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<THE TOPIC OF THIS MONTH> Tuberculosis in Japan, 2016

Tuberculosis (TB) is a category II infectious disease, which is to be notified immediately to a local public health center (PHC) by a physician who has made the diagnosis (see <http://www.nih.go.jp/niid/images/iasr/38/454/de4541.pdf> for notification criteria). Mandatory notification of TB was introduced in 1951 under the revised Tuberculosis Prevention Law, which was integrated into the Infectious Diseases Control Law in 2007. Based on notifications from physicians, PHCs located in prefectures, designated cities and special districts in Japan are responsible for registering the data of notified TB patients into the Japan TB Surveillance system (JTBS). Here, we present an overview of the current epidemiological situation of TB in Japan based on data of case patients notified and registered to the JTBS between 1 January and 31 December 2016.

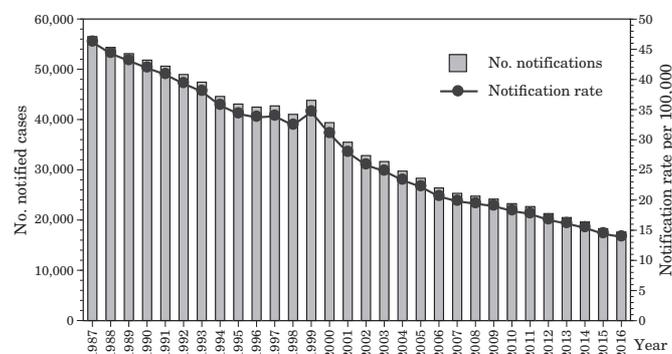
Japan TB surveillance system: JTBS is a subsystem within the National Epidemiological Surveillance of Infectious Diseases (NESID) system. All legally notified TB and latent TB infection (LTBI) case information are registered and entered in the system at PHCs.

Trends in notifications of TB case patients: The annual number of newly notified TB cases and notification rate* over time are shown in Fig.1. In 2016, 17,625 TB patients were newly diagnosed and registered as TB, with a notification rate of 13.9 per 100,000 population. In 2016, the Ministry of Health, Labour and Welfare (MHLW) set a target of reducing the annual TB incidence rate to ≤ 10 per 100,000 population by 2020 (“Guidelines for the prevention of specific infectious diseases: TB”, MHLW). With the current reduction rate of between 4 and 6 % per year, however, attaining this goal may be delayed by several years.

Clinical characteristics of TB case patients: Among the newly notified cases, 77.2% (13,608) and 22.8% (4,017) had pulmonary disease and exclusive extra-pulmonary disease, respectively. Of the pulmonary TB cases, 85.7% (11,668) were bacteriologically confirmed and 1,940 (14.3%) were diagnosed by other methods such as chest X-ray. Among the pulmonary TB cases, 6,642 were sputum smear positive, indicating that approximately half of pulmonary TB cases were potential sources of further infection. The most frequently affected extra-pulmonary organs were pleurae (3,141), followed by lymph nodes, intestines, vertebrae and peritonea. There were 633 cases of miliary TB, a consequence of blood stream dissemination. There were 908 cases with a previous history of TB treatment (i.e. “retreatment cases”), comprising 5.2% of the newly notified TB cases (7.3% in 2006).

Sex and age distribution of TB case patients: Among newly notified TB cases, 10,594 (60.1%) were male and 7,031 (39.9%) female. The sex ratio tended to increase among those aged ≥ 35 years, with approximately twice the number of male than female cases among those aged 40-79 years. The proportion of elderly TB cases has continued to increase (Fig. 2 in p. 232); among the newly notified cases, the proportion of those aged ≥ 65 years increased from 43.0% in 1996, to 54.5% in 2006 and 66.6% in 2016. The proportion of those aged ≥ 80 years reached 39.7% in 2016. On the other hand, there were 59 newly notified cases aged ≤ 14 years, among whom 12 were foreign-born. The notification rate among cases ≤ 14 years was low at 0.4 per 100,000 population; two patients were severe cases

Figure 1. TB case notifications and notification rates, 1987-2016



(Japan Tuberculosis Surveillance Annual Report, 1987-2016)

*Notification rate: notification rate of TB refers to the number of patients diagnosed with TB who were notified, as according to the national guideline, per 100,000 populations over a set period of time. In countries with limited resources and underdeveloped notification systems, the actual frequency of TB occurrence per 100,000 population over a set period of time (i.e. incidence rate) may differ from the notification rate.

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Figure 2. Annual trend in the proportion of elderly cases among all newly notified TB cases, 1987-2016

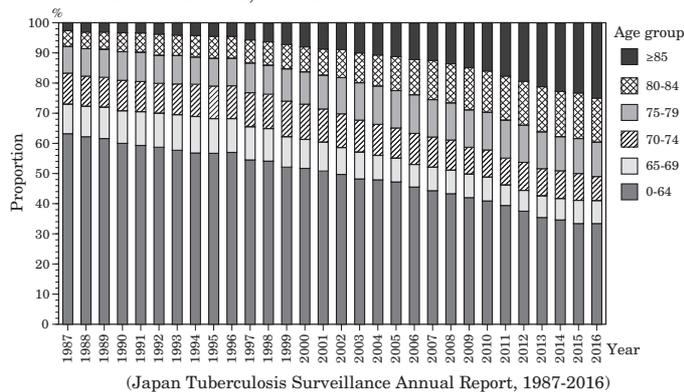
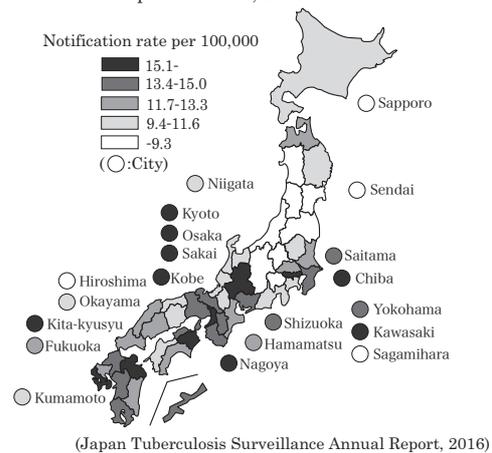


Figure 3. TB notification rate by prefecture and in large metropolitan cities, 2016



(one case patient with both miliary TB and TB meningitis and another with TB meningitis).

