

**ANNUAL REPORT 1999**

**CHEST SERVICE**

**OF THE**

**DEPARTMENT OF HEALTH**

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## PREFACE

In Hong Kong, the TB notification rate decreased from a peak of 697.2 per 100,000 in 1952 to 100.9 in 1995 and 100.3 in 1996. Thereafter, the notification rate increased to 115.5 per 100,000 in 1998, and then decreased again to 111.8 per 100,000 in 1999. In terms of actual numbers, there were 7,512 notified TB cases in 1999 in comparison with 7,673 cases in 1998, 6,501 in 1996, and 6,212 in 1995. Although the notification figure in 1999 was still higher than the historical low, it was encouraging to see the first sign of decline after an increase for three consecutive years. The fluctuating notification trend also underpinned the need to examine these figures against the background demographic changes and the possible changes in notification behaviour.

The population in Hong Kong increased at a relatively rapid rate of 2-3% per year from 1995 to 1999. The estimated mid-year population was 6,720,700 in 1999, in comparison with 6,156,100 in 1995, representing an overall increase of 9.2%. The population of Hong Kong is also getting older as it undergoes demographic transition, which is a result of decreasing birth rate and increasing life expectancy. The number of elderly citizens (aged 65 or above) increased from 601,800 (9.8% of the population) to 734,900 (10.9% of the population) in the same period. There were 2,773 TB cases among the elderly in 1999, in comparison with only 1,703 cases in 1995. Elderly TB patients constituted an increasing proportion of the notified cases, rising from 27.4% in 1995 to 36.9% in 1999 (Annex 4). Reactivation of infection acquired in the past is a major mechanism of development of TB among the elderly. Therefore, their high disease incidence reflects, among other things, the high risk of infection in the past. With an aging population and an exaggerated cohort effect, the rate of decline in the TB notifications may have been significantly retarded.

There were also significant changes in the distribution of notification sources. The number of notifications from general hospitals and the private sector increased from 553 cases in 1995 to 1,842 cases in 1998 and 1,893 in 1999. On the other hand, the number of notifications from chest clinics and chest hospitals remained more or less the same during the same period, being 5,643 in 1995 and 5,577 in 1999 (Annex 5). The changing distribution of notification sources, with drastic increase from previously minor sources, likely signified increased awareness of the importance of TB notification among the general medical community and could readily account for the increase in notifications from 1995 to 1998.

Only 166 out of the 7,512 notifications in 1999 involved recent immigrants from Mainland China. The standardized rate of TB among these recent immigrants with adjustment based on the mid-1999 general Hong Kong population was 103.1 per 100,000. Hence, they did not appear to be at an excess risk of TB in comparison with the local population. Only 5 cases involved

Vietnamese boat people as compared to 7 cases in 1998 and 175 cases in 1995. Overall, these immigrant groups only represented a very small proportion of the total caseload.

A survey was conducted in 1999 to examine the prevalence of coexisting medical conditions that may predispose to TB. Among 594 TB cases notified in August 1999, 26.1% were found to have one or more coexisting medical conditions which might predispose to TB. Diabetes mellitus was the most prevalent condition, occurring in 12.1% of these cases. The rest included malignancies (5.2%), chronic renal failure (3.0%), alcoholism (1.7%), silicosis (1.5%), immunosuppressive treatment with steroid or cytotoxic drugs (1.5%), and other miscellaneous conditions.

TB mortality declined from 207.9 per 100,000 in 1951 to 4.6 per 100,000 in 1999. The average age at death increased from 25.0 years in 1951 to 72.9 years in 1999. While part of the dramatic decline of TB mortality may be attributed to decreasing incidence of the disease, effective management of TB patients must have been another major contributing factor. Effective chemotherapy in the form of directly observed treatment (DOT) cured many ill patients, and averted many deaths. Increased awareness by both patients and health care workers could have led to earlier diagnosis, and allowed treatment at an earlier stage. However, delay in seeking care, atypical presentation, poorer drug tolerance, co-existing diseases, and psychosocial problems were likely factors that had contributed to the less favourable outcome among the elderly.

