Ending Tuberculosis in Thailand's Prisons by 2030: Aspirations vs. Challenges

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Abstract

Tuberculosis (TB) remains a significant global public health challenge, particularly in prisons, where inmates face a disproportionate burden. In Thailand, prisons are hotspots for both TB and multidrug-resistant TB (MDR-TB), with increased transmission risks from staff, visitors, and released inmates. This article aims to: 1) assess the current TB situation through intensified case finding and diagnosis in prisons; 2) identify social determinants of health that improve monitoring and treatment for TB; and 3) evaluate diagnosis and treatment success rates among inmates. We used a mixed-methods approach, involving trained prison healthcare volunteers who administered a standardized questionnaire based on the International Standards for Tuberculosis Care and the Guidelines for Control of Tuberculosis in Prisons. High-risk individuals were referred for confirmatory testing, including chest X-rays and sputum AFB tests, while confirmed cases received treatment in local hospitals until recovery or release. From 2021 to 2024, we screened 351,737, 259,278, 280,921, and 363,825 new arrivals and existing inmates, achieving TB confirmation rates of 1.06%, 0.91%, 0.89%, and 0.89%. Our treatment success rate has consistently exceeded 90%. The Royal "Good Health, Good Heart" project, initiated under the patronage of His Majesty the King, aims for comprehensive TB and MDR-TB screening and treatment by 2030. This initiative seeks to ensure nearly complete coverage in TB prevention and control, particularly for new arrivals, emphasizing the need for targeted strategies that consider social determinants of health to achieve the goal of "Ending TB by 2030."

Keywords: ending tuberculosis, prison health, screening, social determinants of health, the royal Good Health, Good Heart project

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Background

Tuberculosis (TB) remains one of the most urgent public health challenges worldwide, despite being a preventable and treatable disease (World Health Organization [WHO], 2023). In 2023, TB likely regained its position as the leading cause of death globally from a single infectious agent, highlighting its continued threat to public health (WHO, 2024). Over 10 million people are diagnosed with TB each year, and this figure has been steadily increasing since 2021. Recognizing the severity of this crisis, the international community—including the United Nations and the WHO—has set ambitious targets to end the TB epidemic by 2030. Achieving this vision demands comprehensive strategies that address social determinants, enhance detection and treatment, and prioritize high-risk populations.

Thailand ranks among the 30 countries with the highest TB burden worldwide and is also listed among the 30 high TB/HIV burden countries, reflecting the significant overlap of these epidemics within its population. However, Thailand is not included among the 30 countries with the highest prevalence of multidrug-resistant TB (MDR-TB), indicating a comparatively lower reported rate of drug-resistant strains. Nonetheless, TB remains a significant public health concern, particularly among vulnerable groups such as incarcerated populations (Dadu et al., 2021; Reichard et al., 2003).

Prisons and correctional facilities are recognized as critical hotspots for TB transmission, due to overcrowded living conditions, limited healthcare access, and often insufficient infection control measures (Adebisi et al., 2022; Cords et al., 2021). In Thailand, 143 prisons have become focal points for TB and MDR-TB, with approximately 280,000 inmates experiencing disproportionately high infection rates compared to the general population (The Global Fund, 2024). The risk of transmission is further amplified by interactions with staff, visitors, and the high turnover of inmates through releases and transfers. These factors not only facilitate the spread of TB within prisons but also pose a threat to community health, making prison health a vital component of national TB control strategies (Gygli et al., 2021).

This paper explores the current landscape of TB within Thailand's prisons, examining the challenges and opportunities in achieving the national goal of ending TB by 2030. It will identify gaps between aspirations and realities, analyze existing policies, and propose strategies to strengthen TB control efforts within correctional facilities. Ultimately, addressing TB in prisons is essential not only for safeguarding inmate health but also for advancing broader public health objectives and ending the TB epidemic across Thailand.

Objective

This article aims to:

1) assess the current TB situation through intensified case finding and diagnosis in prisons;
2) identify social determinants of health that improve monitoring and treatment for TB; and
3) evaluate diagnosis and treatment success rates among inmates.

Method and Methodology

A mixed-methods approach was employed, combining qualitative and quantitative data collection. Trained prison healthcare volunteers administered a standardized questionnaire

developed in accordance with the Guidelines for the Control of Tuberculosis in Prisons (Division of Tuberculosis, 2023) and the Consolidated Guidelines on Tuberculosis. Module 2: Systematic screening for tuberculosis disease (World Health Organization [WHO], 2021). Individuals identified as high-risk for TB were referred for confirmatory diagnostic procedures, including chest X-rays and sputum acid-fast bacilli (AFB) tests (Pramart & Prommas, 2023).

