

Tuberculosis Annual Report 2009
Series 8. Treatment of TB(1)

Tuberculosis Surveillance Center, RIT, JATA

Abstract The standard treatment of tuberculosis (TB) is the key to its control. Here we report the statistics of treatment history and the initial regimen for treating TB in 2009.

In 2009, 24,170 TB patients were newly notified. Of those, 1,751 cases were reported as having had previous treatment and 410 cases were reported as having an unknown treatment history. The proportion of patients receiving retreatment was 7.4%, excluding those of unknown treatment history. The proportion of those receiving retreatment among newly notified TB patients increased with age from those at 20-24 years old (3.2%) to those at 80-84 years old (9.3%). The frequency of retreatment among newly notified TB patients might be partly an indicator of previous insufficient treatment.

Regarding the year of previous treatment, the greatest number of cases reported having received previous treatment in 2008 ($n = 194$). The total number of cases whose previous treatment had begun in 2008 or 2009 was 224, i.e. 12.8% of all retreatment cases in 2009. On the other hand, the number of cases having received previous treatment in the 1950s was also significant ($n = 219$, 12.5%).

As the initial treatment regimen, the combination of INH (isoniazid), RFP (rifampicin), PZA (pyrazinamide) +EB (ethambutol) or SM (streptomycin) is recommended by the Japanese Society for Tuberculosis. This regimen was initially used in 80.8% of all forms of TB patients aged 15–79 years old, excluding those cases whose treatment regimen was unknown.

The data on duration of having actually received PZA was added to the central TB surveillance database starting in 2007. The number of cases who started TB treatment including PZA in 2008 was 15,146. Of those, 11,997 cases had completed TB treatment by the end of 2009, but 9.9% of them could not take PZA fully for 2 months.

Key words: Tuberculosis, Age, Treatment history, New treatment, Retreatment, Regimen, PZA

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Table 1 Number of TB patients by treatment history and age group, 2009

Age group	Newly notified TB patients	Treatment history			Retreatment t(%)
		New	Retreatment	Unknown	
Total	24,170	22,009	1,751	410	7.4
0-4	34	33	1	-	2.9
5-9	13	10	3	-	23.1
10-14	26	24	2	-	7.7
15-19	204	187	15	2	7.4
20-24	697	670	22	5	3.2
25-29	1,002	944	52	6	5.2
30-34	1,052	991	53	8	5.1
35-39	1,048	997	49	2	4.7
40-44	957	895	55	7	5.8
45-49	890	845	40	5	4.5
50-54	1,034	957	69	8	6.7
55-59	1,442	1,317	109	16	7.6
60-64	1,760	1,592	154	14	8.8
65-69	1,890	1,700	165	25	8.8
70-74	2,160	1,959	175	26	8.2
75-79	2,988	2,688	240	60	8.2
80-84	3,380	2,972	305	103	9.3
85-89	2,320	2,103	156	61	6.9
90+	1,273	1,125	86	62	7.1

Proportion of retreatment : Excluding those of unknown treatment history

Table 2 Number of TB patients treated previously by previous TB treatment regimen and age group, 2009

Age group	Retreatment	Previous treatment regimen				
		Regimen with HRZ	Other regimen with HR	Other regimen	LTBI treatment	Unknown
総数 Total	1,751	476	321	245	55	654
0-4	1	-	-	-	1	-
5-9	3	3	-	-	-	-
10-14	2	-	-	-	2	-
15-19	15	4	2	-	7	2
20-24	22	5	1	-	8	8
25-29	52	27	7	1	9	8
30-34	53	27	7	2	10	7
35-39	49	28	5	6	5	5
40-44	55	28	10	2	4	11
45-49	40	21	7	1	2	9
50-54	69	32	13	3	1	20
55-59	109	44	26	5	3	31
60-64	154	69	25	14	2	44
65-69	165	48	25	24	-	68
70-74	175	45	32	38	1	59
75-79	240	51	46	54	-	89
80-84	305	28	51	62	-	164
85-89	156	11	40	24	-	81
90+	86	5	24	9	-	48

Table 3 Number of retreatment TB patients by previous treatment year and age group, 2009