Increased emphasis was put on the public health aspects of TB control. TB surveillance measures were further intensified since 1998. Laboratory information was actively tapped to promote notification, especially among general hospitals. Information on death certificates was also reviewed to identify missed notifications. Health education activities were intensified through different channels and media to assist case finding, which focused primarily on infectious TB patients with significant chest or systemic symptoms. In collaboration with the Hong Kong Tuberculosis, Chest and Heart Diseases Association and the Hospital Authority, a series of publicity and education programmes were held to commemorate the World TB Day on 24<sup>th</sup> March 1999. The TB & Chest Service (TB&CS) also participated actively in the organization of the 20<sup>th</sup> Eastern Region Conference of the International Union Against Tuberculosis and Lung Disease held at the Hong Kong Convention Centre from 4<sup>th</sup> to 7<sup>th</sup> June 1999. This Conference facilitated interchange of experience and expertise among over 1,000 delegates mainly from the Asia-Pacific region.

Great emphasis continued to be put on DOT, which remained the main pillar of the local TB control programme. Collaboration and coordination between different health care providers was actively promoted through the TB Control Coordinating Committee. The TB&CS and the Yung Fung Shee TB Laboratory of the Institute of Pathology continued to participate in the WHO/

IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Drug resistance rates were closely monitored in all chest clinics.

During the year, 126,585 patients attended the TB&CS compared with 106,447 in 1998, and the total attendance was 975,145 compared with 982,818 in 1998. Among the 126,585 patients, 39,257 patients were new attendants, of whom 28.1% were found free of any chest diseases. The diagnoses among other new patients included active pulmonary tuberculosis (11.3%), active tuberculosis of other forms (2.2%), inactive tuberculosis (10.7%), bronchitis not specified as acute or chronic (16.6%), acute respiratory infection (10.3%), pneumonia (4.1%), malignant neoplasm of trachea and bronchus (1.9%), bronchiectasis (1.2%), asthma (0.8%) and emphysema (0.3%). Among all the attendance, 5,012 hospital admissions were arranged.

In this Annual Report, there are a number of new/ modified items:

- (i) As the statistical method of calculation for residential population data in Hong Kong has been redefined from 1996 onwards, the respective notification and death rates are revised. The revised rates for 1996, 1997 and 1998 as shown in Appendix 1 (Part 1) are thus slightly different from those quoted in the previous Annual Reports. In addition, Annexes 1(a to c) and 2(a to c) are included to show the revised age-specific notification and death rates for these three years.
- (ii) Appendices 4(b) and 4(c) are included to show the number of notifications and notification rates for different categories of pulmonary TB among different age groups. Similar figures are shown in Annexes 3(a to f) for the years 1996, 1997 and 1998.
- (iii) The table in Appendix 27 (Part 1) shows the results of unlinked anonymous screening (UAS) for HIV among TB patients of the chest clinics in recent years.
- (iv) With the enactment of the Occupational Safety & Health Ordinance in May 1997, TB cases among health care staff are required to be notified to the Labour Department. The “Guidance Notes on the Diagnosis of Notifiable Occupational Diseases” was published in July 1997 and circulated to doctors in Hong Kong. The number of such notified cases over the years are shown in Appendix 28 (Part 1).
- (v) ‘Programme Forms’ have been used for the evaluation of progress and outcome of TB patients seen at the chest clinics since 1996. For the cohort of TB patients in 1998, the information and outcomes at 12 month (i.e., in 1999) for different categories of patients are shown in Appendix 29 (Part 1).

- (vi) A poster presentation on a review of the historical drug resistance rates in Hong Kong has been made by the TB&CS at the 20<sup>th</sup> Eastern Region Conference of the International Union Against Tuberculosis and Lung Disease and is now reproduced in Annex 6 for easy reference.
- (vii) A set of “Guidance Notes for Notification of Tuberculosis” has been published in the Public Health & Epidemiology Bulletin (Nov. 99 Vol. 8 No.4). It is now reproduced in Annex 7 for easy reference. A sample of the notification form [DH1A(s)(Rev.99)] is also shown.
- (viii) A manuscript on “Ambulatory treatment and public health measures for a patient with uncomplicated pulmonary tuberculosis” was circulated among doctors of TB&CS for reference. It is reproduced in Annex 8.

#### Part 1: Tuberculosis

The number of tuberculosis notification in 1999 was 7,512, making a notification rate of 111.8 per 100,000 population. The corresponding figures in 1998 were 7,673 and 115.5 respectively.

