TUBERCULOSIS IN JAPAN

ANNUAL REPORT - 2024

TUBERCULOSIS SURVEILLANCE CENTER
Research Institute of Tuberculosis, Japan Anti-Tuberculosis Association

CONTENTS

1 Newly Notified Tuberculosis Patients and Incidence Rates and Their Trends

The number of patients diagnosed and notified with tuberculosis in Japan in 2022 was 10,235. The incidence rate per 100,000 population (hereinafter referred to as "Incidence Rate") was 8.2*. Of these, 7,454 patients with pulmonary tuberculosis accounted for 72.8% of newly notified tuberculosis patients. There were 2,781 extrapulmonary tuberculosis patients, 27.2% of the total.

The number of sputum smear-positive pulmonary tuberculosis patients was 3,703, or 49.7% of all pulmonary tuberculosis patients. The number of bacteriologically-positive pulmonary tuberculosis patients, including sputum smear-positive pulmonary tuberculosis patients, for whom *Mycobacterium tuberculosis* was detected was 6,529, or 87.6% of all pulmonary tuberculosis patients. 925 were bacteriologically-negative or bacteriologically-unidentified pulmonary tuberculosis patients reported by clinical diagnosis without *Mycobacterium tuberculosis* detection, accounting for 12.4% of pulmonary tuberculosis patients.

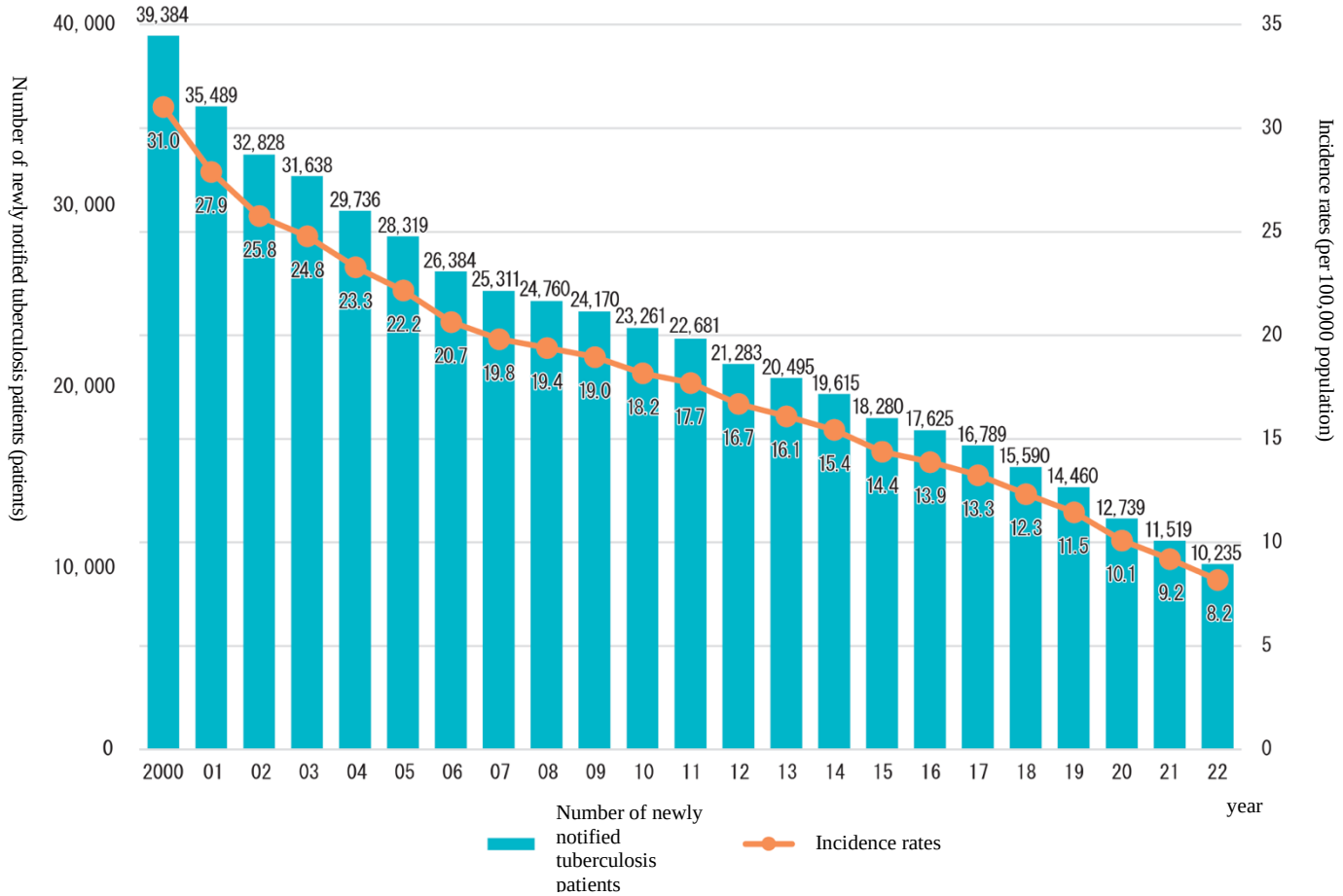
In addition, 5,025 new cases of latent tuberculosis infection requiring treatment were notified, with an incidence rate of 4.0.

Figure l - l shows trends in the number of newly notified tuberculosis patients and incidence rates since 2000.

The number of newly notified patients from 2021 to 2022 decreased by 11.1% or 1,284. The incidence rate decreased from 9.2% to 10.9%, a decrease of 1.0. Before 2000, the incidence rate had decreased at an average rate of 10.6% per year from 1968 to 1979, but the rate of decrease slowed to 4-5% per year after 1980. The incidence rate in 2020 showed a significant decrease of 12.2% from the previous year. The decrease in 2021 was reduced to 8.9%, but in 2022, the decrease was again large, more than 10%.

(*: "Population Estimates" were used for the population for the calculation of incidence rates. (Statistics Bureau, Ministry of Internal Affairs and Communications) (https://www.stat.go.jp/data/jinsui/index.html) (used on June 29, 2023) was used.

Figure 1-1 Trend of number of newly notified tuberculosis patients and incidence rates, 2000 – 2022

