and treated: 17.774 (2021) vs 19.064 (2022)
 - ❖ Number of Hospitals report Presumptive TB: 217 (2021) vs 238 (2022)
 - ❖ Number of Hospitals report TB cases: 214 (2021) vs 215 (2022)

- ❖ Number of Hospitals access GX for Presumptive TB: 194 (2021) vs 227 (2022)
- ❖ Number of Hospitals access TB program drug (OAT program): 190 (2021) vs 210 (2022)
- Through Big Chain Hospitals Engagement, it is targeted that the hospitals under four Big Chain Hospitals management who have signed the MoU will contribute to the TB case finding and reporting up to 20,478 cases as well as achieve 85% TSR in 2022.



Figure 28. Signing of Joint communiqué to support END TB in 2030 involving the association of health care facilities (PERSEI, ARSSI, ARSAMU), coalition of professional organization for TB (KOPI TB), and community organization (Consortium STPI-Penabulu)



Figure 27. MoU signing between General Director of P2P, MoH and Director of four Big Chain Hospitals Management



Figure 29. Dissemination of Circular Letter of General Director of P2P, ARSSI (the Association of Private Hospitals in Indonesia), and four big chain hospitals management about "Strengthening Hospitals' Role and Contribution in the Implementation of TB Control Program"

b) WIFI TB

- WIFI TB is an alternative application for GP/Clinics who haven't been able to report using SITB and don't have access to a SITB account, have limited infrastructure related recording and reporting (eg. laptop, personal computer, etc) and human resources (quantity and quality), and the main contribution is only until finding presumptives TB or level 1. WIFI TB users are regularly encouraged to increase their contribution to be able to use SITB.
- The use of WiFi TB has been socialized since April 2022. Recently, there are 228 GP and 492 clinics that have reported TB data through WiFi TB (data as of November 1st, 2022). Currently, WiFi TB is integrated in one direction with SITB.

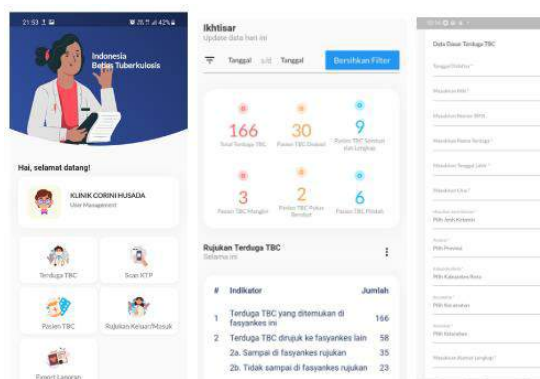


Figure 30. The display of WiFi TB using Clinic User



Figure 31. Socialization and Simulation of Using WiFi TB in April and June 2022

c) Coaching Tuberculosis

- Coaching tuberculosis is an activity provided by Coach TB through a coaching mechanism to improve the capacity of health workers (doctors, nurses, laboratory, and pharmacy staff) and also improve the quality of tuberculosis services. Coach TB is part of KOPI TB, this activity helps to strengthen the role of professional organizations who joined KOPI TB.
- Coaching TBC is piloting in 6 (six) districts (Medan, Samarinda, Denpasar, Gresik, South Jakarta, and North Jakarta) with 27 hospitals, including 6 public and 21 private hospitals. Coaching TBC has been carried out in July - October 2022
- Best practice of the coaching TBC activities are:
 - ❖ Coaching TBC triggers hospitals to strengthen their internal networks (establishment document of SOP TBC program in hospitals, coordination of all units/station care, improve the recording and reporting of TB cases by SITB, collaboration TB-HIV and TB DM) and external networks in TBC services (diagnostic networks, access to logistics, coordination related to investigations contact with health primary care and communities)
 - ❖ Increasing awareness of the hospital to pay attention and provide improvement the facilities and infrastructure towards the quality and services of TBC
 - ❖ Health workers receive updated training related to

TBC topics held by internal hospitals/district health offices/webinars/seminars

- ❖ KOPI TB in provinces/districts actively involved as a source person to deliver updated TB treatment and diagnosis and also doing advocacy to management hospitals about how to improve the quality of TB services in hospitals
- ❖ An intense discussion forum for each profession was formed to discuss cases in the hospital

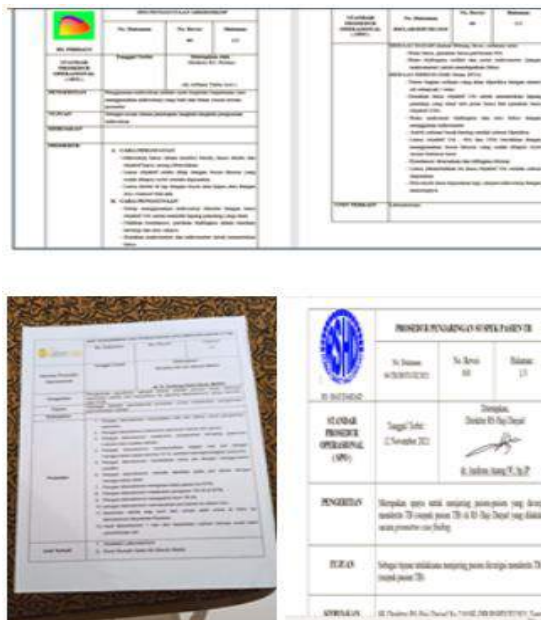


Figure 32. Coachee makes and complete standard operating procedure documents related to TBC in the hospital



Figure 33. Hospital repairing facilities and infrastructure (sputum booth and separation waiting room for TB patient)



Figure 34. Coachee participated in TB training activities held by internal hospitals/district health offices



Figure 35. Microscopic training by KOPI TB

d) Indonesian doctor association's (IDI) professional credits point as a reward

- Since 2014 Indonesian Doctors Association (IDI) has been providing credit points as rewards for doctors related to the TB program, but only GPs can get credit points, and the given number of credit points is not alluring yet. To help increase engagement and commitment from more doctors in TB services, now IDI has an update issued in 2022: SK No.0748/PB/A.4/09/2022.
- In this update regulation reward is given to doctors who work in GPs, Clinics, Puskesmas, and Hospitals that have treated presumptive and TB patients and reported to the national tuberculosis information system, and update number of credit point would be given to doctor once a year in accordance with the TB services provided as follows:



Figure 36. Discussion meeting about updated guideline/mechanism IDI credit points

TB Services Provided	Quantity of IDI Credits
Detection/ Finding for Presumptive TB	<ul style="list-style-type: none"> • 1 - 10 : 1 Credit Point • 11 - 30 : 2 Credit Point • 30 : 3 Credit Point
Diagnose for Presumptive TB	<ul style="list-style-type: none"> • 1 - 10 : 2 Credit Point • 11 - 30 : 3 Credit Point • > 30 : 4 Credit Point
TB Treatment	For each new TB patients who had been complete the medication: 2 Credit Point

- This approach aims to ensure that all TB suspects and patients receive TB treatment according to standards and recorded in the national TB information system.
- Currently, NTP and IDI are still developing guidelines for doctors who want to claim IDI credit points, and socialization of this updated regulation and guideline will be held by NTP, IDI, and TB Partners at the end of November to all provinces and districts in Indonesia.