The number of tuberculosis deaths was 312 in 1999 compared with 270 in 1998, with the mortality rate for both years being 4.6 and 4.1 per 100,000 respectively.

Deaths of tuberculosis in 1999 stayed outside the top ten causes of death. Tuberculosis deaths accounted for 0.9% of the total registered deaths in Hong Kong. The average age of tuberculosis deaths was 72.9.

In 1999, 99.4% of the newborns were given direct BCG vaccination at birth. 92.1% of primary school children aged 6-10 took up tuberculin test, among whom 81.7% were found to be tuberculin negative and given BCG revaccination.

HIV testing was done among tuberculosis patients of the TB&CS on a voluntary basis after counselling and obtaining their consent. The positive rate remained low. Besides, unlinked anonymous screening (UAS) continued to be done among a consecutive sample of TB patients attending the TB&CS at yearly intervals.

#### Part 2: Pneumoconiosis

The Pneumoconiosis Compensation Ordinance was first introduced in 1980 for compensation of workers who acquired pneumoconiosis as a result of occupational exposure to silica and asbestos dusts. Compensation was paid out in the form of a lump sum according to the assessed degree of incapacity and the expected degree of further deterioration. The Ordinance was amended in 1993 to replace the lump sum payment with monthly payment. Reassessment at 2-yearly interval was also introduced at the same time to update the degree of incapacity for adjustment of the monthly compensation. Previously compensated post-1981 pneumoconiotics could apply for reassessment for compensation for additional incapacity. Further amendments were made in 1996. A flat-rate compensation for pain, suffering, and loss of amenities was payable to all post-1981 pneumoconiotics who had applied for reassessment under the revised scheme, irrespective of whether there was additional degree of incapacity over previous lump-sum compensation. The 1996 amendment also allowed the Pneumoconiosis Medical Board to take other tests into consideration in adjusting the degree of incapacity as determined by FVC test by a maximum of 5%. The *ex-gratia* payment scheme for pre-1981 pneumoconiotics was also reviewed. On top of a flat-rate of monthly payment, additional payments were introduced for those in need of constant care, oxygen and medical appliances.

The Pneumoconiosis Clinic continued to provide a full range of outpatient services to patients with suspected or confirmed pneumoconiosis. These services covered not only the assessment aspect, but also addressed the patients' diversified needs in terms of treatment, prevention and rehabilitation. The attendance at the clinic was 12,182 in 1999 compared with 10,821 in 1998. In 1999, 291 new cases of pneumoconiosis were registered in the TB&CS, and 154 new cases (including 15 cases of asbestos-related lung diseases) were confirmed by the Pneumoconiosis Medical Board. Up to the end of 1999, a total of 4,999 patients had been compensated.