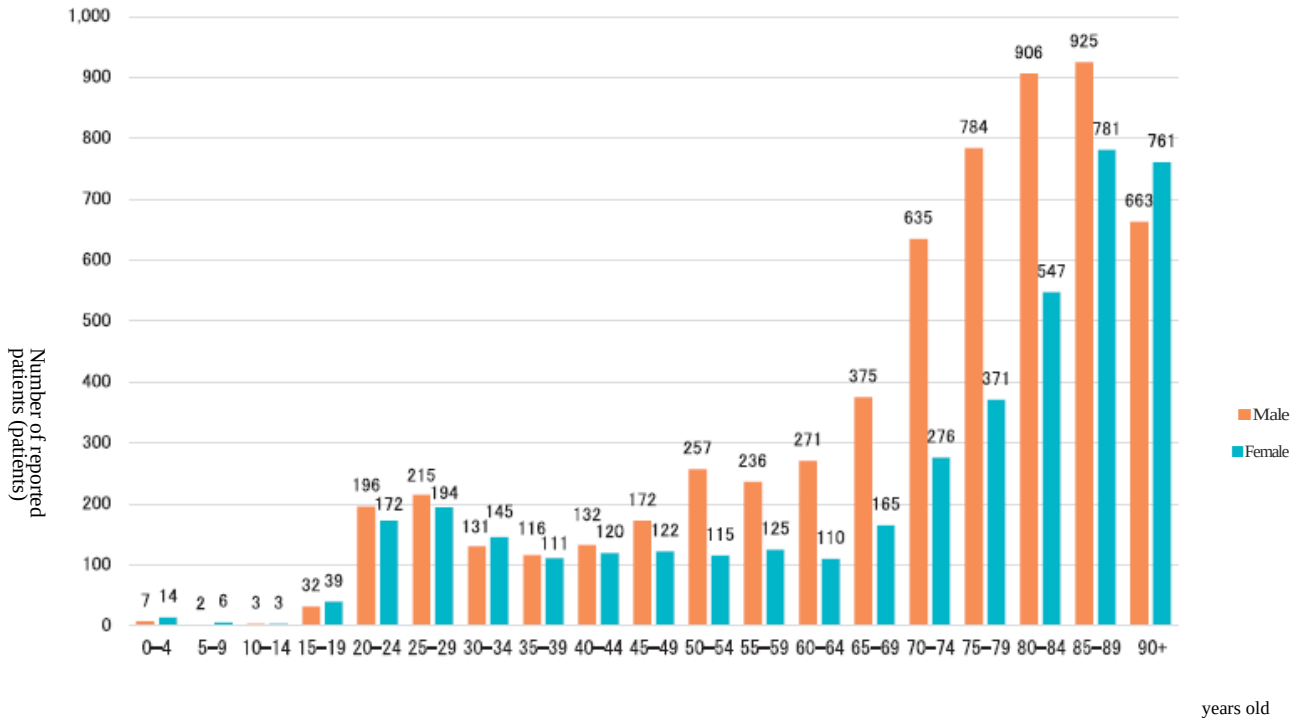


The age distribution of newly notified tuberculosis patients was skewed toward the elderly group, with the most significant number of both male and female patients in the 5-year age group between 85 and 89 years of age. A small peak was observed in the 20s, which was due to tuberculosis patients foreign-born (see 5 Tuberculosis in Patients of Foreign-Born).

The number of newly notified patients by sex was 6,058 males and 4,177 females, with males 1.5 times as many as females. The age-specific male-to-female ratio increased after the age of 45, and in the age group from 50 to 84, the number of males was 1.7 to 2.5 times greater than that of females.

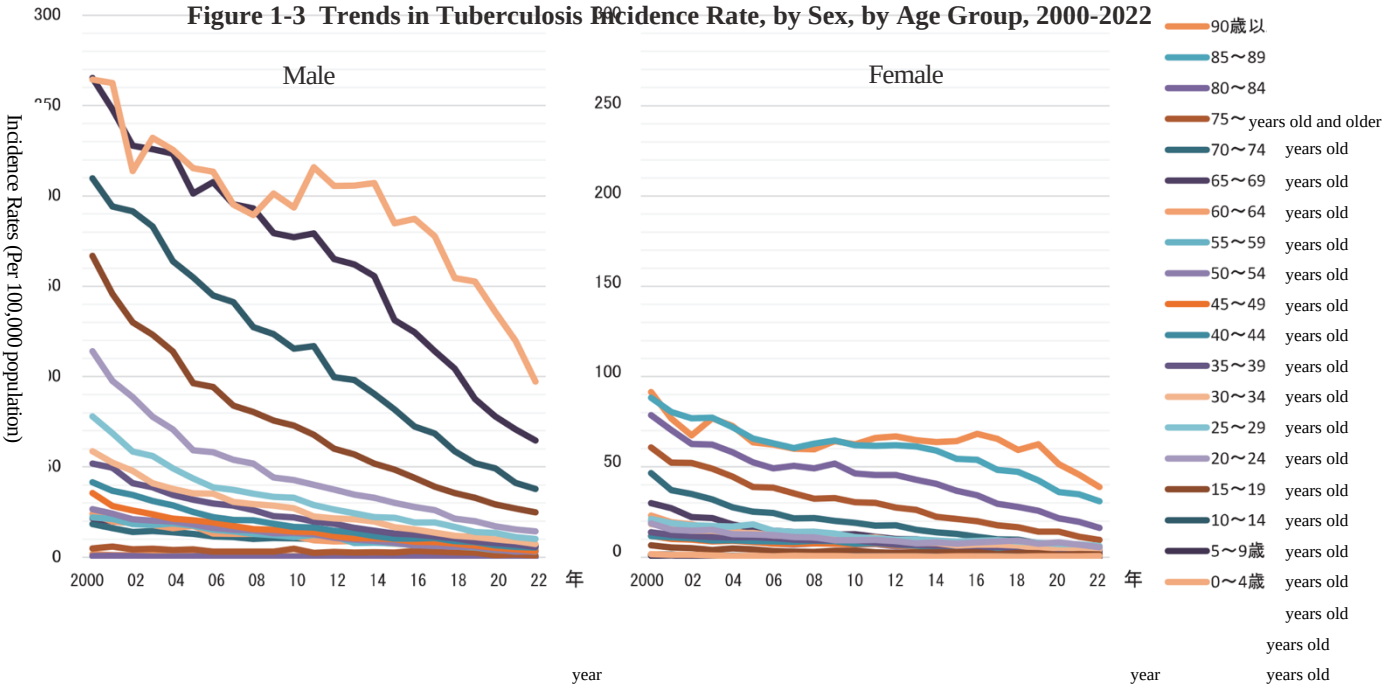
The average age of newly notified tuberculosis patients was 70.1 years old (male 70.0, female 70.1), and the median age was 78 years old (male 76, female 80) **(Figure 1-2)**.

Figure 1-2 Number of newly notified tuberculosis patients, by sex, by age group, 2022



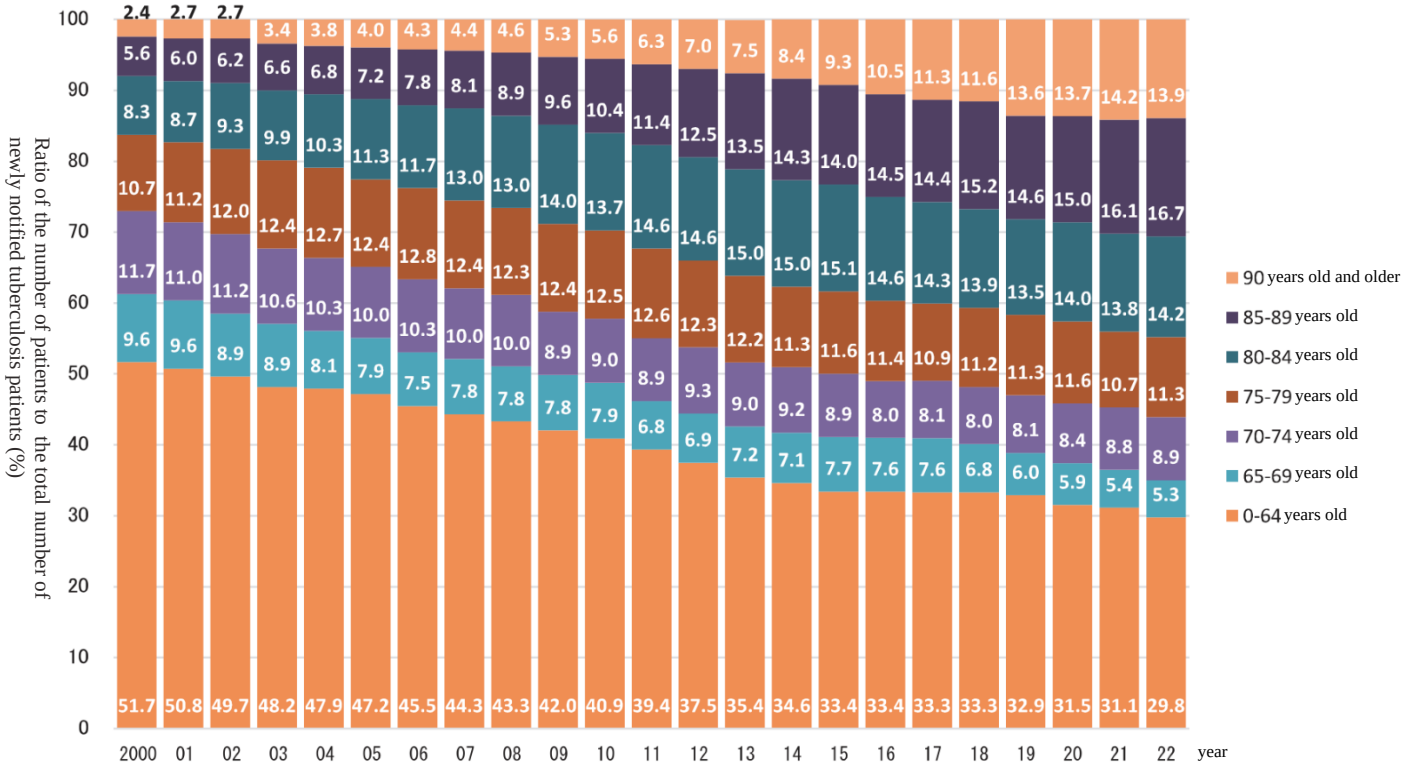
The incidence rate of tuberculosis by sex and by age group was higher in males than in females and tended to increase with increasing age groups. In the age group 50 years old and older, the incidence rate for males was 1.9 times higher than that for females, and in the age group 90 years old and older, the incidence rate for males (97.2) was 2.5 times higher than that for females (38.9). After 2000, the incidence rates of both males and females consistently decreased, except for those aged 90 years old and older. The incidence rate for males aged 90 years old and older began to increase in 2009 but declined again in and after 2015. The incidence rate for females aged 90 years old and older did not have a clear decreasing trend until 2019. A decreasing trend was seen from 2020 **(Figure 1-3)**.