5. TB Information System

The National Tuberculosis Program (NTP) has had two electronic recording and reporting systems in Indonesia since 2014. The TB electronic surveillance system for case-based reporting of drug-resistant TB (DR-TB), called eTB-Manager, was first implemented in 2009 at 93 sites nationally. A web and case-based TB information system, called SITT, started capturing drug-susceptible TB (DS-TB) cases in 2014, covering all public health centers and some government hospitals. A new system, the Sistem Informasi Tuberkulosis Terintegrasi (SITB) (Integrated Tuberculosis Information System) is currently being rolled out and is an integrated software which will be used for recording and reporting case-based data for DS-TB and DR-TB. The application, created by the Sub Directorate of Tuberculosis, Ministry of Health. SITB has been the national platform since January 2020 to notify all TB cases. All the data fed into SITB is owned by the MOH.

SITB was successfully conceptualised and rolled out nationally across all Puskesmas/PHCs in just three years, from 2017 to 2020. In 2021, SITB was also integrated with other health information systems such as Gx Alerts and community-based applications namely Sobat TB, EMPATI TB, and SITK.

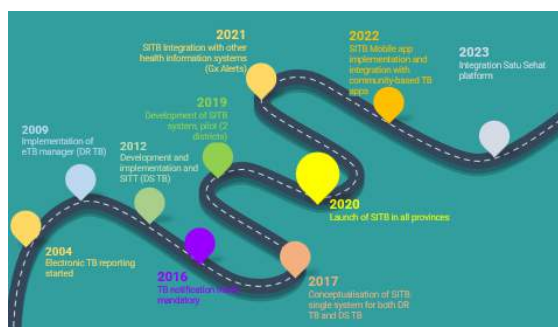


Figure 37. Journey of SITB

Private sector clinics and general physicians besides using SITB also have an alternative to reporting TB notifications through the WIFI TB mobile application. WIFI TB (Wajib Notifikasi TB) is a simplified version of SITB.

SITB is used by service delivery stakeholders at different levels: health service facilities, District/City/Provincial Health Offices and MOH, as well as civil society partners to record and report TB cases.

User Level	Group	Group	Function	Description
Super Admin	-	Admin	All access	Pengelola Program TB/ Yuzor
Unit TB Central	Admin Pusat, Manajemen Pusat, Data Officer Pusat, Instalasi Farmasi Pusat	Management	All access except User Management	Kepala/ Struktural
Unit TB Province	Admin Provinsi, Manajemen Provinsi, Data Officer Provinsi, Instalasi Farmasi Provinsi	Data Officer	All access except User Management	DO
Unit TB District	Admin Provinsi, Manajemen Kab/kota, Data Officer Kab/kota, Instalasi Farmasi Kab/kota	Pharmacy	Logistics only	Farmasi
Health Facilities	Admin Fasilitas, Manajemen Fasilitas, Data Officer Fasilitas, Instalasi Farmasi Fasilitas	Laboratorium	Laboratorium only	Laboratorium
Laboratorium	Admin laboratorium, Data Officer laboratorium			

Figure 38. Levels and Functions of SITB Users

SITB servers are hosted by the National TB Program, and managed by the in-house IT team. The National TB program employs an in-house IT team to handle server management and application maintenance.

Currently, together with the Ministry of Health's DTO, a unified dashboard has been developed to display real-time achievements in recording suspected TB, case finding, treatment, adherence to reporting from health facilities, and other indicators to make it easier for policy makers to get data quickly.

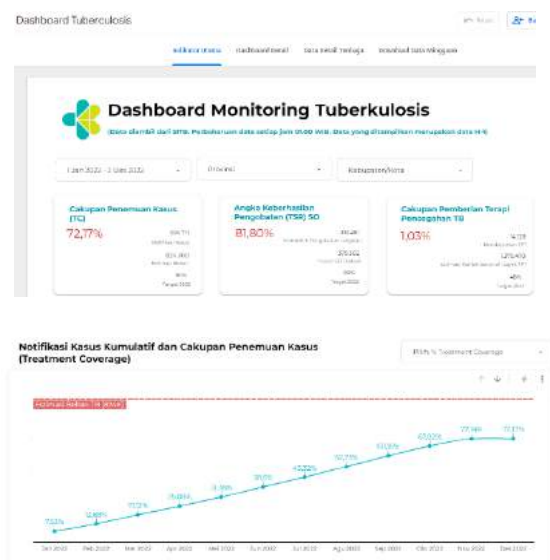


Figure 39. Unified TB Dashboard

6. Supporting Community for MDR TB Patients

a) Drug-resistant TB patient pocket book

Currently, there are already two pocket books for mentoring Drug-resistant TB patients. The pocket book is intended for DR TB patients and staff at the DR TB Satellite Health Center. The satellite health center has the main task of continuing treatment and managing minor Adverse Drug Reaction (ADR).

The pocket book for DR TB patients and staff at satellite health centers contains the diagnosis of DR TB, symptoms, types of drugs, duration of treatment and Adverse Drug Reaction (ADR). However, in the pocket book for officers at satellite health centers, information on Adverse Drug Reaction (ADR) is classified into mild, moderate, and severe and information on which Adverse Drug Reaction (ADR) can be managed at the satellite health center and which must be referred to the DR TB health facility.



Figure 40. Drug-resistant TB patient pocket book

b) Meaningful Engagement of Civil Society, Communities and People Affected by TB to Support Recovery Patient

TB survivor organizations in Indonesia started to collaborate with philanthropic organizations and the private sector to mobilize resources, to support people affected by TB during treatment. The initiative obtained corporate social responsibility funding from the private sector to provide supplementary food, psychosocial support, house renovations and business capital for TB survivors to

generate income through small enterprise.