Part 1

# TUBERCULOSIS



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APPENDIX 1

Notification & Death Rate of Tuberculosis (All Forms)  
1947 - 1999

Year	TB Notification	Notification Rate per 100,000 Pop	TB Deaths	Death Rate per 100,000 Pop	Ratio (Notifications/ Deaths)	Deaths ----- x 100% Notifications
1947	4,855	277.4	1,861	106.3	2.61	38.33
1948	6,279	348.8	1,961	108.9	3.20	31.23
1949	7,510	404.4	2,611	140.6	2.88	34.77
1950	9,067	405.3	3,263	145.9	2.78	35.99
1951	13,886	689.0	4,190	207.9	3.31	30.17
1952	14,821	697.2	3,573	168.1	4.15	24.11
1953	11,900	530.7	2,939	131.1	4.05	24.70
1954	12,508	528.9	2,876	121.6	4.35	22.99
1955	14,148	568.1	2,810	112.8	5.03	19.86
1956	12,155	464.9	2,629	100.6	4.62	21.63
1957	13,665	499.4	2,675	97.8	5.11	19.58
1958	13,485	472.5	2,302	80.7	5.86	17.07
1959	14,302	482.0	2,178	73.4	6.57	15.23
1960	12,425	404.0	2,085	67.8	5.96	16.78
1961	12,584	397.2	1,907	60.2	6.60	15.15
1962	14,263	431.5	1,881	56.9	7.58	13.19
1963	13,031	380.9	1,762	51.5	7.40	13.52
1964	12,557	358.3	1,441	41.1	8.71	11.48
1965	9,927	275.9	1,278	35.5	7.77	12.87
1966	11,427	314.8	1,515	41.7	7.54	13.26
1967	15,253	409.7	1,493	40.1	10.22	9.79
1968	9,792	257.5	1,483	39.0	6.60	15.15
1969	11,072	286.5	1,470	38.0	7.53	13.28
1970	10,077	254.5	1,436	36.3	7.02	14.25
1971	9,028	223.2	1,250	30.9	7.22	13.85
1972	8,420	204.2	1,312	31.8	6.42	15.58
1973	8,152	192.2	1,154	27.2	7.06	14.16
1974	8,320	190.0	974	22.2	8.54	11.71
1975	8,192	183.6	646	14.5	12.68	7.89
1976	7,928	175.5	568	12.6	13.96	7.16
1977	7,191	156.9	532	11.6	13.52	7.40
1978	6,623	141.9	420	9.0	15.77	6.34
1979	7,907 (498)*	160.4	523	10.6	15.12	6.61
1980	8,065 (712)	159.3	551	10.9	14.64	6.83
1981	7,729 (254)	149.1	489	9.4	15.81	6.33
1982	7,527 (112)	143.0	454	8.6	16.58	6.03
1983	7,301 ( 73)	136.6	446	8.3	16.37	6.11
1984	7,843 ( 69)	145.3	420	7.8	18.67	5.36
1985	7,545 ( 59) 580 #	138.3	409	7.5	18.45	5.42
1986	7,432 ( 46) 544	134.5	407	7.4	18.26	5.48
1987	7,269 ( 41) 495	130.3	405	7.3	17.95	5.57
1988	7,021 (121) 433	124.8	388	6.9	18.10	5.53
1989	6,704 (226) 387	117.9	403	7.1	16.64	6.01
1990	6,510 (288) 341	114.1	382	6.7	17.04	5.87
1991	6,283 (281) 293	109.2	409	7.1	15.36	6.51
1992	6,534 (309) 264	112.6	410	7.1	15.94	6.27
1993	6,537 (264) 89	110.8	396	6.7	16.51	6.06
1994	6,319 (230) 87	104.7	409	6.8	15.45	6.47
1995	6,212 (175) 102	100.9	418	6.8	14.86	6.73
1996	6,501 ( 88) 162	100.3	292	4.5	22.26	4.49
1997	7,072 ( 34) 156	107.7	252	3.8	28.06	3.56
1998	7,673 ( 7) 169	115.5	270	4.1	28.42	3.52
1999	7,512 ( 5) 166	111.8	312	4.6	24.08	4.15