Figure 1-3 Trends in Tuberculosis Incidence Rate, by Sex, by Age Group, 2000-2022



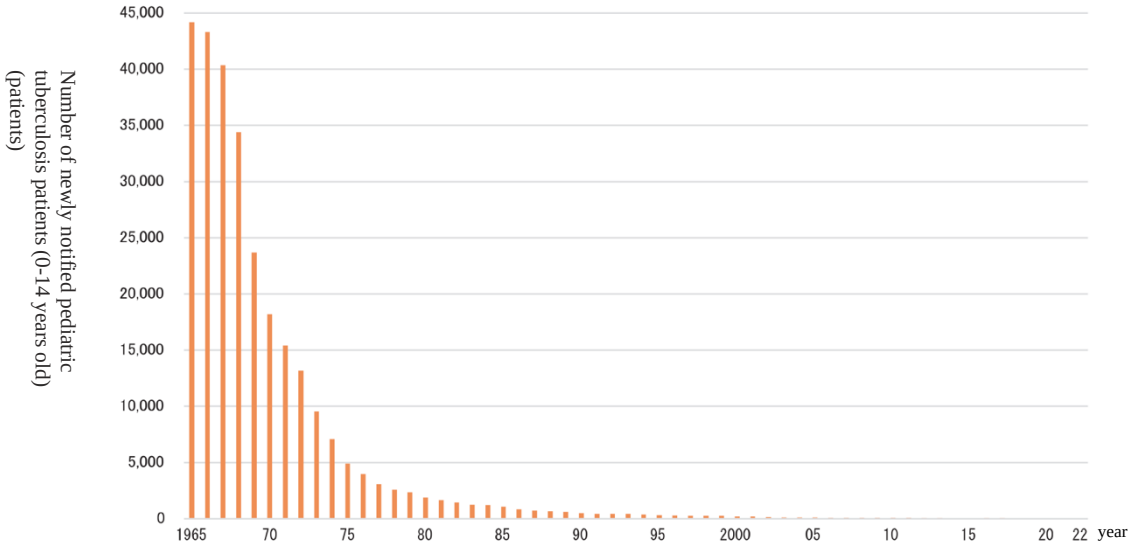
Although the incidence of tuberculosis is decreasing in the elderly population, the low incidence in other age groups and the increase in the elderly population due to the aging of the Japanese population have increased the parameter of the population of tuberculosis patients among the elderly, resulting in a relative bias toward the elderly population of tuberculosis patients. The number of newly notified tuberculosis patients aged 65 years old and older was 7,189, and the ratio to the total number of newly notified tuberculosis patients was 70.2%, an increase of 1.3 percentage points from 68.9% in the previous year. The number of newly notified tuberculosis patients aged 80 years old and older was 4,583 (44.8%). Looking at the percentage of tuberculosis patients aged 65 years old and older, in 2000, it was 48.3%, about half, but in 2015, it was 66.6%, accounting for two-thirds of newly notified tuberculosis patients (**Figure 1-4**).

Figure 1-4 Trends in the ratio of the number of patients by age group to the total number of newly notified tuberculosis patients, 2000-2022



The number of newly notified tuberculosis patients in children aged 14 and under in 2022 was 35 (12 males and 23 females), an increase of 6 from 29 in 2021. 27 were born in Japan, and 8 were born outside of Japan. The most prevalent age at the new notification was 0 years old, with 10 patients. The number of newly notified pediatric tuberculosis patients decreased rapidly from 44,180 newly notified patients in 1965 to 18,197 in 1970, 1,893 in 1980, 518 in 1990, and 220 in 2000. In 2006, the number of newly notified pediatric tuberculosis patients fell below 100 to 85 and continued to decline, but since 2014, the number has remained between 29 and 59 (**Figure 1-5**).

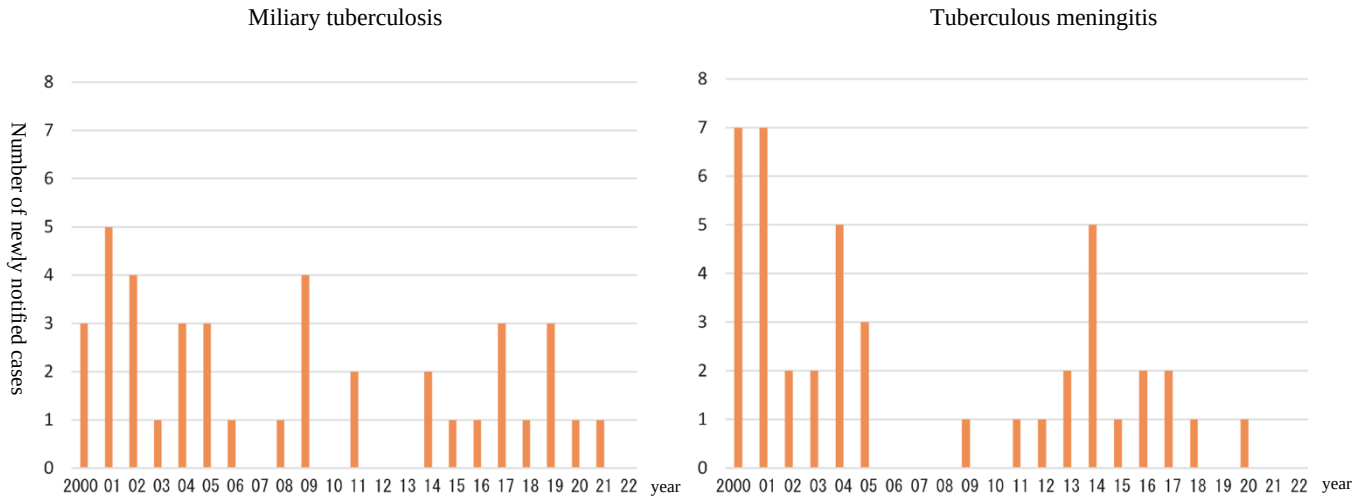
Figure 1-5　Trends in the number of newly notified pediatric tuberculosis patients (0-14 years old), 1965-2022



There were no outbreaks of miliary tuberculosis and tuberculous meningitis, which are severe tuberculosis cases among the pediatric tuberculosis cases notified in 2022. The trend in the number of newly notified cases of miliary tuberculosis and tuberculous meningitis in children since 2000 is shown in Figure 1-6 (duplicate cases of miliary tuberculosis and tuberculous meningitis are notified for 1 patient). A few cases per year of miliary tuberculosis and tuberculous meningitis have been reported (**Figure 1-6**).

The BCG immunization history of the 35 newly notified pediatric tuberculosis patients in 2022 was 8 with BCG immunization, 8 without tuberculosis BCG immunization, and 19 with unknown immunization history (no manpower). Of these 8 foreign-born patients, 3 had a history of BCG vaccination, 1 had no history of BCG vaccination, and 4 had an unknown (no input) vaccination history. The source of infection for 15 pediatric tuberculosis patients was entered. The sources of infection for these patients (15) were mothers (8), grandparents (4), fathers (2), and others (1).

Figure 1-6　Trends in the number of newly notified cases of miliary tuberculosis and tuberculous meningitis in children with tuberculosis (0~14 years old), 2000-2022



2 Geographic Distribution of Newly Notified Tuberculosis Patients

Newly Notified Tuberculosis Patients and Incidence Rates by Prefecture

The tuberculosis incidence rate has been high in western Japan and low in eastern Japan for many years.

