

CASE STUDY

Evaluation of the Public-Private Mix for Tuberculosis Control in Vietnam (2015–2023)

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ABSTRACT

Objectives: This study aims to evaluate the outcomes of the Public-Private Mix (PPM) initiative for tuberculosis (TB) control in Vietnam from 2015 to 2023 and to analyze key factors influencing its implementation.

Methods: A mixed-methods approach was employed, incorporating a desk review of reports and data on PPM implementation for TB control from 2015 to 2023, alongside qualitative interviews. A total of twenty in-depth interviews were conducted.

Results: The number of provinces participating in the PPM initiative increased from 24 in 2015 to 63 in 2023. During this period, the number of TB cases detected through PPM rose from 9,182 in 2015 to 26,300 in 2023, accounting for 5.6% to 33.4% of all detected TB cases. The key determinants influencing PPM implementation included policy and governance, financial resources, and human resource capacity. Conflicts or discrepancies between certain policies can severely hinder the participation of private healthcare facilities in the PPM program.

Conclusion: The PPM initiative for TB control in Vietnam has made substantial progress, expanding nationwide and significantly enhancing TB case detection.

Keywords: Tuberculosis, Tuberculosis control, case detection, Public-Private Mix.

INTRODUCTION

Tuberculosis (TB) remains the second leading cause of death among infectious diseases, with approximately 1.3 million fatalities recorded in 2022 (1). In response, the World Health Organization (WHO) established the End Tuberculosis Strategy, setting ambitious targets under the global Millennium Development Goals. Specifically, the strategy aims to reduce the incidence of TB cases by 20% and TB-related mortality by 35% by 2020, with further reductions of 50% and 75%, respectively, by 2025, relative to 2015 levels (2). To achieve these targets, the annual decline in TB incidence must accelerate from 4–5% by 2020 to at least 10% by 2025 (3). However, from 2015 to 2022, the global reduction in TB mortality reached

only 19%, falling significantly short of the 75% reduction milestone set for 2025 in the WHO End Tuberculosis Strategy (1).

Vietnam continues to bear a high TB burden, ranking 11th among the 30 countries with the highest TB incidence globally and 11th among those with the highest burden of multidrug-resistant TB (MDR-TB) (4). As of the end of 2023, Vietnam's National Strategic Plan for Tuberculosis (TB) Prevention and Control for 2023–2026, developed by the National TB Program (NTP), outlines specific objectives to combat TB: Reduce TB Incidence; Lower Mortality Rates; Control Drug-Resistant TB. To achieve these goals, Vietnam has implemented TB control measures such as active case finding, treatment of drug-resistant



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TB, community engagement. Similar to other high-burden countries, Vietnam faces challenges in promptly diagnosing TB, particularly MDR-TB, which hampers effective control efforts. With the national goal of TB elimination by 2030, TB control efforts in Vietnam necessitate broad societal engagement, particularly through the Public-Private Mix (PPM) initiative. Despite the Ministry of Health's issuance of Circular No. 02/2013/TT-BYT in January 2013—regulating coordination among healthcare facilities in TB control—reports on TB prevention and control indicate persistent limitations in PPM implementation.

This study, “Evaluation of Public-Private Mix Among Healthcare Facilities for Tuberculosis Control in Vietnam (2015–2023),” aims to: (i) assess the outcomes of PPM implementation in TB control in Vietnam from 2015 to 2023 and (ii) analyze key factors influencing the effectiveness of PPM initiatives in the country.

METHODS

Research Design: This study employed a descriptive cross-sectional design, integrating both quantitative and qualitative research methods.

Study site and time: The study was conducted in Hanoi, Hai Phong, Quang Nam, and Ho Chi Minh City. These locations were selected based on the following criteria: Geographical diversity (representation of mountainous, plain, and island regions across the North, Central, and South of Vietnam); Demographic, economic, cultural, and social diversity to ensure a comprehensive understanding of PPM implementation across different contexts. The study was conducted from 2020 to 2024.