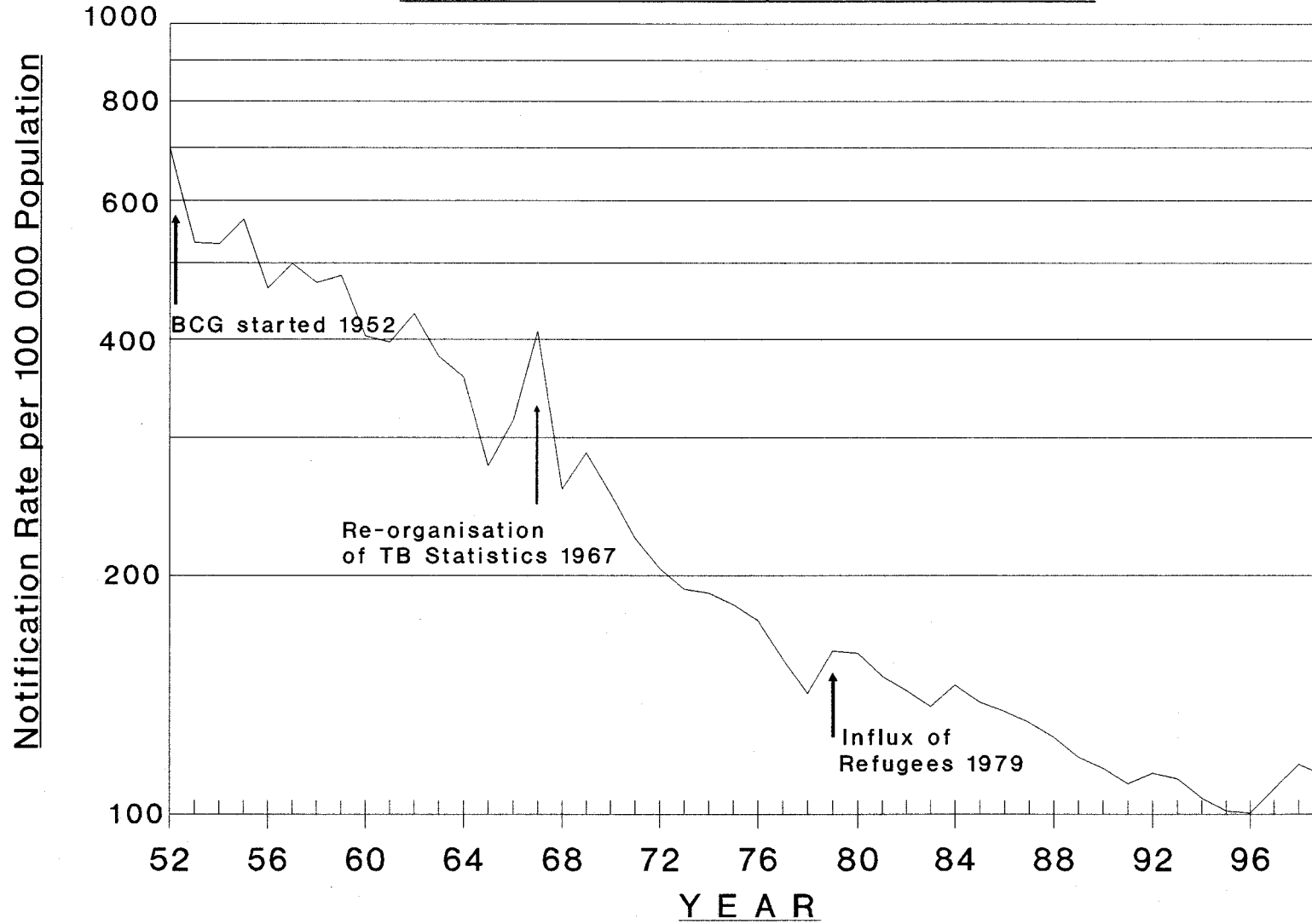
\* Figure in brackets denote the number of Vietnamese refugees included.

# Figure in this column denote the number of Chinese immigrants staying in Hong Kong for less than 7 years.

NB The rates from the year 1996 onwards are revised as the statistical method of calculation for residential population data in Hong Kong has been changed (see Preface).