Year	Total	Age group (yrs)								(Re-count)*
		0-19	20-29	30-39	40-49	50-59	60-69	70-79	80+	
Total	1,751	21	74	102	95	178	319	415	547	654
~1949	133	-	-	-	-	-	7	17	109	104
1950-59	219	-	-	-	-	3	25	88	103	110
1960-69	98	-	-	-	-	5	31	36	26	46
1970-79	63	-	-	1	-	11	16	21	14	42
1980-89	66	-	1	-	7	15	12	12	19	33
1990-99	149	3	12	15	14	22	31	35	17	39
2000-09	781	18	59	82	68	110	154	152	138	56
Unknown	242	-	2	4	6	12	43	54	121	224
(Re-count) 2000-2009										
2000	24	-	1	4	4	7	5	1	2	3
2001	32	-	2	2	4	1	13	4	6	6
2002	44	-	4	7	1	6	8	8	10	5
2003	61	-	7	5	9	6	8	16	10	9
2004	56	3	4	5	5	10	10	13	6	5
2005	82	2	6	12	2	14	22	12	12	6
2006	102	4	7	7	11	11	21	17	24	7
2007	156	4	7	13	11	21	28	40	32	5
2008	194	2	16	22	19	32	35	35	33	8
2009	30	3	5	5	2	2	4	6	3	2

*(Re-count) Unknown of previous treatment regimen

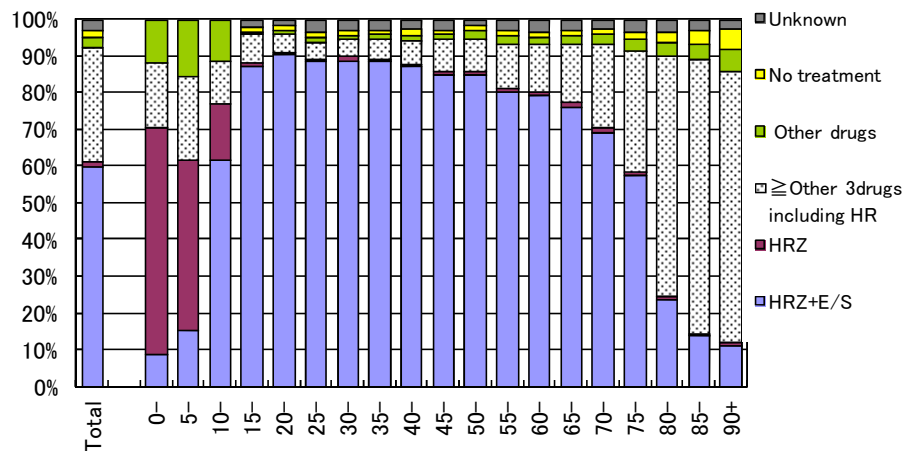


Fig. Initial treatment regimen of newly notified TB patients by age group, 2009

Table 4 Outcome of treatment with PZA in initial phase among those newly notified TB patients in 2008 and completed standard treatment

	Total	Completed
Total	15,146	11,997
2 months	11,011	10,637 (90.1)
≥1 month and <2 months	669	569 (4.8)
<1 month	72	604 (5.1)
Unknown	2,745	187 (-)

(%) Excluding unknown

Tuberculosis Annual Report 2009
Series 9. Treatment of TB (2)

Tuberculosis Surveillance Center, RIT, JATA

Abstract The standard treatment for tuberculosis (TB) is the key to its control. Here we report on the statistics of treatment status and the duration of hospitalization/treatment.

The place of initial treatment was observed among newly notified TB patients (n = 24,170) in 2009. The proportion receiving treatment in hospital was highest (91.8%) in sputum smear-positive pulmonary TB patients (n=9,675) including 2.3% hospitalized mainly due to other diseases. The proportion receiving treatment in hospital was the least (25.1%) among bacteriologically negative pulmonary TB cases, including 10.4% hospitalized mainly due to other diseases. Among sputum smear-positive pulmonary TB cases the proportion of patients receiving treatment in hospital did not differ with age, but among bacteriologically negative pulmonary TB cases, this proportion differed markedly according to age groups (e.g. 7.7% in their 20s, 24.4% of those in their 50s and 48.8% of those in their 80s),.

The duration of hospitalization for TB treatment among newly notified cases in 2008 was observed. The median hospitalization periods were 73 days, 78 days, 45 days, 36 days and 46 days, among new sputum smear-positive pulmonary TB cases, retreatment sputum smear-positive pulmonary TB cases, other bacillus-positive pulmonary TB cases, bacillinegative pulmonary TB cases and extra-pulmonary TB cases, respectively.

The duration of TB treatment among newly notified cases in 2008 was observed at the end of 2009. The median treatment duration among all forms of TB was 272 days. The longest median treatment duration was 286 days for retreatment sputum smear-positive pulmonary TB cases and the shortest was 198 days for bacteriologically negative pulmonary TB cases.