1. Aisiyah Shelter House in Garut Regency, land waqf for TB RO patient shelter and one village were also mobilized to support TB Drug Resistance. Aisiyah cadres in Garut accompany a TB patient, namely Mr. Nurdin. Not only Pak Nurdin, his wife also contracted tuberculosis. Pak Nurdin's family lives in a plot of heritage house measuring only 2 meters wide by 6 meters long. This 12 square meter house is inhabited by 4 people. The proposal to renovate Pak Nurdin's house was put forward by 'Aisiyah as a "gift" for the recovery of Pak Nurdin and his wife. Renovations must be made because the condition of the house is unfit for habitation. This condition is feared to trigger the recurrence of TB disease. 'Aisiyah Garut in collaboration with Yahintara is indeed campaigning for a healthy home as a solution to completely break the chain of TB disease.



Figure 41. Aisiyah Shelter House in Garut Regency

2. TBC Survivors Organizations and philanthropic organizations in Indonesia work together in providing additional food, groceries, medical devices, and housing improvements.

REKAT Surabaya cooperates with private companies/CSR and philanthropy in providing food assistance in the form of milk, basic food packages, and ready-to-eat food, with a total of more than 785 food packages distributed to TB RO patients. REKAT also conducts Advocacy for Surgical Programs in patient homes that are no longer livable. In total there are 3 patient houses that have been renovated/renovated. REKAT also provided Smartphone assistance to 25 Drug Resistant TB patients to facilitate communication between patients and health workers with support from STOP TB Partnership Indonesia, and also providing oxygen refill assistance at this time to a total of 5 TB patients in the city of Surabaya collaborating with PT Medquest and the Health Office.

3. PESAT (TBC Survivors Organizations in Medan City) in collaboration with philanthropists consisting of YSKI, Lions Club International and Aksata Pangan. From YSKI, PESAT office rental financing for 12 months from April 2022 - March 2023 worth Rp. 15,000,000 and PMT assistance in the form of groceries (rice, milk, biscuits) for 6 TB RO patients. From Lions Club International: Giving oxygen to 3 RO TB patients who need oxygen. From Food Aksata, PMT assistance in the form of 70 food packages (milk, cereal, fruit) to TB SO and TB RO patients per month in Medan City for 7 months from April 2021 to October 2021. PESAT also succeeded in obtaining CSR funding from the Bank of North Sumatra for Providing Supplementary Food (PMT) for TB-RO patients.



Figure 42. Provision of groceries to people affected by TB

7. TB Case Finding in High Risk Population

Collaboration of TB Case Finding in High Risk Population.

- a) **Active case finding in detention centers and prisons using routine symptoms screening and mobile CXR screening among prisoners.**



Figure 43. Jakarta Narcotics Prison was implementing TBC screening by symptoms



Figure 44. Bandung Class II Children's Special Guidance Institute was implementing TBC screening by symptoms



Figure 45. Medan Class I State Prison was implementing TBC screening by mobile CXR

In 2022, the TBC screening by mobile CXR has implemented in 64 detention centers/ prisons/ children's special guidance institute located at 6 provinces (Sumatera Utara, Banten, DKI Jakarta, Jawa Barat, Jawa Tengah, Jawa Timur).

In addition to reporting through SITB, the Directorate General of Corrections also reports routine screening and TBC cases through quarterly reports to NTP.

b) Active case finding in workers

In 2020, NTP has carried out TB screening activities for the following groups of workers:

- Tanners in Garut District with a target of 1,250 people



Figure 46. TBC screening for Tanners in Garut District

- Industrial employees in Karawang District with a target of 1,250 people.



Figure 47. TBC screening for Industrial employees in Karawang District

- Farming and fishing communities in Brebes District with a target of 1,250 people.



Figure 48. TBC screening for Farming and fishing communities in Brebes District

c) Active case finding in boarding schools and prisons

In 2020, TBC screening has been carried out in Islamic boarding schools and prisons/detentions through symptom screening and Chest X-Rays located in 5 provinces (Banten, West Java, Central Java, East Java and DKI Jakarta) consisting of 26 prisons/remand centers and 36 Islamic boarding schools with a total of 116,358 screening participants.

The screening results showed that out of a total of 116,358 screening participants, 149 participants had confirmed bacteriological TBC based on the results of the TCM examination and 73 participants were diagnosed with clinical TBC.

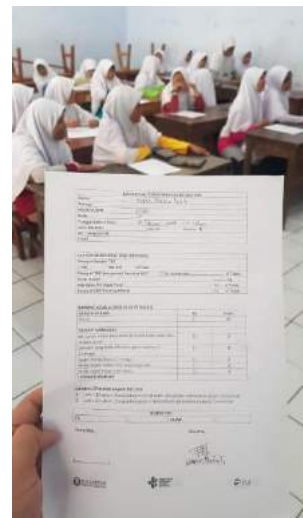


Figure 49. TBC screening for students in boarding schools



Figure 50. Implementation of screening with mobile chest x-ray on students in Islamic boarding schools

8. TB HIV

a) Development of the National Action Plan for TB-HIV Collaboration 2020-2024

The National Action Plan for TB-HIV Collaboration 2020-2024 has been developed by updating several indicators that are tailored to the needs of the current program. This document also includes indicators regarding the community as a supporter in the TB HIV program.

offered HIV tests to TB patients, and for those who have offered, there is a cost constraint because private health facilities pay for HIV tests).



Figure 51. Presentation of the Policy and Achievement of the HIV TB Collaboration Indicators by the HIV/AIDS Substance Coordinator and PIMS

b) TB-HIV Collaboration Indicator Achievement Evaluation Meeting

Evaluation meeting was held on November 25th 2021 online by zoom meeting, inviting 34 provincial Health Offices (TB and HIV Programs). The results of the meeting obtained several challenge points including; 1. the low achievement of TB patients in knowing their HIV status due to the refusal of TB patients to be tested for HIV; 2. the problem of under-reporting, TB and HIV services are not under the same roof, TB patients receiving ARV at other health facilities are not recorded in SITB, and vice versa; 3. Not yet optimal communication between TB and HIV officers at health facilities, causing data discrepancies between SITB and SIHA; 4. Many CST services have very low performance (there are still many health workers who have not



Figure 52. Presentation of Achievements, Barriers, and Challenges in TB-HIV Collaboration Programme by 34 Provinces

c) Development Materials for Capacity Building for TB-HIV Facilitators related to Peer Educators

The meeting to prepare materials related to TB HIV peer educators was held on September 29-30 2021. Then

continued with the finalization of materials on October 13, 2021, the process of completing materials according to input on October 14-24 2021 and distribution of materials to 34 provinces on October 29, 2021. The TB HIV peer educator materials consist of 1) materials for TB, HIV and TB HIV coinfection; 2) material on healthy living behavior and nutrition; 3) the working concept of TB HIV peer educators; 4) communication and motivation; 5) drug swallowing supervisor and identification of side effects; 6) gender introduction; 7) introduction to human rights in the context of TB and HIV; 8) supporting materials in building learning commitment; 9) RTL TB HIV peer educator training.