Study subjects:

Quantitative research: The study utilized reports and statistical data on the implementation of the Public-Private Mix (PPM) initiative for tuberculosis (TB) control from 2015 to 2023. Data were collected directly from the National

Tuberculosis Program (NTP) at both the central level (National Lung Hospital) and the local level (provinces included in the study).

Qualitative research: Qualitative research involved key stakeholders engaged in TB control coordination, including representatives from: Government agencies overseeing TB control: Ministry of Health (MoH) and provincial Departments of Health; Organizations responsible for TB control: National and provincial/city TB control programs; Healthcare service providers: Public and private healthcare facilities within and outside the TB control network.

Sample size and sampling methods

Quantitative research: Reports and statistical data on PPM implementation from 2015 to 2023 were collected from the National Tuberculosis Program at the central (National Lung Hospital) and local (selected provinces) levels.

Qualitative research: The qualitative component involved 20 in-depth interviews (IDIs) with key informants at both the central and local levels, selected by a purposive sampling method.

Study variables and qualitative research topics

Quantitative research: 1) Extent of PPM implementation: Number of provinces participating in the PPM initiative; 2) TB case detection through PPM (Number of TB patients detected and referred by private healthcare facilities; Proportion of TB cases detected by private healthcare facilities; Number of TB patients detected by public healthcare facilities outside the National Tuberculosis Program (NTP);

Proportion of TB cases detected by public healthcare facilities outside the NTP; Total number of TB cases detected by public and private healthcare facilities; Proportion of TB cases detected through the PPM initiative); 3) Capacity building: Number of healthcare workers trained in PPM-related activities.

Qualitative research: The qualitative component explored stakeholders' perspectives on PPM implementation and its influencing factors, including: 1) Stakeholder perceptions of PPM for TB control, focusing on its role, necessity, and implementation status; 2) Factors influencing PPM effectiveness (Policy, governance, and management; Financial resources; Human resource capacity; Information systems; Infrastructure, equipment, and drug availability; Other contextual factors); 3) Potential solutions to enhance PPM effectiveness in TB control.

Tools and methods of data collection

Quantitative Research: Secondary data describing the implementation of the Public-Private Mix (PPM) initiative for tuberculosis (TB) control were collected using a structured Secondary Data Collection Form. These data provide an overview of PPM activities and their impact on TB detection and management.

Qualitative Research: Qualitative data were collected through IDIs, guided by a structured interview protocol.

Processing and analyzing data: Quantitative data were processed and analyzed using Microsoft Excel; Qualitative data were thematically analyzed and synthesized based on the key topics identified.

Research ethics: This study was approved by the Ethics Council of Hanoi University of Public Health (Decision No. 249/2020/YTCC-HD3; Code 020-249/DD-YTCC, dated June 19, 2020). Ethical considerations included obtaining informed consent from participants, ensuring data confidentiality.

RESULTS

Outcomes of the PPM for TB control in the period 2015-2023

Expansion of PPM Implementation

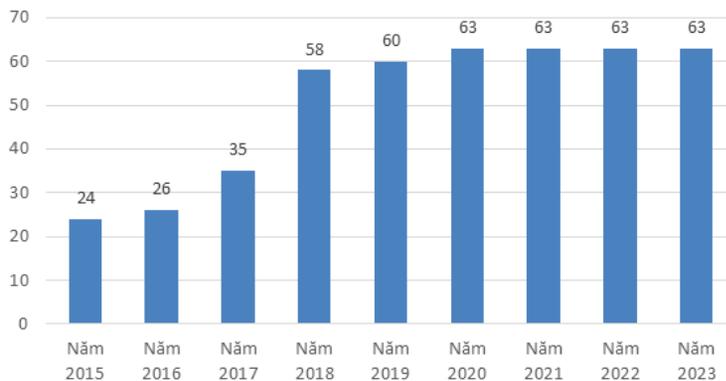


Figure 1. The number of provinces participating in the PPM initiative for TB control in the period 2015-2023

During the period 2015–2023, the number of provinces participating in the PPM initiative for TB control increased from 24 to 63. By 2023, the initiative had been implemented nationwide, with all provinces officially registering for participation in the PPM

approach, reflecting a significant expansion in the integration of public and private healthcare facilities in TB detection and management.

