East African Scholars Journal of Medical Sciences
Abbreviated Key Title: East African Scholars J Med Sci
ISSN: 2617-4421 (Print) & ISSN: 2617-7188 (Online)
Published By East African Scholars Publisher, Kenya

Volume-8 | Issue-12 | Dec-2025 | DOI: https://doi.org/10.36349/easms.2025.v08i12.002

OPEN ACCESS

Original Research Article

Tuberculosis in East Nusa Tenggara, 2025: Epidemiological Profile and Program Performance

Maria Magdalena Dwi Wahyuni[1]*, Aminah Haslinda Baun[2], Simon Sani Kleden[3], Tanti Rahayu[1], Norma Tiku Kambuno[4], Marianus Lino[2], A.A Gd Bagus Adi Suardipa[2], Sakti Oktaria Batubara[5], Amanda Jelita Eka Riani Johannis[6]

[1]Faculty of Public Health, Universitas Nusa Cendana, Indonesia
[2]East Nusa Tenggara Provincial Health Office, Indonesia
[3]Nursing Professional Education, Poltekkes Kemenkes Kupang, Indonesia
[4]Department of Medical Laboratory Technology, Poltekkes Kemenkes Kupang, Indonesia
[5]Faculty of Health Sciences, Universitas Citra Bangsa, Indonesia
[6]Faculty of Medicine and Veterinary Medicine, Universitas Nusa Cendana, Indonesia

Article History
Received: 21.10.2025
Accepted: 13.12.2025
Published: 19.12.2025

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: Tuberculosis (TB) remains a major global health challenge, with Indonesia ranking second in TB burden. In East Nusa Tenggara, TB case detection and treatment coverage remains below national targets. A secondary analysis was conducted using cross-sectional data from the 2025 Tuberculosis Information System (SITB), including TB notifications, treatment outcomes for drug-sensitive (DS) and drug-resistant (DR) TB, and population-based case characteristics. Drug-sensitive TB treatment achieved high success in several districts, while drug-resistant TB outcomes were lower due to mortality and treatment discontinuation. TB notifications remain suboptimal, influenced by environmental factors such as poor household ventilation and uneven distribution and activity of health cadres. Strengthening human resources and ensuring active, village-level cadre engagement are essential for improving TB case detection and treatment outcomes. Mapping epidemiological patterns can guide targeted interventions and support policy development to enhance TB control in East Nusa Tenggara.

Keywords: Tuberculosis, TB Notifications, Drug-Sensitive, Drug-Resistant, Poor Household, Village-Level Cadre.

INTRODUCTION

Tuberculosis (TB) remains a global health problem, including in Indonesia. The 2023 Global TB Report reported that Indonesia has the second-highest estimated TB burden after India, with an incidence rate of 1,060,000 cases, or 385 per 100,000 population, and a mortality rate of 141,000, or 51 per 100,000 population (World Health Organization, 2023). Furthermore, current challenges that require attention include TB DM, TB HIV, TB in children, and TB in the community, special groups, or other vulnerable groups.

Data from the Tuberculosis Information System (SITB) of East Nusa Tenggara in 2024 showed that 10,110 TB cases (56%) were found. Approximately 7,851 of the 17,961 TB cases remain undetected or unreported. These undetected cases could be a source of TB transmission in the community. Meanwhile, the achievement of TPT provision in 2024 based on SITB data for household contacts was 13% (target 58%). This certainly creates gaps in TB case detection, treatment success, and TPT provision. The discovery of TB cases in Kupang Regency in 2024 was 454 cases (38%), there are still around 755 cases that have not been discovered from the target of 1,209. The national TB control program has implemented a TB prevention policy as outlined in the 2020-2024 National Strategy with several strategies, namely providing Tuberculosis Prevention Therapy (TPT) to household contacts, PLHIV, and other risk groups (Kementerian Kesehatan Republik Indonesia, 2020).

Many factors cause the coverage of TB treatment to be less than optimal, including: trained human resources being reassigned elsewhere (especially in community health centers); monitoring and evaluation are conducted monthly via monthly zoom; offline meetings at district, provincial, and central levels are attended by program managers every semester; leadership commitment to program supervision is not yet optimal; implementation of tuberculosis prevention therapy still experiences obstacles in community understanding of the importance of TPT; cross-program collaboration is not optimal; community involvement in

***Corresponding Author:** Maria Magdalena Dwi Wahyuni
Faculty of Public Health, Universitas Nusa Cendana, Indonesia

identifying suspects and directing them to health services is not optimal; evaluation assistance for program implementation using online methods has never been evaluated (Chotimah *et al*., 2018; Handayani & Isworo, 2024; Ogbuabor, 2020; Putri *et al*., 2020; Tukamuhebwa *et al*., 2024; Wu *et al*., 2022).