In 2022, the highest number of newly notified tuberculosis patients among the 47 prefectures was 1,193 in Tokyo, of which 926 were notified in the special wards of Tokyo. The smallest number of patients was 40 in Tottori Prefecture.

The highest incidence rate was 12.7 in Osaka Prefecture. The next highest rates were 10.8 in Oita Prefecture, 10.7 in Nagasaki Prefecture, 10.7 in Tokushima Prefecture (ranked to the second decimal place), and 10.4 in Wakayama Prefecture.

The lowest incidence rate was 4.6 in Fukushima Prefecture. The next lowest rates were 4.6 in Yamagata Prefecture (ranked to the second decimal place), 4.9 in Niigata Prefecture, 5.1 in Iwate Prefecture, and 5.2 in Nagano Prefecture.

The highest incidence rate in Osaka Prefecture was 2.8 times that in Fukushima Prefecture, the lowest.

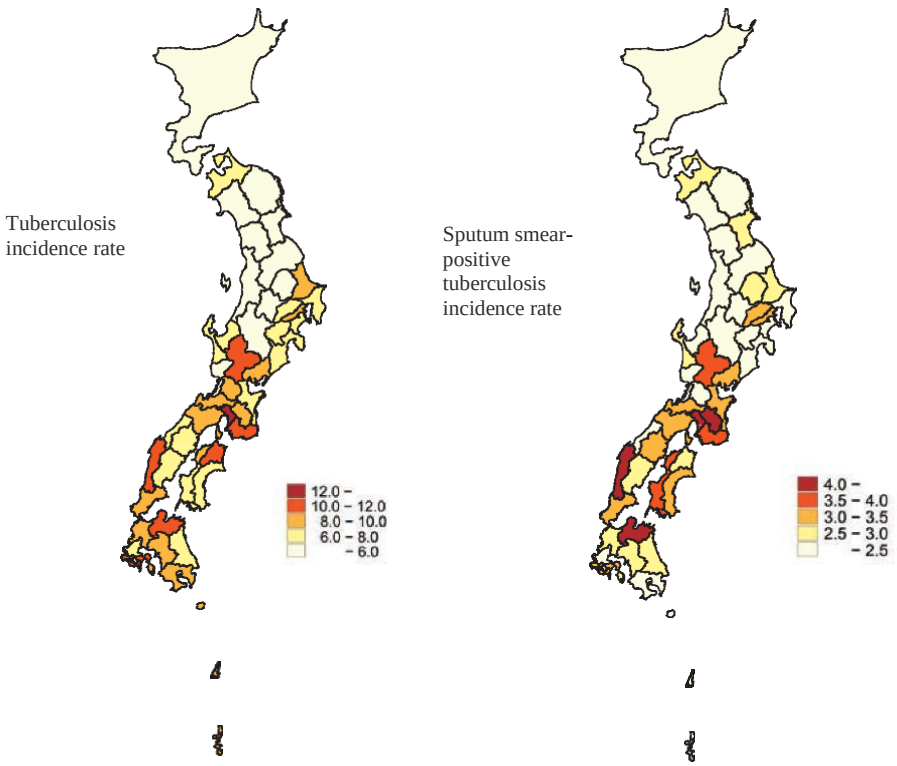
Of the 47 prefectures, 7 had an incidence rate of 10 or more. （**Figure 2-1**）

Number of newly notified sputum smear-positive pulmonary tuberculosis patients and incidence rate by prefecture

In 2022, 454 newly notified sputum-positive pulmonary tuberculosis patients were notified in Osaka Prefecture, the highest number in the 47 prefectures, and the lowest number was 9 in Fukui Prefecture. The highest incidence rate of sputum smear-positive pulmonary tuberculosis was 5.2 in Osaka Prefecture. The next highest rates were 4.2 in Oita Prefecture, 4.1 in Shimane Prefecture, 4.1 in Nara Prefecture (ranked to the second decimal place), and 3.9 in Gifu Prefecture.

The lowest incidence rate was 1.2 in Fukui Prefecture, followed by 1.4 in Niigata Prefecture, 1.8 in Yamagata Prefecture, 1.9 in Iwate Prefecture, and 1.9 in Yamanashi Prefecture (ranked to the second decimal place). (**Figure 2-1**)

Figure 2-1 Tuberculosis incidence rate and sputum smear-positive tuberculosis incidence rate by prefecture, 2022



Geographic Distribution of Newly Notified Tuberculosis Patients of Foreign-Born

Among the 1,214 newly notified tuberculosis patients of foreign-born in 2022, Tokyo had the highest number of patients among the 47 prefectures, with 158 patients. Aichi Prefecture had 138 patients, followed by Osaka Prefecture with 99, Kanagawa Prefecture with 77, and Chiba Prefecture with 71. The percentage of foreign-born patients among newly notified tuberculosis patients was the highest in Gunma Prefecture (34 foreign-born patients) at 30.4%. The next highest percentages were 22.5% in Kagawa Prefecture (18 patients), 21.4% in Tochigi Prefecture (24 patients), 19.9% in Shizuoka Prefecture (48 patients), and 19.6% in Yamanashi Prefecture (10 patients), in that order. The lowest percentage of foreign-born patients was 3.2% (3 foreign-born patients) in Wakayama Prefecture. A higher trend was observed in the Northern Kanto and Tokai-Chubu regions. (**Figure 2-2)**

(See 5. Tuberculosis in patients of foreign-born）

Geographic distribution of newly notified tuberculosis patients among the elderly

The highest percentage of newly notified tuberculosis patients aged 65 years old and older in 2022 was found in Fukui Prefecture (number of patients aged 65 years old and older 39 patients), with 92.9% or more than 90% of the patients being elderly. The next highest percentages were 88.0% in Tokushima Prefecture (66 patients), 86.9% in Nagasaki Prefecture (119 patients), 86.1% in Nara Prefecture (105 patients), and 85.2% in Kochi Prefecture (46 patients), in that order. On the other hand, Gunma Prefecture (63 patients) had the lowest rate at 56.3%. This was followed by Chiba Prefecture (291 patients) at 58.9%, Tokyo (731 patients) at 61.3%, Ibaraki Prefecture (155 patients) at 62.5%, and Kanagawa Prefecture (448 patients) at 63.9%. There was a 1.7-fold gap between Gunma Prefecture, which had the lowest rate, and Fukui Prefecture, which had the highest rate.

Miyazaki Prefecture had the highest percentage of patients aged 80 years old and older, 66.7% (56 patients aged 80 years old and older), and two out of three newly notified tuberculosis patients were aged 80 years old and older. The lowest rate was in Gunma Prefecture at 32.1% (36 patients).

There was a tendency for the proportion of elderly tuberculosis patients to be lower in areas with a high proportion of foreign-born patients in the northern Kanto, Tokai, and Chubu regions, as well as the Kanto metropolitan area. (**Figure 2-3**)

Figure 2-2 Percentage of foreign-born patients among newly notified patients (%) by prefecture, 2022

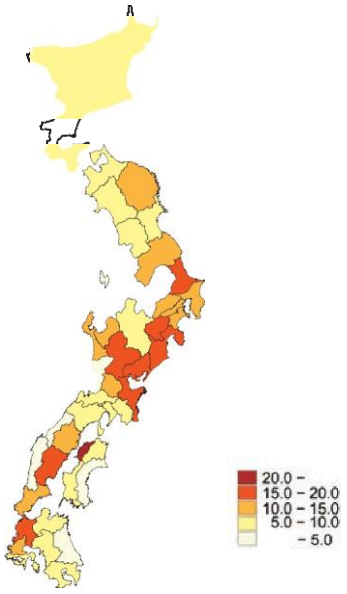
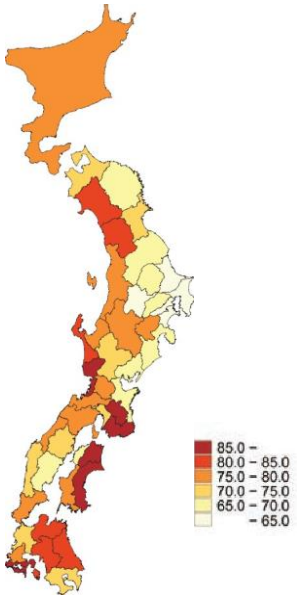


Figure 2-3 Percentage of patients 65 years old and older among newly notified tuberculosis patients (%) by prefecture, 2022



3 Clinical Background of Newly Notified Tuberculosis Patients

Pulmonary and extrapulmonary tuberculosis

In classifying activity in notified tuberculosis patients, pulmonary tuberculosis includes pulmonary tuberculosis and tracheal/bronchial tuberculosis. Therefore, it is necessary to distinguish between pulmonary tuberculosis in the broad sense, which includes tracheal and bronchial tuberculosis, and pulmonary tuberculosis in the narrow sense, which does not include them. However, this section deals specifically with pulmonary tuberculosis in a narrow sense. In addition, when pulmonary tuberculosis was combined with extrapulmonary tuberculosis, the patients were counted in both cases. When multiple organs were affected in extrapulmonary tuberculosis, the patients were counted in duplicate. Therefore, the total number exceeded the number of newly notified tuberculosis patients.