Key word: Tuberculosis, Age, Treatment status, Duration of hospitalization, Duration of treatment, INH, RFP

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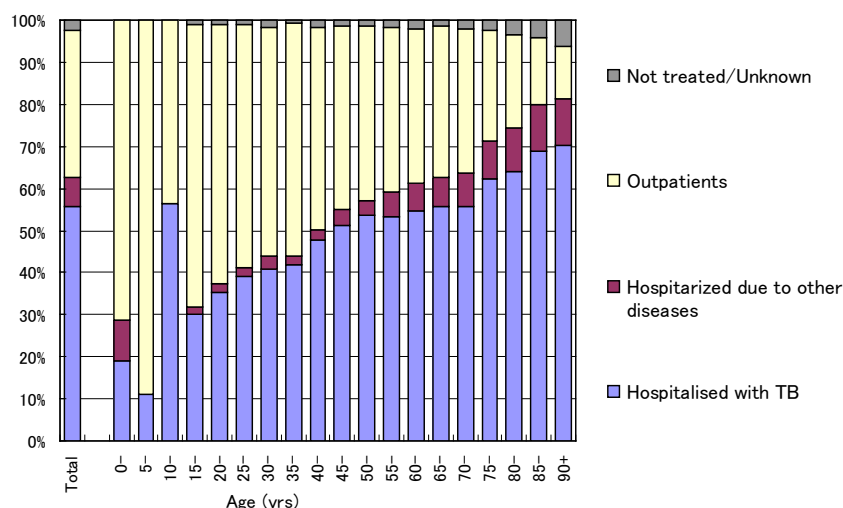


Fig.1 Proportion of initial treatment status among newly notified pulmonary TB patients by age group, 2009

Table 1 Proportion (%) hospitalized among newly notified TB patients in 2009 by age group and patient classification

Age	Pulmonary TB										Extra-pulmonary	
	Total		Sputum smear pos.		Other bacillary pos.		Bacillary neg.		Ht	Ho		
	Ht	Ho	Ht	Ho	Ht	Ho	Ht	Ho				
Total	55.7	7.0	89.5	2.3	23.4	12.7	14.7	10.4	28.3	21.4		
0-19	30.3	2.2	80.8	0.0	21.8	5.1	10.9	1.0	37.0	15.2		
20-29	37.5	2.1	86.9	1.0	14.1	2.9	5.1	2.6	21.2	8.9		
30-39	41.3	2.6	87.1	0.7	14.0	3.3	8.6	4.6	14.3	13.5		
40-49	49.4	3.2	89.9	1.0	17.2	6.5	9.4	3.2	21.8	13.7		
50-59	53.4	5.0	89.5	1.6	16.3	9.2	16.9	7.5	21.8	12.7		
60-69	55.3	6.5	89.7	2.3	19.0	10.9	19.0	11.2	24.4	19.7		
70-79	59.4	8.7	89.5	3.2	27.4	13.9	18.9	17.4	28.3	21.9		
80-89	66.0	10.8	90.6	2.6	32.0	21.9	23.6	25.2	35.8	29.2		
90+	70.3	11.0	90.0	3.3	37.8	23.8	23.3	28.3	43.3	28.9		

Ht: Hospitalized with TB

Ho: Hospitalized mainly due to other diseases

Table 2 Duration of hospitalization among newly notified TB patients receiving initial treatment at hospital in 2008 by patient classification

	Newly notified TB patients							
	Total	Pulmonary TB					Extra-pulmonary	
		Total	Sputum smear pos.		Other bacillary pos.	Bacillary neg.		
		New	Retreatment					
Total	24,571	19,274	8,999	826	6,172	3,277	5,297	
Hospitalized with TB	12,645	10,978	8,072	725	1,678	503	1,667	
Known date of discharge	9,893	8,752	6,558	577	1,287	330	1,141	
Duration of hospitalization among those hospitalized with TB and with known date of discharge								
Median (days)		65	67	73	78	45	36	46
80% ile (days)		120	121	123	131	93	96	108

*: Irrespective of the reason for discharge from hospital

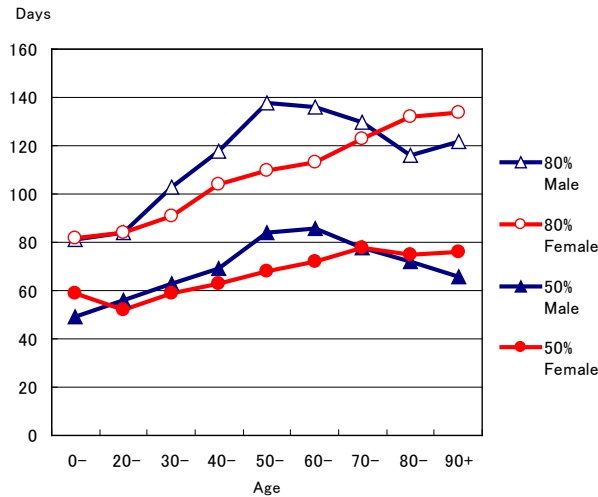


Fig.2 Median (50% ile) and 80% ile tile of duration of hospitalization among those hospitalized with TB and with known discharged day, new sputum smear positive pulmonary TB patients in 2008 by sex.