d) Development TB HIV Collaboration Training Module for Communities

The preparation of the TB-HIV collaboration training module for the community was carried out with the HIV/AIDS Working Team, TB Working Team, WHO Indonesia, PR-Penabulu-STPI Consortium, IAC HIV PR, SPIRITIA HIV PR, Zero TB Yogyakarta and the TB Sub Working Group (SWG) -HIV. The materials contained in this module are 1) National policy for the TB-HIV collaboration program, 2) Basic information on TB, HIV, and TPT, 3) The role of the community in the TB-HIV collaboration program, 4) Networking and referrals, 5) Effective communication, and 6) Recording and reporting.

e) TPT Workshop for TB HIV Community

Workshops related to TPT for communities in 34 provinces. This activity was attended by 153 participants consisting of representatives of participants from the TB and HIV program holders of the

provincial or district/city health offices, and representatives of the peer support coordinator from the Spiritia community and representatives of peer leaders from the Indonesian AIDS Coalition (IAC) community while the TB community was represented by staff. the Sub Sub-recipient (SSR) or Implementing Unit (IU) program representing the Penabulu-STPI Community Consortium. The activity has been running in batches 1 and 2 in Tangerang Regency on 1-4 June 2022 and batch 3 which was held on 15-18 June 2022 in Makassar. The follow-up plan that resulted from this workshop is a commitment from the provincial, district/city health offices and the TB and HIV community to work together in assisting the implementation of TPT throughout 2022.

f) Sub Working Group (SWG) TB HIV Meeting

SWG TB HIV meetings are held every 3 months. The purpose of this meeting is to discuss the progress update of programmatic achievements, financial uptake, challenges, and recommendations for the implementation of the TB HIV program. The participants of this meeting were TWG TB, TWG HIV, Experts from the TB and ARI Working Teams, the HIV AIDS and PIMS Working Teams, and the community.

g) Technical Assistance Staff for TB HIV Recording and Reporting

Technical Assistance from EpiC is 1 person per District Health Office (13) in DKI Jakarta Province (North Jakarta, Central Jakarta, West Jakarta, East Jakarta, and South Jakarta), West Java Province (Depok City, Bekasi City, Bekasi District, Bogor

City, Bogor District), and Banten Province (Tangerang City, Tangerang District, and South Tangerang City) (13 people). Technical assistance staff are consultants dedicated to assisting the Provincial Health Office, District

Health Office and Health Facilities: for strengthening coordination, recording and reporting, and activity management. Recruited and jointly supervised by EpiC and the Province/District Health Office with funding support from EpiC.

9. Expansion of TB Prevention Therapy

a) Training Latent Tuberculosis Infection (LTBI) and Tuberculosis Preventive Treatment (TPT) at health worker in 157 districts

In order to increase the capacity of health worker about management provision of TPT, workshop was held in 157 districts from 31 provinces selected divided into 14 batches from April to early July 2022 which involved health worker from puskesmas and hospital, TBC program in district level and province level.



Figure 53. Presentation from dr. Rina Triasih, M.Med(Paed), PhD, SpA(K) as Indonesian Pediatrics Society



Figure 54. Tuberculin Skin Test practice on volunteer participants.

b) Active Case Finding and TPT conducted by Zero TB Yogyakarta

Household Contacts (excluding Close Contacts) targeting Kulon Progo District and Yogyakarta Municipality in 2 selected sub-districts of urban and rural areas, 39 Index Case Health Centers (all types) registered at TB Information System during 2018-2021. Before active case finding number of index cases whose are investigated 427 cases and after ACF up to 336 cases (39%). TPT coverage among household contact before ACF are 165 who received TPT and after ACF up to 332 who received TPT.



Figure 55. Participants to mobile rontgen



Figure 56. Participants screened chest xray in mobile xray



Figure 58. Presentation Clinical in workshop Implementation of 3HP for Household Contacts dan PLHIV

c) Initial Implementation of 3HP for Household Contacts dan PLHIV in DKI Jakarta, 2020-2021

In the period from December 2020 to June 2021, there were 503 household contacts who started the 3HP in Jakarta. A total of 473 people (94%) had completed treatment, 30 people (6%) dropped out from treatment (11 people experienced nausea/vomiting/allergies, 15 people the cause is unknown. 3 people moved services / moved cities, and 1 was pregnant). In the period from December 2020 to June 2021, there were 53 people living with HIV who started the 3HP TPT in DKI Jakarta, 52 people (98%) had complete treatment, 1 person (2%) dropped out of treatment for unknown reasons.



Figure 57. Welcome Speech dr. Dante Saksono Harbuwono, Sp. PD., Ph.D

d) TPT workshops for Household Contacts and PLHIV for Professional Organizations

This activity has been carried out in February 2022 in the hybrid form (online and offline). The purpose of this activity is to increase the capacity of clinicians from professional organizations IDAI, PDPI, PB IDI, PP PDUI and PAPDI to be able to provide TPT, including initiation of TPT provision, monitoring and evaluation of TPT patients for household contacts and PLHIV Target participants: Professional organizations (PAPDI, PDPI, IDAI) 34 provinces, TB program manager in Provincial Health Office, HIV program manager in Provincial Health Office



Figure 59. All speakers in workshops for Household Contacts and PLHIV



Figure 60. All participants health worker in workshops for Household Contacts and PLHIV

e) Piloting project Qiareach QuantiFeron TBC for LTBI diagnosis

Already implemented a Piloting project between the Ministry of Health and PT UBC Medical Indonesia to see effectiveness of Qiareach QuantiFeron TBC to detect LTBI. This activity followed by 5 site hospital such as dr. Ciptomangunkusumo hospital, Persahabatan hospital, Sardjito hospital, Dr Soetomo hospital, Saiful Anwar Malang hospital. and addition 1 Puskesmas in Padang West Sumatera. The result uses IGRA are friendly user for health worker, sensitivity and spesificity higher than TST, patient does not need to visit health facility to result, IGRA result is objective because health worker not read result such as TST.



Figure 61. Agreement Cooperation between Ministry of Health and PT UBC Medical Indonesia

f) Expansion Short Regimens to all age's household contact

The Ministry of Health recommended TPT short regimens in three categories: 3-month regimen of weekly rifapentine plus isoniazid (3HP) fix dose or single dose formulation, a 3-month regimen of daily isoniazid plus rifampicin (3HR) since the guideline LTBI in Indonesia release 2020. The recommendations are 3HR given to children under 2 years old, 3HP single formulation to 2-14 years old, 3HP fixed dose to adults above 14 years old, this recommendation based on pill burden in every patient and research. Distribution to 34 provinces has already been done.