Number and Proportion of Tuberculosis Cases Detected

Table 1. Tuberculosis Cases Detected and Referred by Public and Private Healthcare Facilities Outside the National Tuberculosis Program (2015–2023)

Unit: 1.000 patients

| Description | Quantity (person) | | | | | | | | |
|---|-------------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 2015 | 2016 | 2017* | 2018 | 2019 | 2020 | 2021** | 2022* | 2023* |
| Number of TB patients detected and referred by private healthcare facilities | 2,27 | 1,51 | 2,37 | 3,26 | 3,62 | 3,22 | 4,46 | 7,80 | 7,66 |
| Number of TB patients detected and referred by public healthcare facilities (outside the NTP) | 6,91 | 6,93 | 8,27 | 7,71 | 10,34 | 8,80 | 6,46 | 9,64 | 18,64 |
| Total number of TB patients detected and referred by public and private healthcare facilities | 9,18 | 8,44 | 4,35 | 10,97 | 13,96 | 12,02 | 10,92 | 17,43 | 26,30 |
| Total number of TB patients detected nationwide | 102,7 | 105,8 | 77,8 | 102,1 | 103,8 | 101,3 | 63,0 | 76,1 | 78,7 |
| Ratio of TB patients detected by the PPM (%) | 8.9 | 8.0 | 5.6 | 10.7 | 13.4 | 11.9 | 17.3 | 22.9 | 33.4 |

Note: (*): Data of the first 9 months; (**): Data of the first 10 months

The results presented in Table 1 indicate a significant increase in the total number of TB patients detected through the PPM initiative among healthcare facilities, rising from 9,182 cases in 2015 to 26,300 cases in 2023.

Analysis of the ratio of TB patients detected by PPM over the years highlights the growing impact of the initiative on TB detection. Specifically, the PPM contributed to detecting

8.9% of TB cases in 2015 and 33.4% in 2023, demonstrating a marked improvement in the scope and effectiveness of the program.

Figure 2 below further illustrates the role of public healthcare facilities (outside the National Tuberculosis Program) and private healthcare facilities in the detection of TB cases, providing a visual representation of their respective contributions to the PPM initiative’s success.

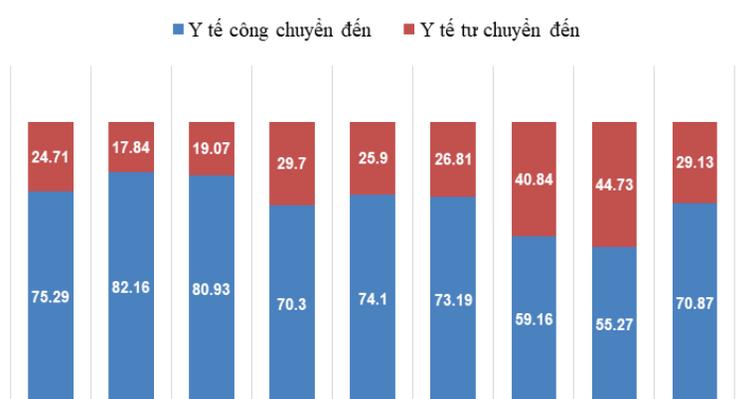


Figure 2. Ratio of Tuberculosis Patients Detected and Referred by Public and Private Healthcare Facilities Outside the National Tuberculosis Program (2015–2023)

The results presented in Figure 2 demonstrate that, from 2015 to 2023, the proportion of tuberculosis patients detected through the PPM initiative who were identified by public healthcare facilities outside the NTP ranged from 55.27% to 80.93% of the total cases detected by PPM.