Of the 10,235 newly notified tuberculosis patients in 2022, 7,454 had pulmonary tuberculosis, and 4,111 had extrapulmonary tuberculosis.

Table 3-1 shows the percentage of extrapulmonary tuberculosis by organ. The most common type of extrapulmonary tuberculosis was tuberculous pleurisy, with 1,969 cases (47.9%) accounting for about half of all cases. This was followed by lymph node tuberculosis outside the pulmonary hilum and mediastinum, with 560 cases (13.6%). Miliary tuberculosis followed with 527 cases (12.8%).

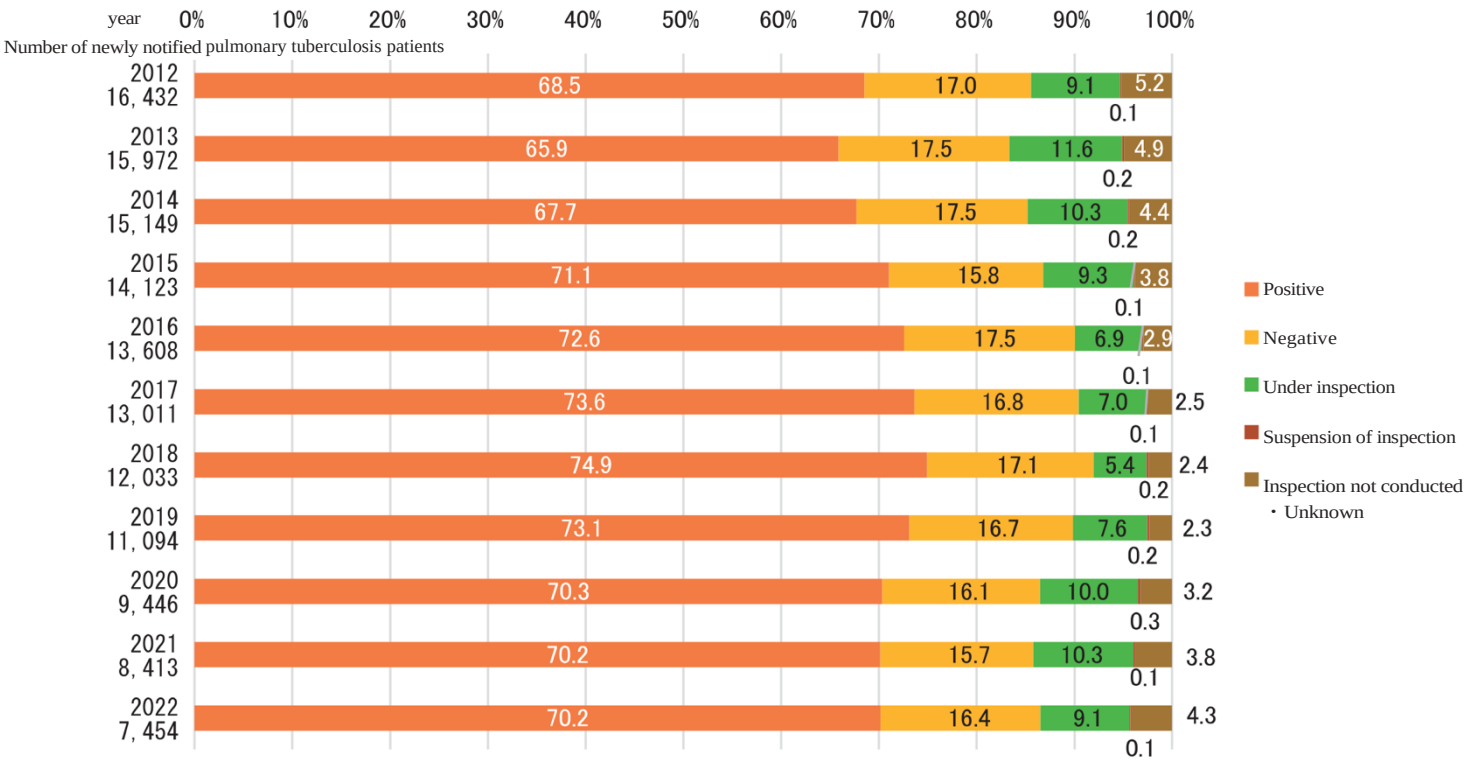
Table 3-1 Extrapulmonary Tuberculosis by Organ, 2022

Diseased organ	Number of cases	Percentage of extrapulmonary tuberculosis cases
Tuberculous pleurisy	1,969	47.9%
Lymph node tuberculosis outside the pulmonary hilum and mediastinum	560	13.6%
Miliary tuberculosis	527	12.8%
Intestinal tuberculosis	153	3.7%
Tuberculous peritonitis	121	2.9%
Tuberculosis of the spine	118	2.9%
Tuberculous meningitis	100	2.4%
Tuberculosis of lymph nodes in the mediastinum	90	2.2%
Cutaneous tuberculosis	73	7.8%
Other bones Tuberculosis of joints	62	1.5%
Tuberculous pericarditis	56	1.4%
Bronchial Tuberculosis	53	1.3%
Tuberculosis of kidney and urinary tract	42	7.0%
Tuberculosis of the eye	32	0.8%
Pharyngeal and laryngeal tuberculosis	21	0.5%
Tuberculous pyothorax	19	0.5%
Tuberculosis of ear	14	0.3%
Tuberculosis of genital organs	7	0.2%
Tuberculosis of other organs	94	2.3%
Total	4,111	100.0%

Positive Percentage by Pulmonary Tuberculosis Tests

In 2022, smear tests were positive in 53.0% (3,951 patients) of 7,454 newly notified pulmonary tuberculosis patients. Of these, 3,433 (46.1%) were smear-positive by sputum specimen. Culture tests were positive in 70.2% (5,231 patients). 9.1% (679 patients) reported that culture test results were still under examination, which decreased to 5.4% in 2018 and then started to increase to more than 10%, but it declined to 9.1% in 2022. It is desirable to strengthen interviews and improve the rate of understanding of culture test results (Figure 3-1). The nucleic acid amplification test was positive for *Mycobacterium tuberculosis* in 74.4% (5,545 patients).

Figure 3-1　Annual trends in the percentage of each culture test result, 2012-2022



Tables 3-2 to 3-4 show the cross-tabulation of smear test results, culture test results, and nucleic acid amplification test results of newly notified pulmonary tuberculosis patients. 60.1% (2,059/3,424) were smear-negative and culture positive, 56.3% (1,929/3,424) were smear-negative and nucleic acid amplification method positive, 34.5% (421/1,219) were culture negative and nucleic acid amplification method positive, and 35.4% (352/995) were nucleic acid amplification method negative and culture positive.