Considering various factors that contribute to the suboptimal coverage of tuberculosis treatment, and the importance of understanding epidemiological patterns to support the development of effective public policies for disease control and monitoring, this study aims to map the profile of tuberculosis cases and analyze temporal trends in tuberculosis incidence in East Nusa Tenggara by 2025.

METHODS

A secondary data analysis was conducted using cross-sectional data from the latest Tuberculosis Information System (SITB) of East Nusa Tenggara Province in 2025. This SITB data includes TB notifications in East Nusa Tenggara Province in November 2025, the success rate of Drug-Sensitive TB treatment in 2025, the success rate of Drug-Resistant TB treatment in 2025, and the percentage distribution of TB cases based on the characteristics of people in East Nusa Tenggara Province in 2025.

RESULT AND DISCUSSION

Portrait of Tuberculosis in East Nusa Tenggara

The TB case detection rate in East Nusa Tenggara Province increased from 2021 to 2024, with increases reaching 27.5% in 2021, 30.9% in 2022, 40% in 2023, and 56% in 2024. This figure has not yet reached the target of 90%. Epidemiologically, the number of discoveries is expected to increase, to break the chain of transmission is to treat people who are sick with TB: TOSS TB (Find, Treat, Until Cured, TB).

Tuberculosis (TB) Notifications in East Nusa Tenggara Province in 2025 reached 54% of the 90% target. The estimated target set for East Nusa Tenggara Province in 2025 is 17,928 and the target for case detection that must be found is 90% of the estimate, namely 16,135 cases. Data from week 47 showed an increase in case discovery of 212 confirmed TB cases compared to week 46. Meanwhile, the districts that did not see an increase in cases from week 46 to week 47 were TTU, Sikka, Ngada, and East Manggarai districts.

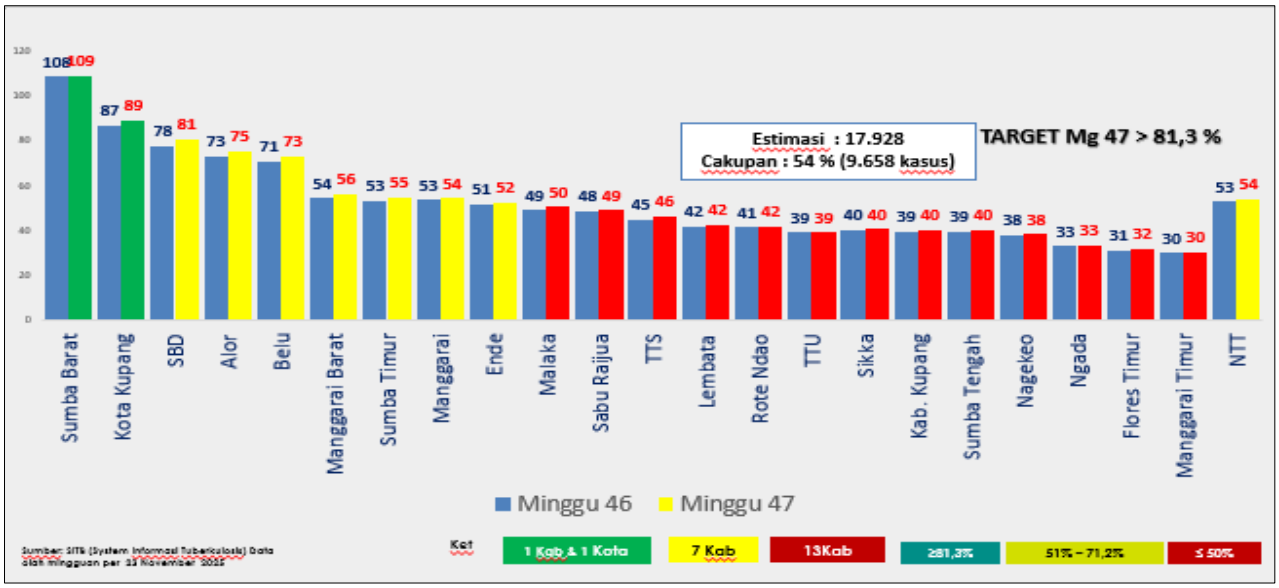

Figure 1: TB Notification for East Nusa Tenggara Province, November 2025

Drug Sensitive TB Treatment Success is the total number of cases declared cured and treatment completed among all TB cases treated and reported. This data represents a cohort of patients from the previous year (2024), with a target of 90%. Four districts have achieved the target above 90%, while 18 other districts are in the final evaluation stage of patient treatment.