Figure 62. Rifapentine plus isoniazid (3HP) fixed doses to adults above 14 years old



Figure 63. Isoniazid plus rifampicin (3HR) fixed doses to children under 2 years old

10. Human Resource

a) E-Learning Module Development

The TBC and ISPA Working Team is developing a digital-based training program (e-learning) in collaboration with USAID TBPS for health workers in the private sector, as many as 4 curricula for each health worker (Doctors, Nurses, Pharmacy Personnel and ATLM) that have been accredited at SIAKPEL. Within the curriculum there are 31 storyboards containing tuberculosis control, case finding, treatment, management of TB in children, TB drug information services, logistics management, infection prevention and control (PPI) TB recording and reporting. The stages that will be carried out in developing e-learning include 4 stages, including:

1. The preparatory stage which includes determining the materials to be used as the basis for developing e-learning content
2. Alpha Stage, where material begins to be developed into digital content and in accordance with learning objectives which also includes assignments, evaluation mechanisms or digital delivery methods
3. Beta Stage, where the content will be combined thoroughly and prepared to be integrated into the LMS
4. User Acceptance Test (UAT) – user trials and user feedback for modules and LMS
5. Gold stage, the stage of completeness of all learning materials that are ready to be used by the user

Currently 13 modules are in the alpha stage and 10 modules in the beta stage, and the remaining 8 modules are in the development process, and the user acceptance test (UAT) stage has been carried out which was held on 18-22 November 2022 and some of the storyboards are entering the gold stage.



Figure 64. The training curriculum is accredited and available at SIAKPEL (Training Accreditation System)



Figure 65. TB e-learning User Acceptance Test (UAT) for health workers in private services

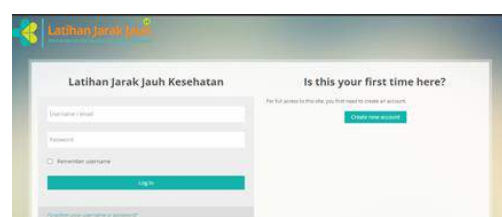


Figure 66. The first page of the e-learning training LMS



Figure 67. The storyboard module will be a learning tool for e-learning

b) Blended Training Methods

The COVID-19 pandemic has caused several restrictions to be imposed, one of which is the limitation for face-to-face gatherings. According to the 2019 BPPSDM provisions concerning the implementation of training during the COVID-19 pandemic, it states that training of more than 50 JPL (School Hours) must organize training in a blended learning manner. Wasor (TB program holders) training was carried out with a total of 104 JPL, so based on this regulation, the training was carried out in a blended manner.

Blended training will be conducted in 2021. Submission of theory will be carried out during online classes, then supervision practices and field work practices will be carried out in their respective regions with guidelines provided. but there have been some changes, related to the training scenario and field work practices and supervision carried out simultaneously during the offline training.

In 2022 the training will be carried out by:

- Submission of material is carried out online via zoom

- Assignments are carried out virtual synchronous (SM), namely, participants work on assignments in the zoom room, by turning on the camera, and accompanied by the facilitator, so that if there are questions while working on assignments, they can be asked and confirmed directly to the facilitator
- Assignments that have been done are discussed when the class is offline with the facilitator and fellow participants in the same class
- Supervision activities and field work practices are carried out in groups and each group is accompanied by 1 facilitator who will accompany during the practice.



Figure 68. Online training via zoom



Figure 69. Offline class training



Figure 70. Presentation of the Task Results of each training participant



Figure 71. PKL activities in the hospital



Figure 72. Supervisi activities in the hospital

11. Research

In the third Pillar of End TB Strategy, one of the efforts to eliminate TB is with intensified research and innovation. These efforts are also regulated in the Ministry of Health of the Republic of Indonesia regulation No.67 years 2016, one of the scopes of TB operational research is operational research that can improve program quality. NTP with Indonesian TB Research Network (JetSet TB Indonesia) already 4th time held a scientific discussion forum, namely Indonesia-Tuberculosis International Meeting (INA-TIME) with the following objectives:

- Organizing scientific discussion forums through exposure to various latest research results, dan research plans in TB control
- Expanding the network of TB researchers, program managers, and practitioners in developing new strategies to accelerate elimination efforts in Indonesia
- Motivate academics and health researchers to understand and adapt TB research themes of the priority issues of the National TB program
- Improving and updating the knowledge of Specialists, General Practitioners, Medical Students, Pharmacists, and Paramedics regarding TB management

In 2022, INA-TIME carries the theme "Readiness to Collaborate for TB Elimination". The number of participants was 512 attended offline and online from students, researchers, program managers, and partners in TB control. The series of activities carried out consisted of a tuberculosis research agenda meeting, four plenaries, two parallel symposiums, twelve oral presentation sessions, and two poster presentation sessions. The series of INA-TIME 2022 events resulted in the following:

- Commitment of researchers and program managers to intensified research and innovation
- Draft Policy Brief 2022
- Strengthening the Indonesian TB Research Network
- Dissemination of the national research priority agenda

INA-TIME 2022 hoped will be the start of implementing the mandate of Presidential Decree No. 67 years 2021 that conducting research with the following scope:

- Research, development, and innovation related to diagnostic tools, drugs, and vaccines that contribute to the acceleration of TB elimination

Research, development, and innovation related to the delivery of services and TB control efforts that are more effective and efficient; and
 Research, development, and innovation related to efforts to change people's behavior that can support TB Elimination.