Table 3-2　Newly notified pulmonary tuberculosis patients, smear test results, and culture test results, 2022

		Culture test results					
		Positive	Negative	Under inspection	Suspension of inspection (Germ contamination, etc.)	Not conducted Unknown	Total
Smear test results	Positive	3,164	174	448	5	160	3,951
	Negative	2,059	1,041	222	3	99	3,424
	Inspection not conducted・Unknown	8	4	9	0	58	79
	Total	5,231	1,219	679	8	317	7,454

Table 3-3　Newly notified pulmonary tuberculosis patients, smear test results, and nucleic acid amplification test results, 2022

		Nucleic acid amplification test results			
		Tubercle bacillus positive	Tubercle bacillus negative	Inspection not conducted・Unknown	Total
Smear test results	Positive	3,593	65	293	3,951
	Negative	1,929	928	567	3,424
	Inspection not	23	2	54	79
	Total	5,545	995	914	7,454

Table 3-4 Newly notified tuberculosis patients, culture test results, nucleic acid amplification test results, 2022

		Nucleic acid amplification test results			
		Tubercle bacillus positive	Tubercle bacillus negative	Inspection not conducted・Unknown	Total
Culture testing	Positive	4,400	352	479	5,231
	Negative	421	571	227	1,219
	Under inspection	515	54	110	679
	Inspection suspended	7	1	0	8
	(e.g., germ contamination)	202	17	98	317
	Total	5,545	995	914	7,454

Indicators of infectivity - Percentage of pulmonary tuberculosis with cavities and percentage of sputum smear-positive

In 2022, the percentage of pulmonary tuberculosis with cavities in 7,454 newly notified pulmonary tuberculosis patients (4,572 males and 2,882 females) was 29.1% (2,168) for the total of males and females, 32.3% (1,479 patients) for males, and 23.9% (689 patients) for females, 8.4 percentage points higher than that of females.

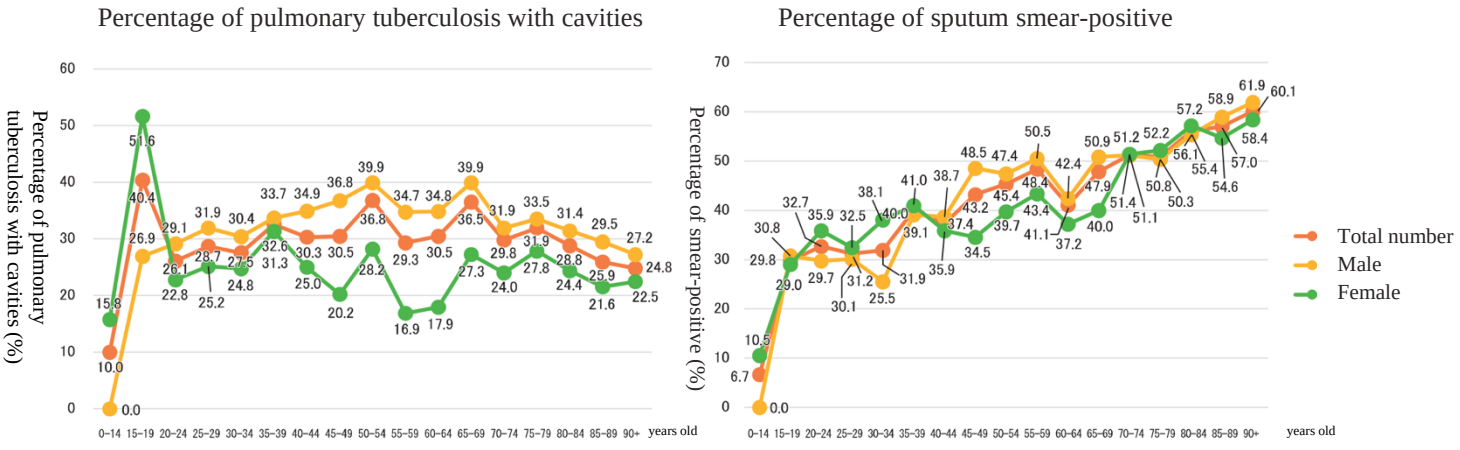
The total percentage of sputum smear positives was 49.7% (3,703 cases), but there was no significant difference between males and females by sex: 50.3% (2,302 cases) for males and 48.6% (1,401 cases) for females.

Figure 3-2 shows the percentages of pulmonary tuberculosis with cavities and sputum smear-positive by sex and age group. The percentage of adult females with cavities was appropriately 15~30%, whereas that of adult males was appropriately 30~40%. The trend for both sexes was similar to that of men. The tendency that older patients are less likely to have cavities is sometimes said to be because the percentage of cavities in male patients aged 50-69 sometimes reaches nearly 40%. In contrast, there is a conspicuous decreasing trend after age 70, which may be interpreted as a tendency to be less likely to have cavities. No decreasing trend was observed for females because the percentage of cavities generally remained unchanged from the age of 15 onward.

The percentage of sputum smear-positive tended to increase with increasing age in both men and women and was more than 50% in both men and women after age 70.

Among 7,454 pulmonary tuberculosis patients, 21.0% (1,569) had cavities and sputum smear-positive, and 8.0% (599) had cavities and sputum smear negativity and others. Patients with no cavity and sputum smear-positive were 28.6% (2,134).

Figure 3-2 Percentages of newly notified pulmonary tuberculosis patients with cavities and with smear-positive, by sex, by age group, 2022



Retreatment

In 2022, 384 (3.8%) retreated tuberculosis were newly notified. The proportion of retreated patients continued to decrease after peaking at 7.6% in 2010. The number of re-treated patients decreased to nearly one-fifth of the 2010 figure of 1,762 (21.8%).

125 patients, or 32.6% of the patients with retreated tuberculosis, had their last treatment in 2020 or later. The number of patients whose last treatment year was 2012 or before was 162 (42.2%), which was 10 years before the last treatment year.

The previous treatment of the patients who were retreated was the treatment with pyrazinamide (PZA) in 30.7% (118 patients) and both isoniazid (INH) and rifampicin (RFP) in 16.9% (65 patients). If treatment including PZA also included INH and RFP, it can be concluded that nearly half of the patients had been treated with standard therapy.

29.7% (114 patients) of the patients were uncertain, probably because they were not interviewed thoroughly or because many of the patients had been treated more than 10 years previously, and therefore, the details of their previous treatment were not remembered.

Complications

Of 10,235 newly notified tuberculosis patients in 2022, 1,614 (15.8%) had diabetes mellitus, and 7,122 (69.6%) had no complications. 1,499 (14.6%) were unknown, which may include those who were not tested for diabetes, those who were tested but not interviewed, and those who were interviewed but not entered.

Among newly notified tuberculosis patients, 633 (6.2%) had known HIV test results. 25 (0.2%) were positive, 608 (5.9%) were negative for HIV test results, and the proportion of HIV-positive patients among those with known test results was 3.9%. The proportion of HIV-positive patients with known test results was 3.9%. 3,401 (33.2%) had not tested for HIV, and 6,201 (60.6%) had unknown test status. It is thought that those not tested included those who did not need to be tested and those who were considered to need to be tested but did not do so.

As in the case of diabetes mellitus, the "test result unknown" is considered to include those who were not actually tested for HIV, those who were tested but not interviewed, and those who were interviewed but did not enter the results.

