Public-Private Partnership for TB care and prevention in Korea

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The importance of engaging all providers in tuberculosis (TB) care and prevention has been recognized for well over a decade. Over 3 million people with TB are missed each year by health systems and therefore do not get the care they need and deserve. A large proportion of these patients are diagnosed and managed in the private sector but not notified to national health systems. Failure to engage with public sector can result in long delays in diagnosis and treatment, resulting in further TB transmission, and poor-quality diagnosis and treatment, leading to the development of multidrug-resistant TB. The public-private partnership, an important component of the End TB Strategy, was first introduced by the World Health Organization (WHO) to improve the quality of essential tuberculosis care at private sectors.

Despite a rapid decline in TB incidence between 1950 and 2000, TB incidence rate remained stagnant from 2001 to 2010. Recognizing its public health burdens, the Korea Disease Control and Prevention Agency (KDCA) initiated various forms of TB eradication efforts. Among these, the Public-Private Mix (PPM) TB Control Project has been actively implemented and expanded nationwide since 2011. Here, we aim to introduce the PPM TB control project, summarize its progress and achievements, and outlined its future plans.

*Early Stage of National TB Control Program*

In 1955, the Ministry of Health formulated a five-year plan for TB control centered on public health centers. With the amendment of the Public Health Center Act in 1961, the National TB Control Program was enforced from 1962, focusing on early detection and treatment in public health centers. During times when treatment facilities were insufficient, TB were managed primarily through public health centers. With economic growth between 1970s and 1980s and universal health coverage in 1989, patients preferred treatment at private hospitals and
proportion of TB cases managed at private sector continued to increase. However, anti-TB
treatment outcome were unsatisfactory within private sectors. Surveys conducted in private
clinics in Korea revealed that the treatment success rate was only 49.2% in 1987 and rose to
just 62.7% by 1993, with a loss-to-follow-up rate of 30%3.

Public-Private Mix Tuberculosis Control Project

The first initiative of public-private collaboration model was introduced by the Korean Institute
of Tuberculosis in 2001 with improved treatment success rate among patients with new smear-
positive pulmonary TB4. In September 2006, the Ministry of Health and Welfare formulated
the '2030 TB Elimination Plan' and introduced a PPM model. In 2007, a pilot PPM project
supporting 16 TB specialist nurses was implemented in 11 university-affiliated hospitals, each
having over 250 reported TB cases annually. As the treatment success rate in private sectors
improved through the pilot project, the legal basis for the PPM TB control project was
established under Article 7 of the TB Prevention Act in January 2009. In February 2009, 22
hospitals were participated5. This initiative expanded to 45 hospitals in 2010. By 2011, the
PPM project had expanded nationwide and 97 hospitals with over 100 reported TB cases
annually participated. From 2014, joint committees involving local governments, public health
centers, and private hospitals have operated for regional TB management.

Despite threat to the healthcare system caused by the coronavirus disease 2019 pandemic6, the
PPM project was able to be maintained. TB notification rate has been continuously decreasing
since 2011 (Figure 1A). After observing successful management of patients with TB within the
PPM project7,8, MDR-TB consortium was formed in 2020 to comprehensively manage patients
with rifampicin-resistant TB.
The public sector is responsible for policy decisions, budgets, and administrative support for the PPM project (Figure 1B). The private hospitals hire and train TB specialist nurses, provide necessary equipment and patient’s clinical information, and assist them in providing patient care and support. The primary focus of the PPM project is to enhance TB case management at private hospitals, thereby reducing loss-to-follow-up and improving outcomes. TB specialist nurses are responsible for educating, supporting and counselling patients along the care pathway. They register TB cases, explain about anti-TB treatment process, check treatment adherence, and encourage patient’s clinic visits. They counsel for social support and coordinate with other appropriate healthcare services. They also identify family contacts, explain need for TB screenings and preventive therapy.

The PPM project is overseen by the Korean Academy of Tuberculosis and Respiratory Diseases under the supervision of the KDCA. To monitor activities of TB case management and improve their qualities at private hospitals, a steering committee exists, comprising a central office and 21 regional offices. In June 2017, a central statistics analysis team was established to host monitoring indicator analysis meetings and evaluate regional activities using the Korean PPM monitoring database (KPPMD)². In addition, a prospective observational registry database of the notified patients with TB within the PPM project, the Korea TB cohort (KTBC)⁹, is also constructed to facilitate TB research, generate new evidence, and support TB policy development.

Future of the Public-Private Mix Tuberculosis Control Project
In March, 2023, the KDCA announced the third National Strategic Plan for TB Control aiming to achieve a TB incidence rate of fewer than 20 cases per 100,000 people by 2027. One of the four key strategies is the 'Enhanced Patient Care and Management,' with a focus on strengthening PPM project. The plan includes comprehensively evaluating the project, devising future strategy to adopt local TB epidemiology, and activating regional committees to monitor activities of private hospitals.

Public-private partnerships play a vital role in the medical fields, exemplified by the collaboration between governments, pharmaceutical companies, and research institutions during the COVID-19 pandemic to develop and distribute vaccines. However, differing interests among various entities complicate TB community collaborations for a long time. Recently, WHO's emphasis on public-private partnerships for TB prevention and care has driven progress. Korea has refined a PPM model over a decade. While not directly replicable, its success could inspire other countries. Bold policies with political wills are crucial to harness the public and private sectors and promote collaborative approaches for TB elimination.
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Author contributions

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**Figure legend**

**Figure 1.** Trends in tuberculosis notification rates between 2001 and 2022 (A) and structure of the Public-Private Mix Tuberculosis Control Project (B) in the Republic of Korea.

WHO, world health organization; TB, tuberculosis; NTCP, national tuberculosis control program; PPM, public-private mix; NIH, national health insurance; MDR-TB, multi-drug resistant tuberculosis; KDCA, Korea Disease Control and Prevention Agency
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