

## Abstract

## Results of the Korean National Private-Public Mix Tuberculosis Control Project: Analysis of the indicators for tuberculosis management in 2017-2019

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To manage tuberculosis (TB) patients treated by private medical institutions, the Korean government has been promoting a national Private-Public Mix (PPM) TB control project with the Korean Academy of Tuberculosis and Respiratory Diseases since 2011. This study analyzed the indicators for TB management reported by medical institutions participating in PPM TB control project from 2017 to 2019. The final treatment results were confirmed through observation for a total of five quarters by dividing the reported date by quarter.

As diagnostic tests and key indicators of the management rate of active TB patients, sputum smears (94.3%), culture tests (93.7%), and drug susceptibility tests (93.5%) were conducted. Major findings indicated that the compliance rate of initial standard treatment was high (93.6%). Further findings indicated that the treatment success rate for sputum acid-fast bacillus (AFB) positive patients was 84.9%; a decrease from 86.8% in 2018 to 84.7% in 2019.

Furthermore, the case investigation rate and contactor screening rate, which are indicators related to the early detection of active TB patients and TB prevention treatment, were high at approximately 98.4% and 90% (89.4% in adults and 91.8% in children) respectively. However, the rate of initiated latent tuberculosis infection (LTBI) treatment tended to be low at 53.8% in adults and 85.8% in children, requiring private and public cooperation to increase the rate of treatment for LTBI.

This study concluded that Korea's overall TB management indicators are improving, but some regions or institutions are still below the national average. To increase the success rate of TB treatment, measures to improve the target underachieving indicators through national PPM TB control project are required. In addition, improvements in TB management indicators will continue to be used as a basis for assessing the effectiveness of PPM control project.

**Keywords:** Tuberculosis (TB), Latent tuberculosis infection (LTBI), Private-public mix (PPM), TB control project, TB management indicators

Table 1. Status of the tuberculosis (TB) patient management under the national private–public mix (PPM) TB control project and new TB notification cases and rates, 2015–2019

|                                                      | 2015                           | 2016   | 2017   | 2018   | 2019   |
|------------------------------------------------------|--------------------------------|--------|--------|--------|--------|
| New TB notification cases (persons)                  | 32,181                         | 30,892 | 28,161 | 26,433 | 23,821 |
| New TB notification rate (person/100,000 population) | 63.2                           | 60.4   | 55.0   | 51.5   | 46.4   |
| PPM hospitals                                        | New TB cases (person)          | 21,128 | 20,531 | 19,349 | 18,698 |
|                                                      | Percentage management (%)      | 65.7   | 66.5   | 68.7   | 70.7   |
|                                                      | Number of hospitals            | 127    | 128    | 127    | 127    |
|                                                      | Number of TB specialist nurses | 193    | 200    | 200    | 198    |

Table 2. Status of the active tuberculosis (TB) patient management under the national private–public mix (PPM) TB control project, 2017–2019

|                                                         |                                                         | (Unit: %) |      |      |       |
|---------------------------------------------------------|---------------------------------------------------------|-----------|------|------|-------|
| Variable                                                |                                                         | 2017      | 2018 | 2019 | Total |
| Case investigation                                      | Investigation performed rate                            | 98.7      | 98.5 | 98.1 | 98.4  |
|                                                         | Period compliance rate                                  | 99.6      | 99.7 | 99.7 | 99.7  |
| Sputum AFB smear test                                   | Rate of tests performed                                 | 93.4      | 94.9 | 94.8 | 94.3  |
|                                                         | Rate of positive results                                | 29.6      | 29.0 | 28.7 | 29.1  |
| Sputum AFB culture test                                 | Rate of tests performed                                 | 92.2      | 94.6 | 94.4 | 93.7  |
|                                                         | Rate of positive results                                | 60.1      | 60.8 | 60.3 | 60.4  |
| Drug susceptibility test (DST)                          | Rate of total DST performed                             | 93.2      | 93.6 | 93.8 | 93.5  |
|                                                         | Rate of conventional method DST performed               | 91.9      | 92.7 | 93.2 | 92.6  |
| Compliance rate of initial standard treatment regimen   | Compliance rate of initial standard treatment regimen   | 93.7      | 93.6 | 93.6 | 93.6  |
| Treatment success rate among smear–positive TB patients | Treatment success rate among smear–positive TB patients | 83.4      | 86.8 | 84.7 | 84.9  |
| Treatment discontinued/failed                           | Rate of treatment discontinuation                       | 2.3       | 2.4  | 2.2  | 2.3   |
|                                                         | Rate of treatment failed                                | 0.03      | 0.04 | 0.06 | 0.04  |

Table 3. Status of the close contacts management under the national private–public mix (PPM) TB control project, 2017–2019

|                                                                                                                |                                            | (Unit: %, n)                   |        |        |       |
|----------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------------------------------|--------|--------|-------|
| Variable                                                                                                       |                                            | 2017                           | 2018   | 2019   | Total |
| Rate of Contacts investigation /Rate of latent tuberculosis infection (LTBI) /Rate of initiated LTBI treatment | Adult TB contacts                          | Contacts investigation rate    | 87.0   | 89.5   | 91.9  |
|                                                                                                                |                                            | LTBI screening rate            | 25.7   | 27.6   | 26.3  |
|                                                                                                                |                                            | Initiated LTBI treatment rate  | 53.3   | 48.1   | 59.8  |
|                                                                                                                | Childhood TB contacts                      | Rate of Contacts investigation | 89.4   | 93.1   | 93.4  |
|                                                                                                                |                                            | LTBI screening rate            | 18.8   | 20.3   | 21.3  |
|                                                                                                                |                                            | Initiated LTBI treatment rate  | 81.9   | 85.8   | 90.0  |
| Proportion of suspected TB and TB patients after contacts investigation                                        | Proportion of suspected TB and TB patients | 3.6                            | 3.5    | 3.5    | 3.5   |
| Sputum smear test for suspected TB                                                                             | Rate of tests performed                    | 50.7                           | 47.9   | 45.1   | 48.0  |
|                                                                                                                | Rate of positive results                   | 5.5                            | 4.9    | 4.9    | 5.1   |
| Sputum culture test for suspected TB                                                                           | Rate of tests performed                    | 42.2                           | 42.2   | 41.3   | 41.9  |
|                                                                                                                | Rate of positive results                   | 6.9                            | 10.1   | 6.0    | 7.7   |
| Final diagnosis of household Contact investigation program (n)                                                 | Normal                                     | 11,271                         | 12,938 | 14,434 | –     |
|                                                                                                                | Active TB                                  | 104                            | 88     | 94     | –     |
|                                                                                                                | LTBI(Include inactive TB)                  | 4,282                          | 4,570  | 4,492  | –     |
|                                                                                                                | Other diseases                             | 285                            | 388    | 429    | –     |
|                                                                                                                | Not a contact                              | 1                              | 0      | 0      | –     |
| No. of individuals in an average household                                                                     |                                            | 2.0                            | 2.0    | 2.0    | –     |