Over the years, public healthcare facilities not affiliated with the NTP consistently accounted for the majority of TB cases detected through the PPM initiative, with an average contribution of 75.7%—approximately three-fourths of the total cases. This trend underscores the pivotal role of public healthcare facilities outside the NTP in tuberculosis detection within the PPM framework.

Results of Training and Capacity Building

Strengthening and consolidating the TB control human resource network has been a key priority of the NTP. To support this, training and coaching activities focused on TB management and sputum smear tests were conducted for healthcare workers in both public and private healthcare facilities across the provinces involved in the project.

The outcomes of these training activities, carried out between 2015 and 2023, are summarized in Table 3, which details the efforts made to enhance the competencies of healthcare workers nationwide for effective TB control.

Table 2. Training and Coaching Activities to Enhance the Competencies of Public and Private Healthcare Workers in Nationwide Tuberculosis Control (2015–2023)

| Year | Training, coaching activities | Number of public and private health workers trained |
|-------------|--|--|
| 2015 | Basic training on tuberculosis and sputum smear microscopy for public and private healthcare staff. | 1,689 |
| 2016 | Provincial training for doctors and laboratory technicians on TB and diagnostic techniques; financial support to encourage broader participation from 12 provinces. | 2,938 |
| 2017 | Expanded training to 15 provinces, targeting general hospitals and laboratory staff to enhance TB detection and treatment capacity. | 3,639 |
| 2018 | Central-level training on TB management per national guidelines; regional workshops for healthcare workers from 8 provinces. | 2,050 |
| 2019 | Development and implementation of training plans to engage public-private providers in TB control and promote integration of TB–respiratory care in 3 regions. | 4,447 |
| 2020 | National-scale training for provincial trainers and private facilities; collaboration with KNCV and GSD Project to reach non-TB-specialized hospitals in major cities. | 5,049 |
| 2021 | Two training-of-trainers courses organized in Northern and Southern regions for provincial TB focal points across 30 provinces. | 1,981 |
| 2022 | Capacity-building under PPM Model 5 with over 500 training sessions and evaluation meetings held in five major cities. | 5,681 |
| 2023 | Extensive training on TB service delivery and community engagement; implementation of a nationwide pharmacy-based cough screening campaign. | 6,022 |

Table 2 presents the training and coaching activities implemented to improve the competencies of healthcare workers in both public and private healthcare facilities across the country. These activities were focused on key areas such as tuberculosis management and sputum smear testing, contributing to the overall strengthening of the National Tuberculosis Program and its human resource network between 2015 and 2023.

The results reflect the ongoing efforts to ensure that healthcare workers are well-equipped with the necessary skills and knowledge to effectively participate in TB detection, diagnosis, and control at both the national and local levels.

Factors affecting the public - private mix for tuberculosis control

The findings of this study reveal that the implementation of the PPM for tuberculosis control in Vietnam is influenced by a range of interrelated factors. These factors include: 1) Policy and Governance; 2) Human Resources; 3) Financial Resources; 4) Information Systems; 5) Infrastructure and Supplies; 6) Sociocultural and Contextual Factors

Each of these categories contributes to either enabling or constraining the engagement of public and private healthcare providers in PPM activities. The sections below present supporting evidence for each factor, drawn from interviews with stakeholders at different levels of the healthcare system.

Policy and Governance

The findings of this study highlight that policy, governance, and management are the primary and most influential factors affecting the implementation of the PPM for TB control. The effectiveness of the PPM largely depends on several key factors: the policies governing the public-private mix for TB control, political commitment at both central and local government

levels, and the consistency of policies related to PPM for TB control. Conflicts or discrepancies between certain policies can severely hinder the participation of private healthcare facilities in the PPM program.