Table 3 Treatment status and duration of treatment at the end of years (2008/2009) among those newly notified and started TB treatment in previous years (2007/2008) by patient classification

	Newly notified TB patients								(Not included in the total) LTBI
	Total	Pulmonary TB				Other bacillary pos.	Bacillary neg.	Extra-pulmonary	
		Total	Sputum smear pos.		Retreatment				
			New	Retreatment					
New cases in 2007*	25,184	19,820	9,421	783	6,010	3,606	5,364	2,942	
Known treatment status	24,635 (100%)	19,355 (100%)	9,226 (100%)	771 (100%)	5,842 (100%)	3,516 (100%)	5,280 (100%)	2,888 (100%)	
Stopped treatment	18,968 (77.0)	14,880 (76.9)	6,680 (72.4)	539 (69.9)	4,713 (80.7)	2,948 (83.8)	4,088 (77.4)	2,661 (92.1)	
Completed	17,038 (69.2)	13,385 (69.2)	5,884 (63.8)	456 (59.1)	4,332 (74.2)	2,713 (77.2)	3,653 (69.2)	2,428 (84.1)	
Others	1,669 (6.8)	1,295 (6.7)	700 (7.6)	73 (9.5)	323 (5.5)	199 (5.7)	374 (7.1)	148 (5.1)	
Defaulted	239 (1.0)	188 (1.0)	88 (1.0)	10 (1.3)	55 (0.9)	35 (1.0)	51 (1.0)	85 (2.9)	
Unknown	22 (0.1)	12 (0.1)	8 (0.1)	0 (0.0)	3 (0.1)	1 (0.0)	10 (0.2)	0 (0.0)	
Median of duration of treatment among those completed treatment and still receiving treatment									
Subjects #	19,226	15,023	6,619	566	4,847	2,991	4,203	2,560	
Median (days)	273	271	277	298	241	204	276	182	
New cases in 2008**	24,571	19,274	8,999	826	6,172	3,277	5,297	4,834	
Known treatment status	23,987 (100%)	18,791 (100%)	8,786 (100%)	812 (100%)	5,974 (100%)	3,219 (100%)	5,196 (100%)	4,731 (100%)	
Stopped treatment	18,944 (79.0)	14,833 (78.9)	6,557 (74.6)	577 (71.1)	4,948 (82.8)	2,751 (85.5)	4,111 (79.1)	4,334 (91.6)	
Completed	16,987 (70.8)	13,317 (70.9)	5,730 (65.2)	497 (61.2)	4,550 (76.2)	2,540 (78.9)	3,670 (70.6)	3,973 (84.0)	
Others	1,686 (7.0)	1,303 (6.9)	728 (8.3)	67 (8.3)	339 (5.7)	169 (5.3)	383 (7.4)	279 (5.9)	
Defaulted	248 (1.0)	196 (1.0)	94 (1.4)	11 (1.4)	52 (0.9)	39 (1.2)	52 (1.0)	75 (1.6)	
Unknown	23 (0.1)	17 (0.1)	5 (0.1)	2 (0.2)	7 (0.1)	3 (0.1)	6 (0.1)	7 (0.1)	
Median of duration of treatment among those completed treatment and still receiving treatment									
Subjects #	18,641	14,515	6,301	573	4,921	2,720	4,126	4,176	
Median (days)	272	271	277	286	242	198	273	183	

Subjects # : Those who completed TB treatment or those who were still receiving treatment at the end of years (2008/2009).

* : Based on the annual report database in 2008.

** : Based on the annual report database in 2009.

Table 4 Outcome of treatment with INH or RFP in initial phase among those newly notified TB patients in 2008 by completion of standard regimen

	Treatment with INH		Treatment with RFP	
	Total	Completed	Total	Completed
Total	23,169	16,783 (100%)	22,953	16,745 (100%)
Full course without interruption	16,010	15,323 (91.3)	16,078	15,453 (92.3)
Full course with interruption	1,132	958 (5.7)	1,208	1,019 (6.1)
Interrupted and discontinued	609	436 (2.6)	376	204 (1.2)
Unknown*	5,418	66 (0.4)	5,291	69 (0.4)

*: Including those who were still receiving treatment with INH or RFP and those who were cancelled from registration during their treatment.