4 Drug Susceptibility

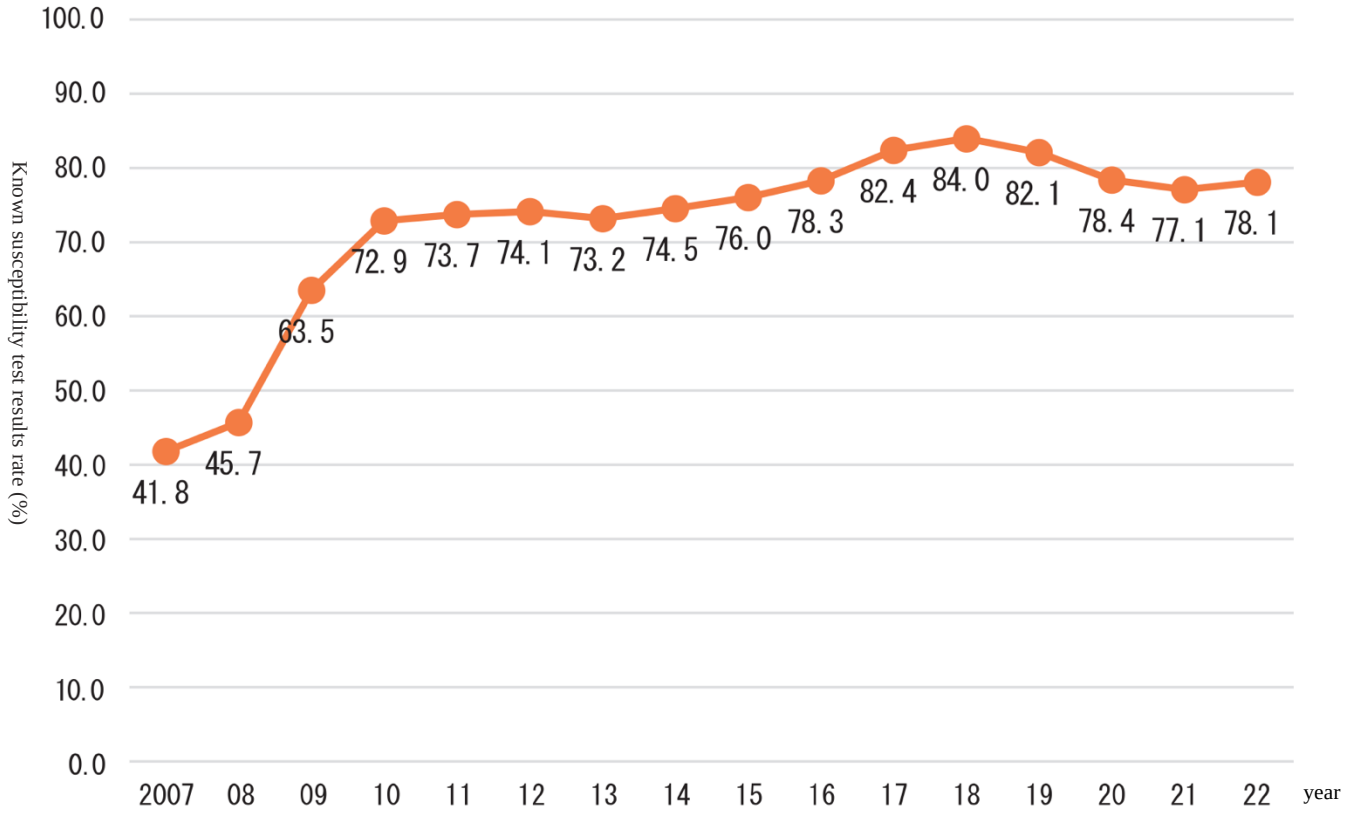
Understanding drug susceptibility

Of the 5,231 newly notified culture-positive pulmonary tuberculosis patients in 2022, 4,086 (78.1%) were found to be examined with drug susceptibility testing both isoniazid (hereafter “INH”) and rifampicin (hereafter “RFP”) and their results were recorded in the surveillance. The percentage of patients with known drug susceptibility results increased from 41.8% in 2007, when we started collecting information, to 45.7% in 2008, 63.5% in 2009, and 72.9% in 2010, and then gradually improved to over 80% in 2017. However, after peaking at 84.0% in 2018, the rate began a downward trend, falling below 80% for three consecutive years in 2022 (Figure 4-1).

Those with unknown test results include all those for whom no drug susceptibility testing has been conducted, those for whom drug susceptibility testing was conducted but test result was not available due to contamination, those for whom susceptibility is obtained but not reported to the health center, and those for whom the result is reported to the health center knows but the results are not entered at the tuberculosis registrant information system.

In this surveillance report, those whose drug susceptibility results are available only to one of INH and RFP, such as those with Xpert MTB/RIF and without phenotypic drug susceptibility test results, are considered to have unknown susceptibility notified.

Figure 4-1 Trends in the proportion of newly notified culture-positive pulmonary tuberculosis patients with known susceptibility test results, 2007-2022



INH and RFP resistance by treatment history

Of the 4,086 newly notified pulmonary tuberculosis patients with known susceptibility test results in 2022, 200 were INH-resistant (4.9%), 41 were RFP resistant (1.0%), and resistance to both INH and RFP (MDR) was 0.6% in 26 patients.

Among 3,899 pulmonary tuberculosis patients* without previous history of tuberculosis treatment (hereafter “new” patients), INH resistance was 4.7% (182 patients), RFP resistance was 0.8% (32 patients), and MDR was 0.5% (21 patients), indicating a slight increase in RFP resistance and MDR rates.

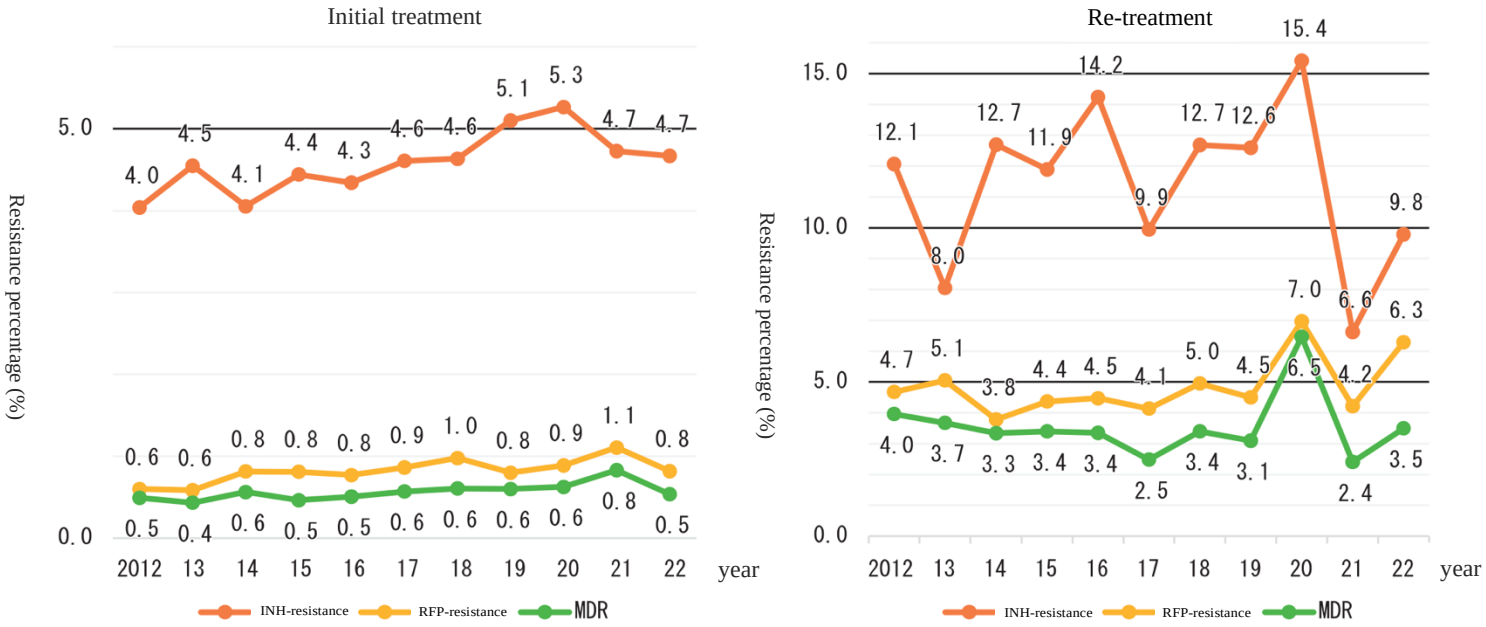
Of the 143pulmonary tuberculosis patients* with a previous history of tuberculosis treatment (hereafter “retreatment” patients), 9.8% (14 patients) were INH resistance, 6.3% (9 patients) were RFP resistance, and 3.5% (5 patients) were MDR, which was higher than those who had not been previously treated.

The percentages of INH resistance, RFP resistance, and MDR have been slowly increasing since 2012 among new patients but

fluctuated widely without a constant trend among retreatment patients. (Figure 4-2)

*: There are 44 other patients with unknown treatment history.

Figure4-2 Trends in the proportion of drug resistance among newly notified pulmonary tuberculosis patients with culture-positive susceptibility results by treatment history, 2012-2022



Differences in the proportion of resistant tuberculosis between Japanese-born and foreign-born patients

In 2022, 3,577 (78.1%) of 4,578 culture-positive* newly notified pulmonary tuberculosis patients born in Japan were recorded with the drug susceptibility test results. Of these, INH resistance was found in 149 patients (4.2%), RFP resistance in 22 patients (0.6%), and MDR in 12 patients (0.3%). Among the 514 culture-positive pulmonary tuberculosis patients* born outside Japan in 2022, 426 (82.9%) were recorded with the drug susceptibility test results. Of these, 47 (11.0%) were INH-resistant, 19 (4.5%) were RFP-resistant, and 14 (3.3%) were MDR. The percentage of resistance was higher than that of the Japanese-born notified.