Findings

Screening and Diagnostic Data (2021–2024)

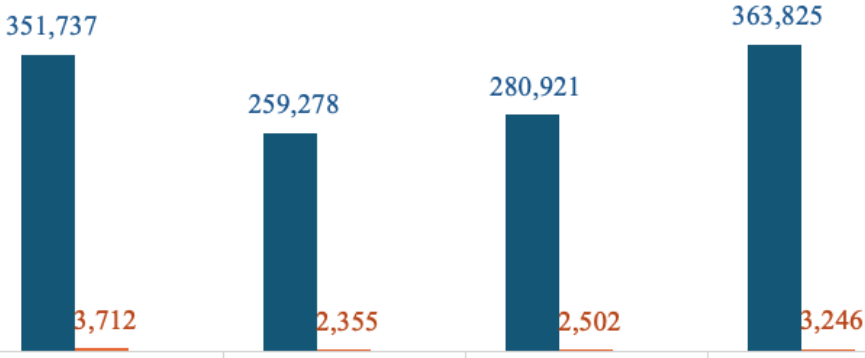
Between 2021 and 2024, significant efforts were made to enhance TB screening, diagnosis, and treatment within the prison system (Division of Tuberculosis, 2025). During this period, a total of 1,255,761 individuals—comprising both new arrivals and existing inmates—were screened for tuberculosis across various facilities. The annual screening numbers were 351,737 in 2021, 259,278 in 2022, 280,921 in 2023, and 363,825 in 2024. The screening process incorporated initial symptom assessments and, for high-risk individuals, confirmatory diagnostic tests such as chest X-rays (CXR) and sputum acid-fast bacilli (AFB) tests.

To improve early detection, the screening interval was reduced from 30 days to just 14 days upon arrival, facilitating more timely diagnosis. Any identified TB cases were registered for treatment within 1–2 weeks, ensuring prompt intervention. Additionally, suspected or confirmed TB cases were quarantined separately in designated rooms to prevent transmission within the prison populations.

Further details and trends are illustrated in Figure 1. The data show that the proportion of confirmed TB cases among those screened remained relatively stable over the years, with confirmation rates of approximately 1.06% in 2021, 0.91% in 2022, 0.89% in 2023, and 0.89% in 2024 (Division of Tuberculosis, 2025). This consistency indicates a steady prevalence of active TB within the inmate population despite intensified screening efforts.

Figure 1

TB Screening, TB Confirmation, and Percentage of TB Cases



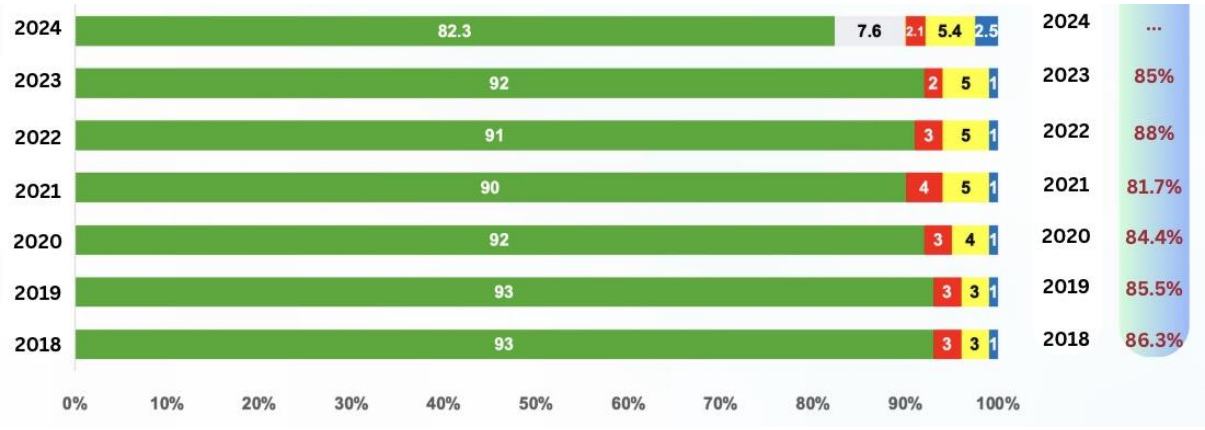
	2021	2022	2023	2024
TB screening	351,737	259,278	280,921	363,825
TB confirmation	3,712	2,355	2,502	3,246
% TB	1.06	0.91	0.89	0.89

Treatment Success Rate in Prison

Throughout this period, the treatment success rate in prisons has consistently exceeded 90%, demonstrating effective management and adherence to treatment protocols. Specifically, the success rates were approximately 90% in 2021, 91% in 2022, 92% in 2023, and 82.3% in 2024 (Division of Tuberculosis, 2025). The slight decline in 2024 is mainly attributed to the ongoing confirmation of TB cases at the end of the year, which temporarily affected reported success rates. In comparison, the TB treatment success rate in communities has been consistently lower, ranging from 81% to 88% between 2018 and 2023 (Division of Tuberculosis, 2025), as shown in Figure 2.