Figure 73. TB Research Agenda Meeting with the Expert Committee and JetSet Indonesia TB



Figure 74. TB Research Agenda Meeting with the Expert Committee and JetSet Indonesia TB



Figure 75. INA-TIME 2022 series Agenda



Figure 76. INA-TIME 2022 series Agenda

Challenges

1. Public Private Mix

a) The involvement and contribution of health facilities in TB service linkage and RR is not optimal especially in private health facilities

- There is no human resources whose job is specifically for recording and reporting TB/entry the data to TB information system
- High turnover of human resources which isn't followed by a handover

mechanism of existing job description, including TB program

- Workshop/inhouse training/capacity building related to TB for private health facilities aren't yet optimal
- Not all private health facilities have direct access to patient support, contact investigation, and tracking LTFU patient from the

- community
- Assistance from Puskesmas and/or DHO/PHO to HCFs especially GP/Clinics still needs to be optimized
- Lack of commitment from the management of health facilities
- The TB indicators haven't become the main indicator in assessing the quality in regard to accreditation at health facilities
- Reward for health workers is currently only available for the medical doctor (Indonesian doctor association's (IDI) professional credits point)
- b) Requires full commitment and support from government, partner, and other related cross-sectors**
 - Involvement of related Local Government Agencies/OPD, health facility associations, professional organizations, communities, and other cross-sectors that haven't been optimal in TB control in the regions
 - TB in JKN framework:
 - a) The financing of health services, especially regarding TB diagnosis, hasn't been fully included and funded by BPJS K because partial referrals are not yet included in the mechanism funded by JKN.
 - b) The ICD 10 code specifically for latent TB and DR TB doesn't yet exist separately. Therefore, the financing is supported by the GF and out of pocket from the patient
 - c) There are differences in the JKN referral flow system for DR TB among several regions that are not in accordance with the regulations at the central level
 - Not all regions have created derivative regulations related to TB control programs (Such as Decree of governors/etc)
 - Not all regions have established TB program partnership forum/multi-sector forum related to TB control
 - The commitment of local government in TB program budgeting through local funds is not strong enough

2. Drug-Resistant TB

- a) Enrollment rate still low
 - Referral of patients in tiers from Puskesmas
 - Patient refuse the treatment
- b) Data quality (completeness and validity) and under reporting reports for further analysis
- c) Case management: inclusion criteria (Lab result availability),

delayed initiation (due to baseline test process), treatment duration, management of Adverse Events, treatment outcome

- High LTFU rate during the first 3 months
 - Death rate during the first month of treatment
- d) Lab result and treatment monitoring are not complete and on time
 - e) Patient education and socioeconomic
 - f) Treatment cost aren't covered by BPJS
 - g) Not all patients DR TB accompany by patient supporters
 - h) Slow expansion of DR TB services. Only 387 DR TB hospitals in 350 districts per November 2022. Target 514 DR TB hospitals in 514 districts in 2024
 - i) Low of contact tracing for DR TB patients
 - j) Some health workers didn't update about the treatment guidelines
 - k) Enablers are not on time

3. Laboratorium

1) Expansion of Molecular rapid test (MRT) in the area/health facilities with limited infrastructure.

Molecular rapid test (MRT) have been established as the main diagnostic tool for tuberculosis. Therefore, the number of facilities equipped with MRT need to be expanded country wide. Placement MRT like GeneXpert need certain infrastructure requirements such as availability of continuous electricity and air conditioning which is not available in all health facilities laboratories, especially puskesmas/health center. In order to address this challenge, NTP is going to utilize MRT which is equipped with an internal battery like Truenat to fill the gap. According to National Strategic Plan 2020-2024, NTP is targeting to have at least 2,133 MRT machines at 2,107 health facilities and 75% of presumptive TB diagnosed using MRT by 2024.

2) Low MRT (GeneXpert) utilization rate

Utilization rate of GeneXpert improved from year to year to reach 50% in 2019, but experienced a significant decline during the COVID-19 pandemic to 32% and 31% respectively in 2020 and 2021. During January – September 2022 period, GeneXpert utilization rate is starting to rebound 47% but still far from NTP target (80%). NTP continues to improve the utilization rate by ensuring implementation of MRT as the main diagnostic tool for tuberculosis as mandated in the Circular Letter (surat edaran/SE) of the Director General for Disease Prevention and Control No. HK .02.02/III.1/936/2021 concerning Update on TB Diagnosis Algorithm and Treatment, strengthen RMT internal and external network. Specimen transportation to link health facilities with GeneXpert sites was also strengthened. 63 % specimens tested with GeneXpert in 2022 (Jan – Jun) come from external linkage both from public and private providers.

3) Majority of RMT health facilities not yet implement RMT connectivity

As of mid November 2022, only 428 out of MRT (GeneXpert) machines are already equipped with the connectivity software. NTP continues to expand the MRT connectivity. NTP conducted connectivity (GxAlert) workshop on 20 October 2022. The main objective is to disseminate these connectivity software to the RMT health facilities including how to install the software by themselves. Up to early November 2022, additional 25 RMT health facilities successfully installed the software. Availability of internet access at health facility laboratories still become the main challenges to be addressed.

4) EQA panel test for RMT not yet established

Currently Quality assurance for RMT is carried out through supervision, monitoring maintenance status including annual calibration, and monitoring of key indicators such as successful test, unsuccessful test, error rate, utilization rate, proportion of TB testing based on the type of TB patient, TB case finding both DS TB and DR TB, Regularity and timeliness of RMT monthly report reporting.

Planning to have RMT EQA (panel testing) has been discussed with NRL. One of the activities to be

conducted is to send NRL staff for training to one of SRL that already implemented the EQA panel test for RMT. Unfortunately, this plan has not been able to be carried out due to the constraints facing during the covid pandemic.

5) Not all RR patients have phenotypic DST and SL LPA results.

In 2021 there were 8,268 TB patients who were confirmed rifampicin resistant and 3,918 (47%) patients had phenotypic DST results and 4,043 (49%) already had second-line LPA results. There was an increase of 5% and 10% for the phenotypic DST and second-line LPA, respectively compared to 2020. During January – September 2022, there were 6,725 TB patients who were confirmed to be resistant to rifampicin and 2,922 (43%) patients had phenotypic DST results and 5,239 (78%) had SL LPA results.

Coverage of patients who had phenotypic DST and second-line LPA results was also influenced by the proportion of DR-TB patients who started the treatment. Specimen collection for phenotypic DST and second-line LPA is carried out when the patient comes to the DR TB treatment center to start the treatment.

4. Active Case Finding

- a) Multi-sector collaboration in ACF to mobilize the population still needs to be strengthened.
- b) Communication, Information and Education (CIE) about TB is important

- in ACF but the implementation should be improved.
- c) Health worker's skill need to be improved about active screening
- d) Some Presumptive TB found didn't collect sputum in the same day and

this is potential to miss opportunity for finding TB cases.

- e) Health workers must educate presumptive TB participants about how to get rid of sputum.
- f) Delayed Xpert MTB/Rif result.
- g) Reporting and recording of ACF is still manually reported and recorded, it's

not real time, so it makes delayed reporting to the NTP.