Country of birth of TB case patients: Among newly notified TB cases in 2016, 1,338 cases (7.9%) were foreign-born (excluding cases whose country of birth was unknown). The proportion of foreign-born cases has approximately doubled in the past decade, from 3.8% (920) in 2006, owing largely to the substantial increase among those aged 15-39 years. In 2016, among the newly notified TB cases aged 20-29 years, more than a half, 58.7% (712), were foreign-born. The most frequent countries of birth of the foreign-born cases were the Philippines (318, 23.8%), followed by China (272, 20.3%), Viet Nam (212, 15.8%), and Nepal (135, 10.1%). The increase in the number of cases from Viet Nam and Nepal has been notable, with an increase of 4.1-fold for the former (52 in 2011) and 3.6-fold for the latter (38 in 2011) (see p. 234 of this issue).

Notification rate by prefecture: In general, the notification rate has continued to be higher in the western than in the eastern part of Japan (Fig. 3), along with a more focused occurrence in urban areas. While the population in central Tokyo and the 20 large metropolitan cities comprise 29.1% of the total population of Japan, the TB cases newly notified from these areas contribute to 35.2% of the total notifications, and 41.3% of notifications among those aged ≤ 64 years. The prefecture with the highest notification rate was Osaka (22.0 per 100,000) and the lowest, Yamagata (7.2 per 100,000). Ten prefectures with a notification rate ≤ 10 per 100,000 were located mainly in the eastern part of Japan.

Detection of TB case patients and laboratory tests: Among the newly notified pulmonary TB cases in 2016, 73.9% (10,063/13,608) were symptomatic, of which 53.9% were detected upon seeking medical attention with TB-related symptoms, and 24.7% during hospitalization or hospital visits due to diseases other than TB. The proportions of those detected through regular medical examination and contact investigation out of all newly notified TB cases were 10.0% (1,759) and 3.5% (620), respectively.

Among the symptomatic pulmonary TB cases, the onset date of clinical symptoms was recorded for 6,703 cases, of whom 19.7% (1,323) experienced delay in seeking medical attention for two months or longer. The proportion of those with such delay tended to be higher among the sputum smear positive cases, with as much as a third among those aged 30-59 years taking 2 months or longer to seek medical attention, after the onset of initial symptoms. The sputum smear test was conducted in 98.9% and bacterial culture examination in 97.1% of all newly notified pulmonary TB cases (see p. 237 of this issue).

Drug resistance: Among 9,878 culture positive pulmonary TB cases newly notified in 2016, the drug susceptibility test (DST) result was known for 7,732 cases (78.3%). Among them, 6,939 (89.7%) were sensitive to four of the five first-line drugs: INH (isoniazid), RFP (rifampicin), SM (streptomycin) and EB (ethambutol) (see p. 235 of this issue). There were 49 cases of multidrug resistant TB, i.e. resistant to both INH and RFP, comprising 0.6% of the cases with DST results known. Similarly, 369 had INH monoresistance and 74 RFP monoresistance, comprising 4.8% and 1.0% of the cases with DST results known, respectively. The remaining 2,146 (21.7%) were either not tested for the DST or their data were unavailable.

Treatment outcome: Treatment outcomes of the 6,676 sputum smear positive pulmonary TB cases newly notified in 2015 were as follows: treatment success (cured and completed) 47.7%, died 22.7%, treatment failure 0.6%, lost to follow-up 3.7%, transferred out 3.7%, still on treatment for >12 months 9.3%, and unclassified 12.2% (unclassified includes cases whose treatment regimen was non-standard due to reasons such as drug resistance, and cases whose data were insufficient). The treatment success rate at 47.7% falls short of the 85% target set by the WHO, largely due to the fact that, as aforementioned, more than a third of the newly notified patients are aged 80 years, thereby pushing up the proportion of those who have died. The treatment success rate of those aged ≤ 49 years has been around 70% (see p. 235 of this issue).

Latent TB infection (LTBI) requiring treatment: Among the 7,477 LTBI cases newly notified in 2016, the age group with the largest number of cases were those aged 60-69 years, comprising 16.9% (1,261) of all LTBI cases. The number of LTBI notifications has fluctuated between 6,675 and 8,771 in the past five years.

Conclusion: TB control has been ongoing in order to reach the goal of reducing the annual TB incidence rate to below 10 per 100,000 population. However, multi-faceted measures are needed to address the various challenges including aging TB patients, increase in young foreign-born TB patients, and the clear regional disparities in TB notification rates.

The statistics in this report are based on 1) the data concerning patients and laboratory findings obtained by the National Epidemiological Surveillance of Infectious Diseases undertaken in compliance with the Law Concerning the Prevention of Infectious Diseases and Medical Care for Patients of Infections, and 2) other data covering various aspects of infectious diseases. The prefectural and municipal health centers and public health institutes (PHIs), the Department of Environmental Health and Food Safety, the Ministry of Health, Labour and Welfare, and quarantine stations, have provided the above data.