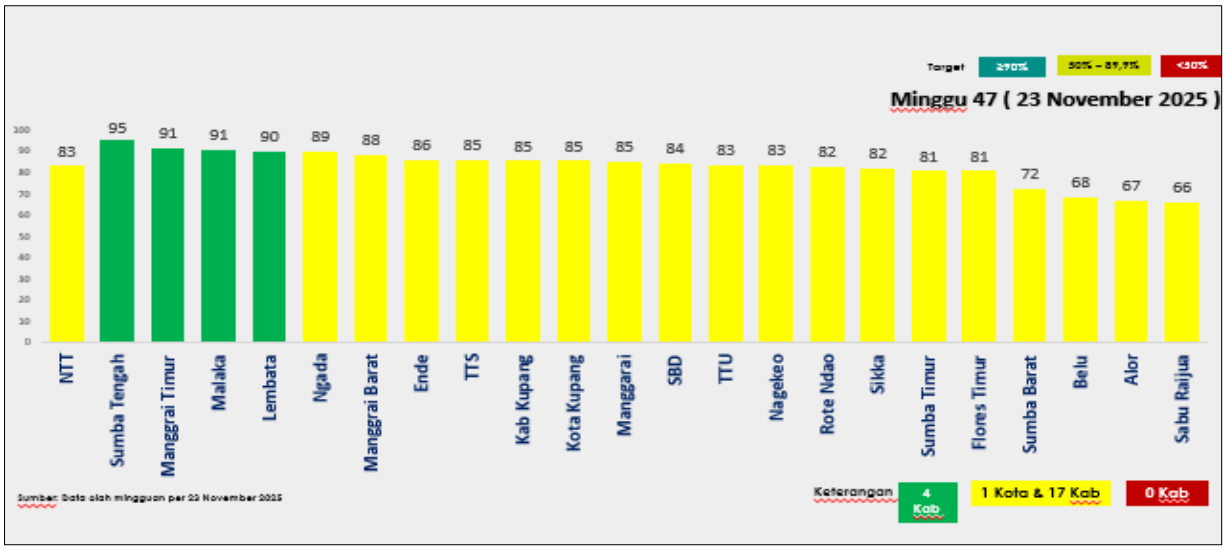

Figure 2: Achievement of Successful Treatment of Drug-Sensitive TB, November 2025

The success rate for drug-resistant TB treatment in East Nusa Tenggara has only reached 83%. This is because, of the total 69 patients, 1 patient is still undergoing treatment, 53 patients have completed treatment, 12 patients have died, and 3 patients have discontinued treatment. Five districts have achieved 0% success rate due to patients dying before starting treatment. Meanwhile, in East Flores, Central Sumba, and West Manggarai districts, no drug-resistant TB patients were found in 2024.