Figure 2

TB Treatment Success Rates in Prisons and Communities



These figures underscore a positive trend of steady treatment success within both the inmate population and the broader community, highlighting the effectiveness of the targeted interventions in prisons. The intensified screening and prompt treatment initiatives have contributed to maintaining low and stable prevalence rates, while also ensuring that those diagnosed with TB receive timely and effective care.

Discussion

The implementation of more frequent and systematic TB screening, notably reducing the screening interval to 14 days upon prison entry, has been instrumental in enabling early detection and containment of TB within correctional facilities. The integration of chest X-rays and other diagnostic tools has enhanced the accuracy of case confirmation, allowing for prompt identification and swift initiation of treatment (Haeusler et al., 2022).

The consistently high treatment success rates observed in prisons reflect the effectiveness of comprehensive healthcare strategies, including active case finding, quarantine measures for suspected or confirmed cases, and immediate treatment initiation (Kelemework et al., 2019). These coordinated efforts not only improve individual patient outcomes but also substantially reduce the risk of TB transmission in the densely populated prison environment (Dara et al., 2015; Lange et al., 2018).

Nevertheless, the slightly lower and more variable success rates in the community highlight ongoing challenges related to treatment adherence outside the prison setting (Martinez et al., 2023). To address these issues, continued efforts are necessary to strengthen community-

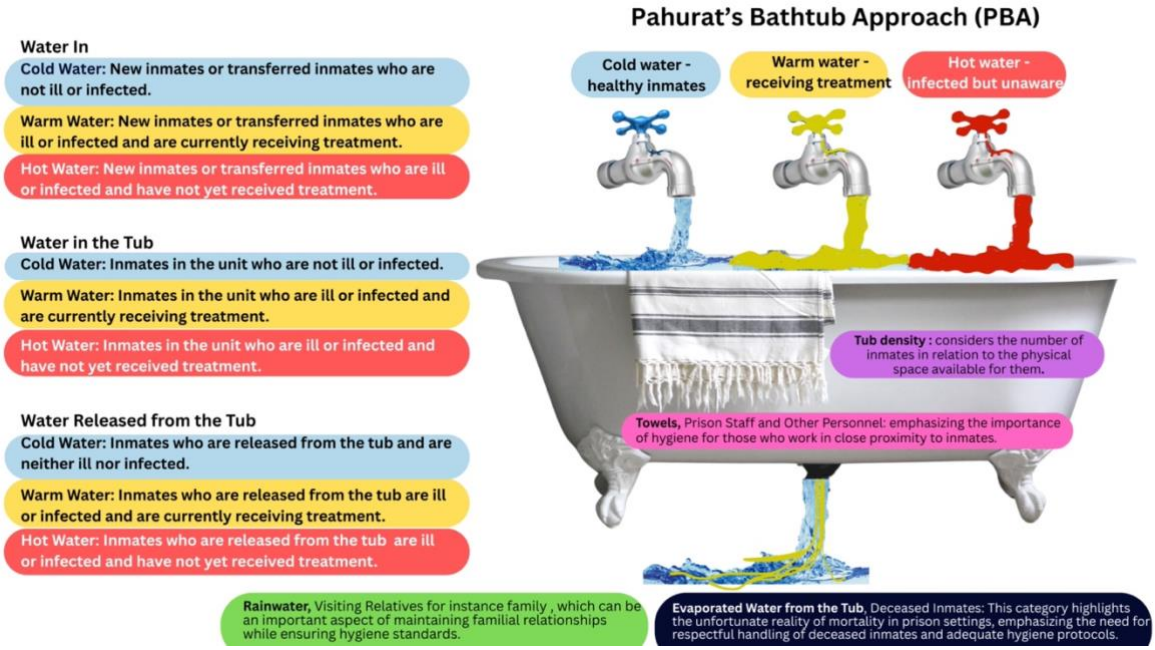
based TB control programs, improve access to diagnostic and treatment services, and tackle social determinants that contribute to TB transmission (Placeres et al., 2023).

Collectively, these findings demonstrate that targeted screening, rapid diagnosis, and effective treatment protocols within prisons can serve as a model for TB control and contribute to broader public health objectives. Sustaining and expanding these initiatives will be critical for further reducing TB prevalence both within correctional facilities and in the wider community (Stuckler et al., 2008; World Health Organization, 2021).