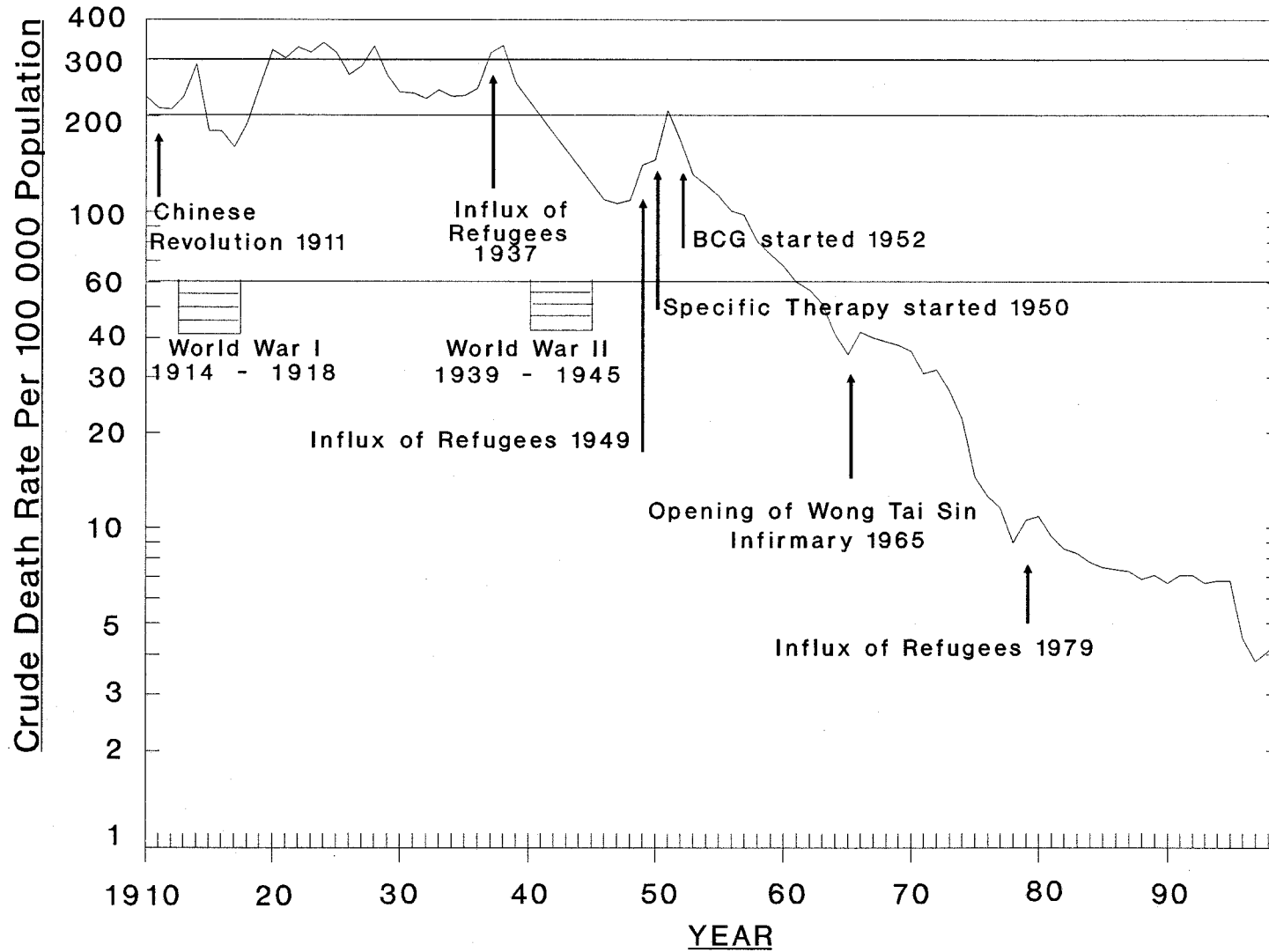
APPENDIX 2

TB Notification Rate (All Forms) 1952-99



### APPENDIX 3

## Crude Death Rate due to Tuberculosis (All Forms) 1910-1999



APPENDIX 4 (a)

Tuberculosis Notifications (All Forms) & Rate by Age and Sex

1999

Age Group	Tuberculosis Notification (All Forms)			Tuberculosis Notification Rate (per 100,000 population)		
	M	F	T	M	F	T
Under 1	0	0	0			
1	1	5	6			
2	2	1	3	>	5.8	6.8
3	5	2	7			
4	2	3	5			
5 - 9	10	12	22		4.7	6.0
10 - 14	10	28	38		4.5	13.1
15 - 19	115	133	248		48.8	59.6
20 - 24	227	222	449		99.3	101.0
25 - 29	236	272	508		98.5	97.6
30 - 34	233	235	468		84.7	69.6
35 - 39	304	225	529		92.8	60.3
40 - 44	335	208	543		106.8	62.9
45 - 49	330	161	491		127.1	61.9
50 - 54	334	105	439		169.5	57.9
55 - 59	360	83	443		259.2	70.2
60 - 64	430	110	540		314.3	87.0
65 - 69	536	151	687		420.1	120.2
70 - 74	534	161	695		563.3	152.3
75 - 79	432	171	603			
80 - 84	286	156	442	>	778.7	302.7
85 & over	165	181	346			
Total	4887	2625	7512		148.1	76.7

APPENDIX 4 (b)