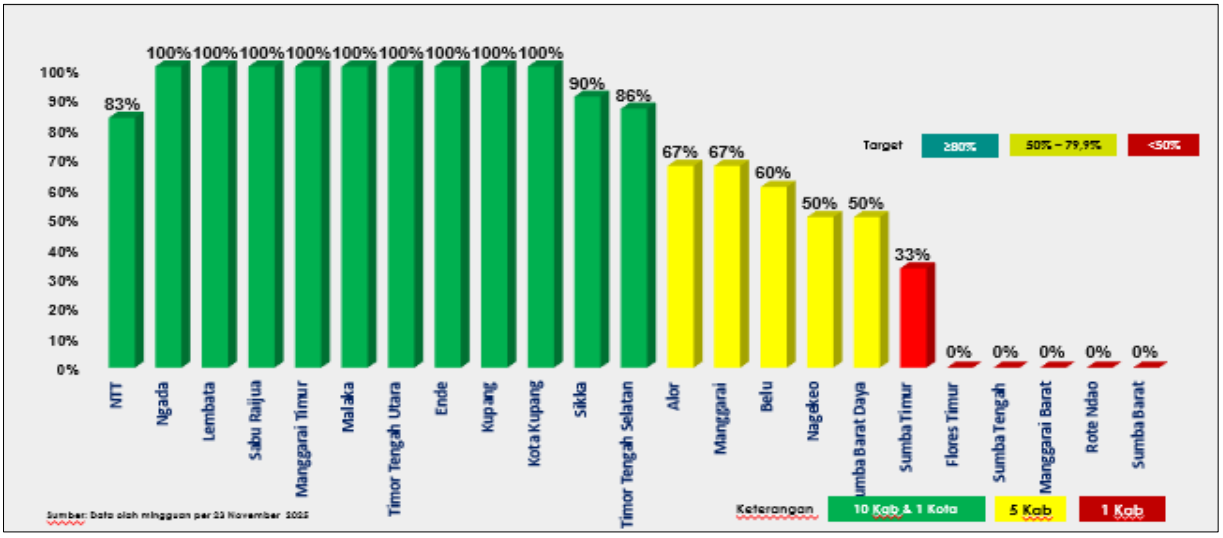

Figure 3: Achievement of Successful Treatment of Drug-Resistant TB, November 2025

Tuberculosis Prevention Therapy (TPT) is a preventive treatment given to someone infected with M.Tb (Mycobacterium tuberculosis) but proven not to have TB, targeting Household Contacts with TB Patients, People with HIV (PLHIV) & other risk groups. Based on data, 1,484 (~5%) household contacts in East Nusa Tenggara Province received TB Prevention Therapy (TPT) in 2025. The target for providing TPT to household contacts in 2025 is 72%.

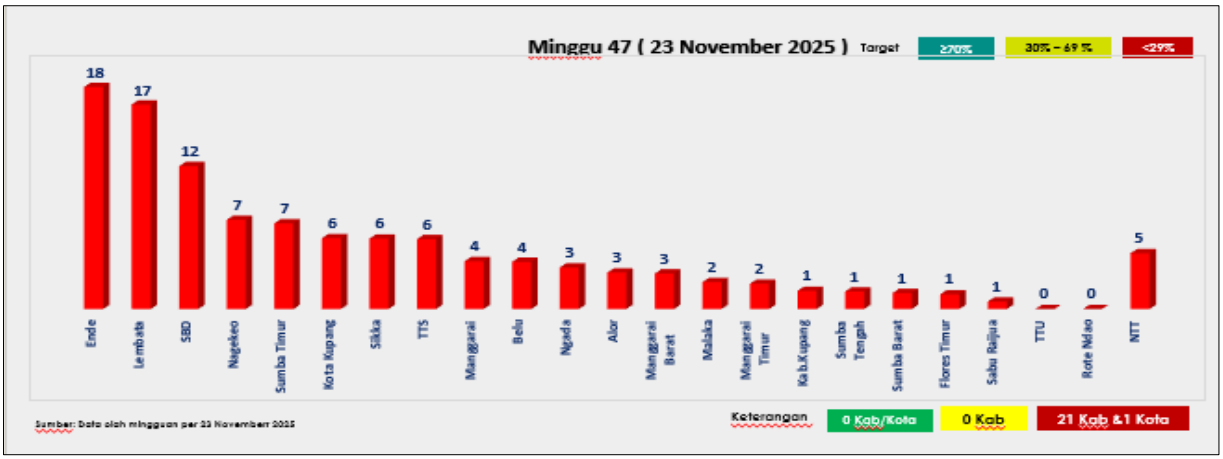

Figure 4: Achievement of TPT in East Nusa Tenggara, November 2025

Determinant Factors of TB in Kupang Regency

The environmental sanitation problem in East Nusa Tenggara residents' homes that is still a problem is ventilation/doors/windows that do not support maximum air circulation. Figure 5 shows the home environment of TB patients in Kupang Regency, where the ventilation is closed, the doors and windows do not provide the opportunity for good air circulation, the walls of the house are made of bamboo, the floor of the house is made of earth. These conditions make the house damp and dark. Dark and damp houses often have poor ventilation, preventing air contaminated with TB bacteria from escaping and fresh air from entering. TB bacteria can live and reproduce in damp and dark conditions. Dark and damp homes provide an ideal environment for TB bacteria. If a family member has TB, a dark and damp house can increase the risk of transmitting TB to other family members. Dark and damp home conditions can weaken the immune system, making a person more susceptible to TB.

Other determinant factors are the behavior of patients who do not comply with taking medication due to reasons of side effects of the medication and the patient's still weak trust in medical treatment, which still involves intervention in non-medical treatment which affects the patient's recovery rate. The role of cadres in case detection and drug monitoring is suboptimal at each service location. The presence of cadres to assist the work of TB program managers in the Regency is very meaningful. The obstacle that occurs in the field is the uneven distribution of cadres based on villages/sub-districts. Even if there are cadres, they are only administrative in nature. The role of cadres is not active. Cadres work voluntarily without being provided with PPE and sanitizer.