At the central level, political commitment has been clearly demonstrated through the issuance of Circular 02/2013/TT-BYT, which provides the legal framework for implementing PPM activities nationwide, and the establishment of the National Committee for Ending Tuberculosis on December 4, 2019. These documents and actions serve as favorable factors in national policy and governance, laying the foundation for TB prevention and control activities across the country and promoting PPM efforts at the local level. A representative from the national TB prevention and control program coordination unit at the central level stated: *“The most evident advantage is the issuance of Circular 02, which provides the foundation for systematic implementation. Previously, before the Circular was in place, PPM activities had already been implemented in some provinces, but they were funded by external projects.”*

However, one of the most prominent issues identified is the inconsistency between Circular No. 02, which regulates the public-private mix for TB control, and Circular No. 04/2016/TT-BYT, which governs medical examination, treatment, and the reimbursement of medical costs for TB-related care. In order to facilitate greater participation of private healthcare facilities in the PPM, it is imperative to amend and clarify Circular No. 02 at the central level, ensuring that there is no discrimination between private and public healthcare facilities.

Human Resources

While factors such as the voluntary involvement of healthcare facilities and the availability of human resources through non-governmental organization (NGO) projects are beneficial, the study also reveals systemic challenges that are

difficult to overcome in the short term, such as a shortage of personnel and workforce instability. A representative from the National Tuberculosis Program at the central level noted:

“The characteristic of tuberculosis is that it is an infectious disease. When mentioning tuberculosis, people are already afraid of it. That’s why human resources in the tuberculosis sector are lacking, especially in mountainous provinces, and provinces with underdeveloped socio-economic conditions” (IDI, NTP).

Additionally, the study recorded several opinions stating that the PPM program has not effectively mobilized healthcare personnel at the district level (health centers). As a result, private healthcare facilities, especially pharmacies, have not fully cooperated or shown significant interest in this initiative, despite the crucial role of these personnel in PPM efforts. A representative from the Ho Chi Minh City Department of Health shared:

“The health center, or previously the medical office, serves as the key coordinating unit at the local level, closely overseeing healthcare facilities in referring suspected or confirmed TB patients to the TB control network. They also play a role in promoting awareness, guiding collaboration, organizing implementation, monitoring, reporting, evaluating activities, and managing local healthcare facilities. However, the PPM program has yet to fully mobilize this workforce.”

Financial Resources

In terms of financial resources, PPM activities are funded through various sources, including the National Tuberculosis Program, NGOs, and private healthcare facilities. While the diversity of funding sources is considered a positive aspect, the actual availability and sustainability of these financial resources are limited. In addition to the provinces that benefit from the PPM implementation support project, there is no or very little funding for PPM implementation at

the local level. Funding is proactively provided by the local level, causing PPM activities to be delayed or not thoroughly implemented. Moreover, the National Tuberculosis Program in Vietnam faces challenges such as declining funding from international organizations and the implementation of financial autonomy in public healthcare facilities, which reduces their attention to activities with low-profit potential, such as the tuberculosis control program.

Information Systems

The information system for the PPM has been largely digitized, with basic data on PPM activities recorded consistently across the nation. While this is an advantage for the implementation of the PPM, challenges such as unstable internet connections and software errors can disrupt the submission of activity reports. Despite the digitalization of data collection, participants in the study still consider this an obstacle, as they may avoid submitting complete data due to time constraints.

Infrastructure and Supplies

Material facilities, equipment, and pharmaceuticals have been highly praised by stakeholders as favorable factors. However, since 2016, private clinics have not been able to receive tuberculosis treatment drugs from the National Tuberculosis Program, which has limited the involvement of private TB clinics in PPM activities. In poorer and more remote provinces, private healthcare facilities are underdeveloped and lack the necessary infrastructure to participate effectively in the PPM program, thus limiting the impact of the PPM efforts.

Sociocultural and Contextual Factors

Other factors influencing PPM activities include the stigma associated with tuberculosis in the community, as well as the self-stigma experienced by TB patients. The increasingly complex epidemiological situation of tuberculosis in Vietnam also poses a challenge.

DISCUSSION

The study's results indicate a significant increase in the number of provinces participating in the PPM program from 24 to 63 provinces between 2015 and 2023. By 2020, all provinces and cities in Vietnam were participating in the PPM. This shift marks an important milestone, reflecting strong political commitment and support for the program from all stakeholders, including policymakers and program participants.