- h) Legal instrument of Hospital (MoU between Hospital & DHO) need long time in process, only 40% hospital notify DM patients screened TB trough out TB DM application
- i) Sputum specimen from several DM patients were difficult to collected

5. TB HIV

- a) In health services, it is still found that HIV tests are carried out on TB patients, but symptom screening has not been carried out routinely by all staff in HIV/CST (Care, Support, and Treatment) services. Therefore, the achievement of TPT PLHIV is still low.
- b) SITB and SIHA are still not integrated, causing many data discrepancies in health services.
- c) Not all staff in HIV services (VCT (voluntary counseling and testing)/CST units) have been socialized about TB-HIV collaboration activities.
- d) The high turnover of staff and the limited budget for TB-HIV training for

officers at the provincial, district/city and health facilities levels.

- e) Taking medication for some people living with HIV, especially key populations, is carried out by their families/companions, people living with HIV who have moved or cannot be contacted, so that TB screening cannot be done.
- f) There is still under reporting of health workers, for example PDP service officers who have not been orderly recorded TB screening for people living with HIV who visit when taking medication.
- g) Community support is not optimal

6. Tuberculosis Preventive Treatment

- a) Someone who refuses for given TPT because feel herself healthy
- b) Lack capacity health worker about TPT so that low self-esteem to initiation provision of TPT
- c) Health facilities not requesting TPT to health office the impact stock his not available at health facilities
- d) Health office waiting for the request the impact unused stock and yet to be distributed
- e) Stock out of Tuberculin Skin Test (TST) which health worker cannot identification LTBI population above 5 years.

- f) TPT PLHIV logistics that have not been maximized can be fulfilled
- g) Turnover health worker and limited budget TB-HIV training for health worker at the provincial level until Health facilities
- h) Some of health worker or door to door staff or PMO not socialized regarding TPT
- i) Existence doubt clinician about TPT effectiveness, pill burden
- j) Limitations of TPT were reported by some PDP services, so that some of the places required the patient to buy TPT.

7. Recording and Reporting, including information system

- a) Implementation of recording to the information system is not in real time
- b) The coverage of using SITB in health facilities is not evenly distributed (the lowest DPM/clinic)
- c) Limited human resources at the health facility level in recording and reporting TB
- d) Several health facilities experienced difficulties in accessing SITB due to internet network constraints and a limited number of computers
- e) SITB takes quite a long time to be accessed
- f) The length of time for the results of laboratory/other tests and difficulties in following up with patients
- g) The integration of NIK data at SITB with the "one healthy" database will only start on November 17, 2022 (so far, the patient's basic data entry has been done manually)
- h) The integration process with other health information systems, especially BPJS is still in progress
- i) Data validation has not been carried out routinely every quarter
- j) Feedback on recording and reporting has not been carried out routinely in every level

8. Human Resources

- a) Updates on HR data at SITB (TB.14) have not been carried out periodically, so it is not certain how many workers and their status are trained or not at health facilities
- b) The low level of accredited training conducted for health workers both at FKTP/FKRTL Training for P2TB health workers at health facilities has been facilitated with a curriculum and modules that can be used by Provinces or Regencies/Cities to carry out FKTP and FKRTL training for health workers
- c) Several provinces and districts/cities have not met the standard for the number of wasors (TB program managers) according to PMK No. 67 of 2016
- d) Turn over or mutation of provincial, district/city program management personnel (wasor) as well as officers at health facilities which causes trained personnel to become unstable and limited accredited training capacity
- e) There are network constraints during blended training
- f) Facilitators and participants are not proficient in using digital technology in training
- g) Online training is carried out at each participant's workplace, so that participants are sometimes still burdened with other tasks
- h) The policy regarding the replacement of internet quota for participants when participating in training is no longer valid. Some participants used private internet fees with the reason that the internet signal they were using was better than the participant's workplace wifi
- i) Allows for other distractions during remote training because the facilitator is not directly supervised and there are limitations in online supervision
- j) Frequent updating of policies and regulations related to the TBC control program requires time for changes to the e-learning module, so that the module that will be used

- during learning is the updated module to adapt to these changes
- k) The implementation of e-learning training must involve accredited institutions such as the Center for Health Training or Bapelkes because the implementation of accredited

training can only be carried out by accredited institutions and there is no technical guidance related to this involvement, especially with regard to training financing for private health facilities as e-learning target that is being developed.

9. Research

Based on JetSet TB Indonesia membership data in 2022, only 13 out of 33 provinces have joined with members from universities, FKTP, FKTRL, program managers, and partners. Currently, there has not been a mapping of existing research assets in Indonesia related to the tuberculosis control program in

accordance with the national priority research agenda. The next challenge in current research and operations is to be able to intensify research-related resources and research assets in Indonesia to be able to carry out the next agenda on research and innovation.

Strategies and Activities

Indonesia has committed to END TB by 2030. To achieve this target, Indonesia has developed National Strategic Plan consist of 6 main strategies as follows:

Strategy 1: Strengthening the commitment and leadership of the central, provincial and district governments to support the acceleration towards tuberculosis elimination 2030

1. Develop policies and regulations for tuberculosis control by involving stakeholders at the provincial and districts level, including:
 - Advocacy and coordination with the Ministry of Home Affairs, as well as provincial and district governments related to the tuberculosis program,
 - The TB program is included in the Regional Mid-Term Development Plan (RPJMD) at the province and districts,
 - Dissemination of the TB control action plan to various stakeholders.
2. Strengthening the capacity of provincial and district governments in implementing sustainable TB control action plans, including those related to HR needs and budget allocation for TB control programs.
3. Advocacy for provincial and district governments to address social factors related to TB, through the development of health financing regulations for people with TB, HR regulations to ensure the continuity of TB control programs, and employment, especially for TB screening for workers and ensuring that workers with TB can still work.

Strategy 2: Increasing access to high-quality and patient-centered tuberculosis diagnosis and treatment services

1. Optimizing efforts for early detection and management of drug sensitive TB cases in a comprehensive and integrated manner with other health services and in places with a high-risk

population for TB (congregate settings), through:

- Active case finding of TB
- Screening of populations at high risk for tuberculosis by X-ray of the lungs and sputum examination with the Molecular Rapid Test,
- Intensification of case finding through contact investigation (CI),
- Provision of TB preventive treatment,
- Support for medication adherence and management of drug side effects,
- Strengthening networking mechanisms between all health facilities,
- Provide integrated and comprehensive TB services with HIV programs,
- Increase the capacity of health workers in primary and referral health care.

2. Optimizing efforts for comprehensive early detection, diagnosis and treatment of drug-resistant tuberculosis (DR TB), through:

- Expansion of PMDT referral hospitals and decentralization of services at puskesmas,
- Improving the capacity of health workers in puskesmas for DR TB case management,
- Improving universal access to quality diagnostic and treatment services for DR TB in private hospitals and specialty hospitals,
- Providing comprehensive DR TB services, including:
 - ❖ Provision of oral and short-term regimens,
 - ❖ Revision and updating of treatment guidelines,
 - ❖ Counseling training for staff
 - ❖ Strengthening of pharmacovigilance
- Implementation of quality assurance for DR TB services, among others, through clinical audits, DR TB management

consultants at the provincial and district levels, and clinical mentoring,

- Support for medication adherence and management of drug side effects.