Figure 5: Residential Environmental Sanitation

Case detection will be higher if cadres are evenly distributed and active. Adequate human resources are key to operational management in the field. The minimum number is one cadre per village. This is because cadres' responsibilities extend beyond TB; other activities and responsibilities also require attention. Time

and distance limitations to reach those who need to be reached are also related to the scope of case finding.

CONCLUSION

TB case detection and treatment outcomes in East Nusa Tenggara remain below national targets, particularly for drug-resistant TB. Environmental challenges, limited human resources, and uneven distribution of health personnel contribute to suboptimal TB control. Strengthening village-level cadre engagement, improving household ventilation, and ensuring consistent monitoring of drug-resistant cases are critical strategies. The findings highlight the need for evidence-based, locally tailored interventions and resource allocation to improve TB management. Future research should focus on evaluating the effectiveness of community-based interventions, identifying barriers to treatment adherence, and monitoring trends in TB epidemiology to inform sustainable public health policies aimed at reducing the TB burden in the province.

Acknowledgement

The TB Research Team sincerely thanks all parties who supported this study, including the East Nusa Tenggara Provincial Health Office, Kupang District Health Office, Puskesmas (Community Health Centers), Universitas Nusa Cendana, Poltekkes Kemenkes Kupang, Universitas Citra Bangsa, the Ethics Committee of Poltekkes Kupang, and the participating communities. Their collaboration and contributions were invaluable to the successful completion of this research.

REFERENCES

- Chotimah, I., Oktaviani, S., & Madjid, A. (2018). EVALUASI PROGRAM TB PARU DI PUSKESMAS BELONG KOTA BOGOR TAHUN 2018. *PROMOTOR Jurnal Mahasiswa Kesehatan Masyarakat*, *1*(2). https://doi.org/https://doi.org/10.32832/pro.v1i2.1594
- Handayani, S., & Isworo, S. (2024). Evaluation of Tuberculosis program implementation in Primary Health Care, Semarang, Indonesia. In *International Journal of Public Health Asia Pacific Open Access: e-Journal* (Vol. 3). https://doi.org/https://doi.org/10.62992/qb8eay62
- Kementerian Kesehatan Republik Indonesia. (2020). *Strategi Nasional Penanggulangan Tuberkulosis di Indonesia*. https://www.tbindonesia.or.id/wp-content/uploads/2021/06/NSP-TB-2020-2024-Ind_Final_-BAHASA.pdf
- Ogbuabor, D. C. (2020). Through service providers' eyes: Health systems factors affecting implementation of tuberculosis control in Enugu State, South-Eastern Nigeria. *BMC Infectious Diseases*, *20*(1). https://doi.org/10.1186/s12879-020-4944-9
- Putri, F. A., Suryawati, C., & Kusumastuti, W. (2020). EVALUASI PELAKSANAAN PROGRAM PENANGGULANGAN TUBERKULOSIS PARU (P2TB) DI PUSKESMAS BANDARHARJO KOTA SEMARANG. *Jurnal Kesehatan Masyarakat*, *8*(3). https://doi.org/https://doi.org/10.14710/jkm.v8i3.24760
- Tukamuhebwa, P. M., Munyewende, P., Tumwesigye, N. M., Nabirye, J., & Ndlovu, N. (2024). Health worker perspectives on barriers and facilitators of tuberculosis investigation coverage among index case contacts in rural Southwestern Uganda: a qualitative study. *BMC Infectious Diseases*, *24*(1). https://doi.org/10.1186/s12879-024-09798-9
- World Health Organization. (2023). *Global Tuberculosis Report 2023*. World Health Organization. https://iris.who.int/server/api/core/bitstreams/cc23b85f-72c0-4177-8137-cb1161da1025/content
- Wu, T., He, H., Wei, S., Zhu, P., Feng, Q., & Tang, Z. (2022). How to establishing an indicators framework for evaluating the performances in primary TB control institutions under the new TB control model? Based on a Delphi study conducted in Guangxi, China. *BMC Public Health*, *22*(1). https://doi.org/10.1186/s12889-022-14865-4.

Cite This Article: Maria Magdalena Dwi Wahyuni, Aminah Haslinda Baun, Simon Sani Kleden, Tanti Rahayu, Norma Tiku Kambuno, Marianus Lino, A.A Gd Bagus Adi Suardipa, Sakti Oktaria Batubara, Amanda Jelita Eka Riani Johannis (2025). Tuberculosis in East Nusa Tenggara, 2025: Epidemiological Profile and Program Performance. *East African Scholars J Med Sci*, *8*(12), 418-422.