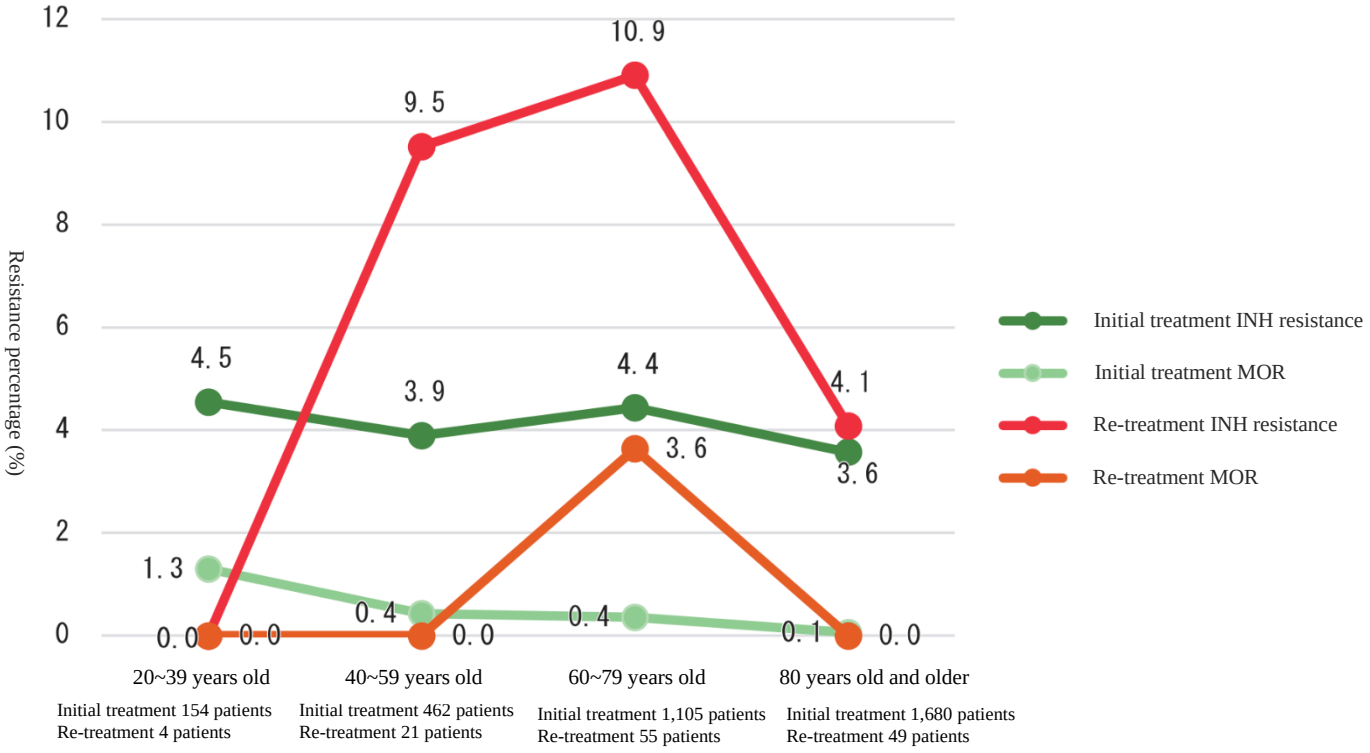
*: **There are 139 others whose country of birth is unknown.**

INH, RFP resistance tuberculosis by age and by treatment history

The proportions of INH resistance and MDR tuberculosis categorized by treatment history and age for those born in Japan are shown in Figure 4-3. New patients show a higher proportion of resistant cases among the young.

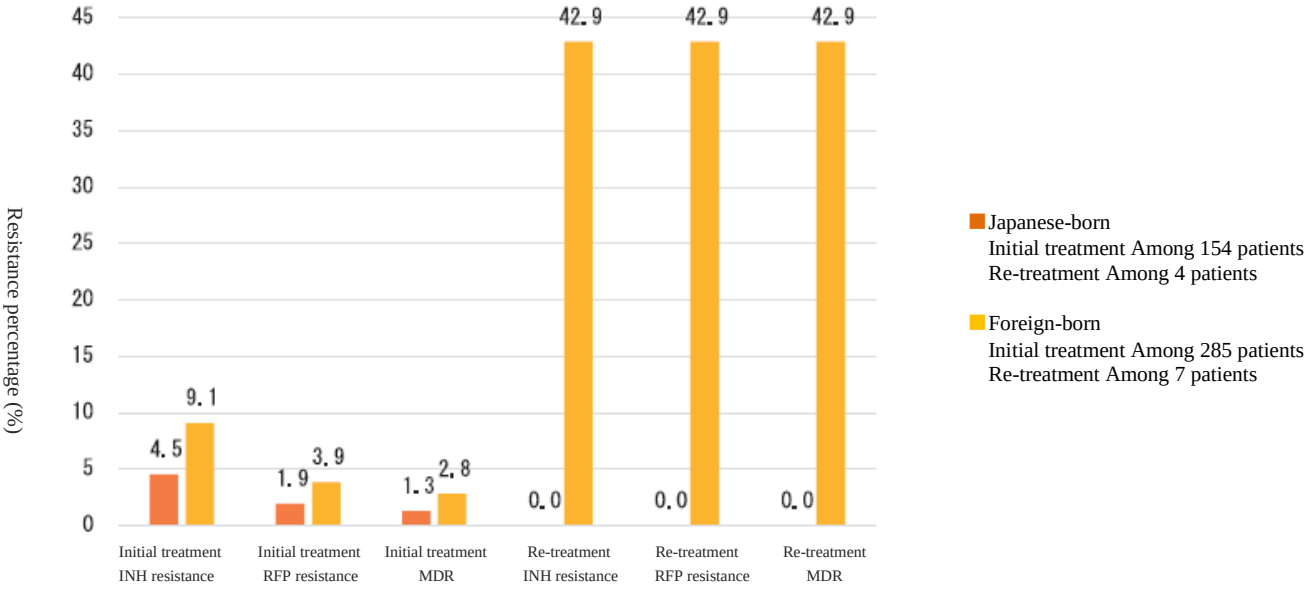
On the other hand, no INH or RFP resistance was observed among retreatment patients, partly because the number of retreatment patients was small among those who were less than 60 years old and notified.

Figure 4-3　Percentage of resistant pulmonary tuberculosis patients with culture-positive drug susceptibility test results among newly notified Japanese-born pulmonary tuberculosis patients with known culture-positive drug susceptibility test results, by treatment history, by age group, 2022



Since most of the newly notified tuberculosis patients born in foreign countries are between 20 and 39 years old, while tuberculosis is more common among the elderly among those born in Japan, we compared the proportion of drug resistance among the tuberculosis patients with age group (20-39 years old) categorized by previous history of treatment and birthplace. the proportion of resistance among Japanese-born patients was lower than that among foreign-born patients for INH resistance, RFP resistance, and MDR. Although the number of eligible patients was small, INH resistance (three), RFP resistance (three), and MDR (three) were found only in the seven foreign-born patients. (Figure 4-4).

Figure 4-4 Percentage of newly notified pulmonary tuberculosis patients aged 20-39 years with culture-positive drug susceptibility test results who are resistant, treatment history by Japanese-born and foreign-born, 2022



Streptomycin (hereafter “SM”) and Ethambutol (hereafter “EMB”) resistance

Among the 3899 new patients with drug susceptibility test results to INH and RFP, SM drug susceptibility test results were available for 3879 patients and 258 (6.7%) were resistant to SM. With the 143 retreatment patients with drug susceptibility test results to INH and RFP, SM drug susceptibility test results were available for 140 patients and 10 (7.1%) were resistant to SM.

Among the 3899 new patients with drug susceptibility test results to INH and RFP, EMB drug susceptibility test results were available for 3889 patients and 53 (1.4%) were resistant to EMB. Of the 143 retreatment patients with drug susceptibility test results to INH, RFP, and EMB, 5 (3.5%) were resistant to EMB.

Information on other drugs was not available in the Japan TB Surveillance System.