3. Optimizing the involvement and strengthening of the TB service network mechanism between all health service facilities (public-private mix/PPM):

- Improving the quality of TB services, among others by:
 - ❖ Disseminate ISTC, National Guidelines for Medical Services (PNPK) for TB and other TB-related issues to all Professional Organizations,
 - ❖ TB as the main assessment in accreditation at primary and referral health care,
 - ❖ TB coaching activities involving TB professional organization/KOPI.
- Strengthening engagement and roles across program, across sectors and communities,
- Strengthening mandatory implementation of TB notifications,
- Strengthening PPM collaboration through financing schemes,
- Build a network between PPM and community organizations for patient support, contact investigations, TB-HIV referrals, & promotional and preventive efforts.

4. Optimization of diagnostic support procedures and treatment for DS and DR TB:

- Strengthening laboratory infrastructure and equipment including work safety and security in the laboratory which includes:
 - ❖ Acceleration of development of culture laboratories and susceptibility test laboratories,

- ❖ Renovation of sensitivity test laboratory to increase examination capacity.
- Improving access and utilization of TCM in Puskesmas, including:
 - ❖ Procurement and maintenance of TCM machines, including availability of TCM cartridges,
 - ❖ Procurement of MGIT liquid media in all susceptibility testing laboratories, procurement of reagents, and their maintenance, and
 - ❖ Improve the specimen transportation system and laboratory examination network;
- Adjustment of the TB laboratory network in accordance with Ministry of Health policies,
- Development of one of the national reference laboratories into a supranational reference laboratory or center of excellence (CoE),
- Adjustment of the TB screening mix in the laboratory following global guidelines,
- Increasing the capacity of laboratory human resources through training and technical assistance,
- Quality assurance services supporting the diagnosis of TB, which include:
 - ❖ Integration with national accreditation system
 - ❖ Increasing the role of BBLK/BLK/Labkesda in coaching, training, supervision
 - ❖ Cooperation with supranational reference laboratories.
- Implementation and development of an integrated laboratory information system with a tuberculosis information system (SITB).

Strategy 3: Optimization of promotion and prevention efforts, provision of tuberculosis prevention therapy and infection control

1. Optimizing efforts to promote, prevent, and provide TB prevention treatment
 - Strengthening managerial efforts for the delivery of TB preventive treatment,
 - Increasing the capacity of officers in the provision of TB prevention treatment,
 - Expanding the coverage of ILTB services to other at-risk populations in congregate settings,
 - Develop strategies to promote TB prevention and control of TB infection.
2. Carry out prevention and control of tuberculosis infection in health facilities
 - Preparation of revised guidelines for TB Infection Prevention and Control in 2012 and its socialization,
 - Technical guidance on TB infection prevention and control program management to health workers at health facilities,
 - Advocacy and cross-sectoral coordination on TB Infection Prevention and Control,
 - Provision of Personal Protective Equipment (PPE),
 - Strengthening administrative efforts and a healthy environment for TB Infection Prevention and Control.

Strategy 4: Utilizing research findings and technologies for screening, diagnosis, and management of tuberculosis

1. Adopting digital technology to support the implementation of the National Tuberculosis Control Program.
 - Simplification and digitization of TB recording and reporting for private primary health facilities,
 - Carry out integrated TB recording and reporting with programs related to high-risk populations,
 - Evaluating the provision of TPT to people with ILTB
2. Coordinate various research institutions to implement the Tuberculosis research agenda
 - Establishing a working group of researchers who are interested in doing TB research,
 - Establishing a communication network among TB researchers,
 - Develop the TB research agenda with network members and policy makers,
 - Conducting mapping of leading TB research from study centers in Indonesia.
3. Mobilization of funding for research and innovation in the field of TB from various institutions
 - Identify and propose research funding, both from government and donors,
 - Socialization of the TB research agenda to the network of researchers and donors/funders.
4. Support research and innovation development to support TB control programs
 - Facilitate researchers and policy makers in the formulation of policies on TB programs based on research results,
 - Support TB researchers to obtain research and/or publication funding,
 - Encouraging the publication of TB research results in scientific activities and journals at the national or international level,
 - Develop mechanisms for adaptation of new diagnostic tools, vaccines and drugs/regimens,
 - Conduct research on reducing stigma and discrimination in high-risk and vulnerable populations.

Strategy 5: Increasing communities, partners, and multisectoral participation in tuberculosis elimination efforts

1. Increasing community empowerment efforts through intensification of communication and information to the community, especially for the prevention of tuberculosis through education and community empowerment.
2. Coordinate with relevant Ministries and Local Governments (Provincial and Districts) to strengthen cross-program and cross-ministerial/institutional commitments.
3. Improve the mechanism for providing community feedback on the quality of tuberculosis services in health facilities through identifying and providing data on barriers to access to TB services at the national, provincial and district levels.
4. Reduction of stigma and discrimination in populations at high risk of TB and vulnerable populations through campaigns/education to the community in schools and workplaces.

Strategy 6: Strengthening program management through health systems strengthening

1. Coordination of tuberculosis control across programs/units within the Ministry of Health (health promotion units, family health, nutrition, non-communicable diseases, health services, and others) as well as across ministries/agencies, NGOs (LKNU, Aisyiah, and others), and women's organizations
2. Strengthening tuberculosis program management capacity in provinces and districts by increasing the number of TB program managers consisting of program managers, technical staff, data officers, and administrative staff
3. Improving the skills of health workers for managing the TB program as well as managing TB cases at the provincial and district levels through case management training, program management, online assessment, advocacy to overcome HR rotation problems, and encouraging local financing for training for TB program holders.
4. Digitally integrated and sustainable case recording and reporting through the development of a Tuberculosis Information System (SITB) for notification and treatment of TB cases that can be linked to existing information systems in other health programs (SIM-RS, SIKDA/SIP, WIFI TB, PCare, SIHA, e-MESO, SDP).
5. Strengthening the TB financing system through advocacy, mapping the financing potential at the central, provincial and district levels, as well as strengthening the TB financing system through the National Health Insurance.
6. Strengthening the logistics management system for TB through integrated logistics planning with pharmacy managers at all levels, one-stop logistics management at the pharmacy unit, implementing logistics data recording and reporting using SITB online, as well as monitoring and reporting as well as follow-up.