PPM activities have contributed to the detection of approximately 5.6% to 33.4% of total tuberculosis cases. While this percentage is relatively modest compared to other countries implementing PPM, it is noteworthy that the role of private healthcare facilities in detecting tuberculosis cases is still limited. The number of tuberculosis cases detected in public health facilities outside the anti-tuberculosis program accounts for about three-quarters of the detected tuberculosis cases (ranging from 70.3% - 82.16%), the remaining detected tuberculosis cases (20-30%) are from private health facilities. Globally, however, the contribution of the private sector in PPM models is highly valued. In India, for instance, the Public-Private Interface Agency (PPIA) model has played a crucial role, with private facilities contributing 40% to 90% of the total PPM involvement in regions such as Bihar and Patna (6, 7).

A systematic review by X. Lei et al. (2015) analyzing 78 studies on 48 PPM programs across 16 countries demonstrated that successful implementation of PPM in these countries often involved allowing qualified private healthcare facilities to manage TB cases and connect to the national network without discrimination between private and public healthcare sectors (8).

The findings of this study underscore that policy, governance, and management are the most critical factors influencing PPM implementation at the local level. To further enhance the effectiveness of PPM, it is essential to advocate for policy changes at the provincial

level that increase the political commitment of policymakers toward TB control.

Human resources are another key determinant. Two major challenges regarding human resources require further attention. The first is the need for comprehensive training and retraining programs for healthcare personnel. Global experience suggests that training and standardizing the capacity of healthcare facilities involved in PPM is vital for success, as evidenced by countries like India, where such measures are mandatory (8). The second challenge is the mobilization of district-level human resources, which has not received sufficient focus in Vietnam. The assessment report of the Department of Medical Examination and Treatment Management on the implementation and deployment of Circular 02 in 2017 also emphasized the role of the Health Department in PPM activities (9).

Regarding financial issues, the research results have shown the difficulties that the National Tuberculosis Control Program in Vietnam is facing in the context of increasingly limited resources, reduced funding from international organizations, and public health facilities focusing on financial autonomy, so they pay less attention to "less profitable" activities such as the Tuberculosis Control Program. Financial constraints are also a common challenge in low- and middle-income countries, as reflected in the findings of X. Lei et al. (2015), which indicated that most programs lack sufficient funding to maintain or scale up PPM activities (8). To address this, provincial tuberculosis control units should work closely with the Department of Health to direct support for healthcare facilities engaged in tuberculosis control.

While the information system for PPM activities is generally effective, challenges in communication between healthcare facilities and provincial TB programs persist. This mirrors findings from global research, which identifies limitations in information exchange between

participating healthcare facilities as a major barrier to PPM implementation in low-income and middle-income countries (8),(10--12).

Study limitations: First, the study relied on secondary data to assess the results of PPM activities in Vietnam, so it has not been able to fully assess indicators such as treatment outcomes, management, cost-effectiveness and people's access to the program. The qualitative study was only conducted in 3 provinces - local representatives including: Hai Phong, Quang Nam, Ho Chi Minh City; and Hanoi (central representative), so some of the research results may not be completely representative of all provinces and cities nationwide.

CONCLUSIONS

After nearly a decade of implementing the public-private mix for tuberculosis control, the results of this study indicate that the PPM model is well-suited to the Vietnamese context and aligns with the World Health Organization's recommended approach for low- and middle-income countries. From 2015 to 2023, the number of provinces participating in the PPM increased from 24 to 63, representing full nationwide participation. The proportion of tuberculosis patients detected through the PPM program has steadily increased, from 5.6% to 33.4% by 2023, with a significant proportion of patients diagnosed in public healthcare facilities outside the National Tuberculosis Program.

Moving forward, it is critical to strengthen the involvement of private healthcare facilities in PPM by adjusting policies related to TB control and ensuring no discrimination between private and public sectors. Moreover, clear guidelines for rewarding or penalizing facilities based on their performance in the PPM are necessary to encourage greater

engagement in the program.

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