Future Research

The Pahurat's Bathtub Approach (PBA) offers a comprehensive framework for health management within correctional facilities through systematic assessments at key stages: intake, during detention, and pre-release. This model classifies inmates into three health statuses—Cold Water, Warm Water, and Hot Water—to facilitate targeted interventions as illustrated in Figure 3.

Figure 3
Pahurat's Bathtub Approach-PBA



Maintaining prisoners in the Cold Water category, indicating no current health threats, emphasizes the importance of proactively addressing social determinants of health. By focusing on prevention and health promotion, the PBA aims to sustain a healthy prison population and prevent the progression of latent or undiagnosed conditions (Taisuwan & Chotthanapund, 2025).

For those in Warm Water, ongoing care and treatment are essential to effectively manage existing health issues. Meanwhile, individuals in Hot Water—those unaware of their infection—require targeted screening and treatment to prevent disease transmission and support their successful reintegration into society (Taisuwan & Chotthanapund, 2025).

A key component of the PBA is universal screening of all new arrivals with chest X-ray (CXR), ensuring early detection of TB and other health conditions. Any abnormalities identified are addressed with treatment within 1–2 weeks, aligning with best practices for infectious disease control (Haeusler et al., 2022). Additionally, inmates will undergo annual CXR screenings, with re-screening within six months prior to release to identify and address any emerging health concerns (Haeusler et al., 2022).

Overall, the Pahurat's BathTub Approach underscores a proactive, staged, and comprehensive strategy for health management in correctional settings. Future research should evaluate its effectiveness in reducing disease transmission, improving health outcomes, and supporting successful reintegration, while also exploring strategies to address social determinants influencing health within these populations (Taisuwan & Chotthanapund, 2025).

Conclusion

The adoption of more frequent and systematic TB screening, including reducing the interval to 14 days upon prison entry, has proven crucial in enabling early detection and effective containment of TB within correctional facilities. The integration of chest X-rays and other diagnostic tools has improved case confirmation accuracy, facilitating prompt treatment initiation (Haeusler et al., 2022). These measures, combined with comprehensive healthcare strategies such as active case finding, quarantine protocols, and immediate treatment, have resulted in high treatment success rates in prisons (Kelemework et al., 2019). This integrated approach not only enhances individual health outcomes but also significantly reduces TB transmission risks in densely populated prison environments (Dara et al., 2015; Lange et al., 2018).

However, the observed variability and slightly lower success rates in the community highlight persistent challenges related to treatment adherence and access outside correctional settings. Addressing these issues requires ongoing efforts to strengthen community-based TB control programs, improve diagnostic and treatment services, and confront social determinants that contribute to TB spread (Martinez et al., 2023).

Overall, targeted screening, rapid diagnosis, and effective treatment within prisons demonstrate a viable model for TB control that can contribute to broader public health goals. Sustaining and expanding these initiatives are essential for further reducing TB prevalence both within correctional facilities and in the wider community.

The Pahurat's BathTub Approach (PBA) offers a comprehensive framework for health management in correctional settings through systematic assessments at key stages—intake, during detention, and pre-release. By classifying inmates into three health statuses—Cold Water, Warm Water, and Hot Water—the model enables targeted interventions that promote prevention, ongoing care, and treatment for undiagnosed infections. Maintaining prisoners in the Cold Water category underscores the importance of addressing social determinants of health to prevent disease progression (Taisuwan & Chotthanapund, 2025). Regular screening with chest X-rays, prompt treatment of identified abnormalities, and re-screening before release support a proactive, staged strategy that aims to sustain a healthy prison population and facilitate successful reintegration.

Future research should focus on evaluating the effectiveness of the PBA in reducing disease transmission, improving health outcomes, and supporting reintegration, while also exploring strategies to mitigate social factors influencing health within correctional populations.

Lastly, His Majesty King Maha Vajiralongkorn Bodindradebayavarangkun's leadership—embodying the legacy of compassion established by his father—has significantly advanced prison healthcare through the Royal "Good Health, Good Heart" project launched in December 2019 (Ministry of Justice, 2024). This initiative has enhanced healthcare infrastructure, including biomolecular laboratories, portable X-ray machines, and PPE, thereby strengthening TB prevention and control efforts. By striving for near-complete coverage, especially among new arrivals, and emphasizing the importance of addressing social determinants of health, this program aligns with the national goal to "End TB by 2030" (World Health Organization, 2021). These efforts exemplify a holistic approach to healthcare equity and disease control within correctional settings.

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