Pulmonary TB Notifications by Age & Sex 1999 \*\*

Age Group	Pulmonary TB			Bacteriologically * Positive Pulmonary TB			Smear Positive Pulmonary TB		
	M	F	T	M	F	T	M	F	T
Under 1									
1	1	3	4						
2	1	1	2	1	0	1			
3	5	1	6	0	0	0			
4	1	2	3	0	0	0			
5 - 9	8	10	18	1	1	2	1	0	1
10 - 14	7	23	30	1	7	8	0	7	7
15 - 19	103	116	219	37	40	77	24	25	49
20 - 24	206	187	393	83	73	156	47	44	91
25 - 29	209	227	436	78	87	165	46	56	102
30 - 34	209	177	386	97	72	169	60	51	111
35 - 39	281	183	464	122	76	198	86	52	138
40 - 44	312	157	469	149	69	218	108	40	148
45 - 49	305	127	432	159	51	210	99	27	126
50 - 54	314	74	388	167	38	205	119	21	140
55 - 59	349	68	417	206	38	244	139	21	160
60 - 64	411	86	497	246	50	296	156	30	186
65 - 69	511	127	638	311	72	383	184	46	230
70 - 74	514	134	648	327	81	408	173	43	216
75 - 79	421	150	571	267	98	365	151	53	204
80 - 84	275	139	414	197	86	283	119	43	162
85 & over	163	166	329	117	115	232	55	47	102
Total	4606	2158	6764	2566	1054	3620	1567	606	2173

\*\* Pulmonary TB with or without extrapulmonary TB

\* Either smear or culture positive

APPENDIX 4 (c)

Rate of Pulmonary TB Notification by Age & Sex 1999

(Rate per 100,000 Population)

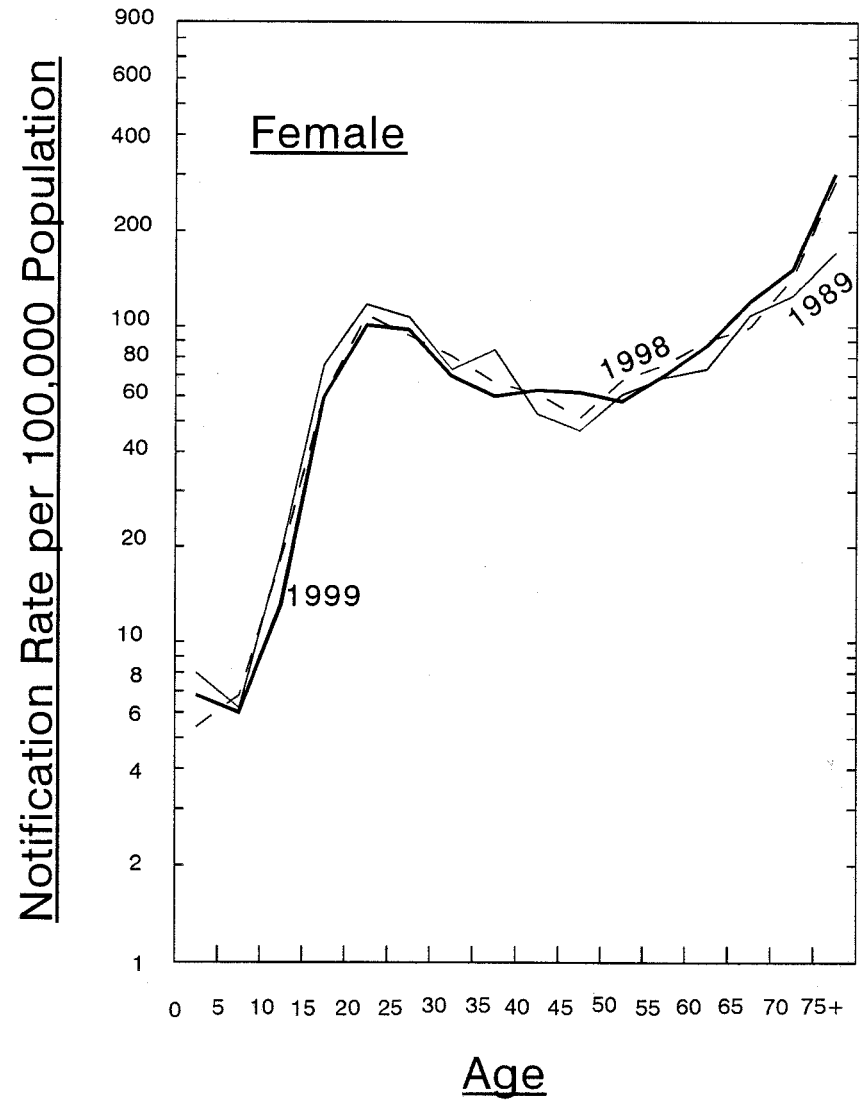
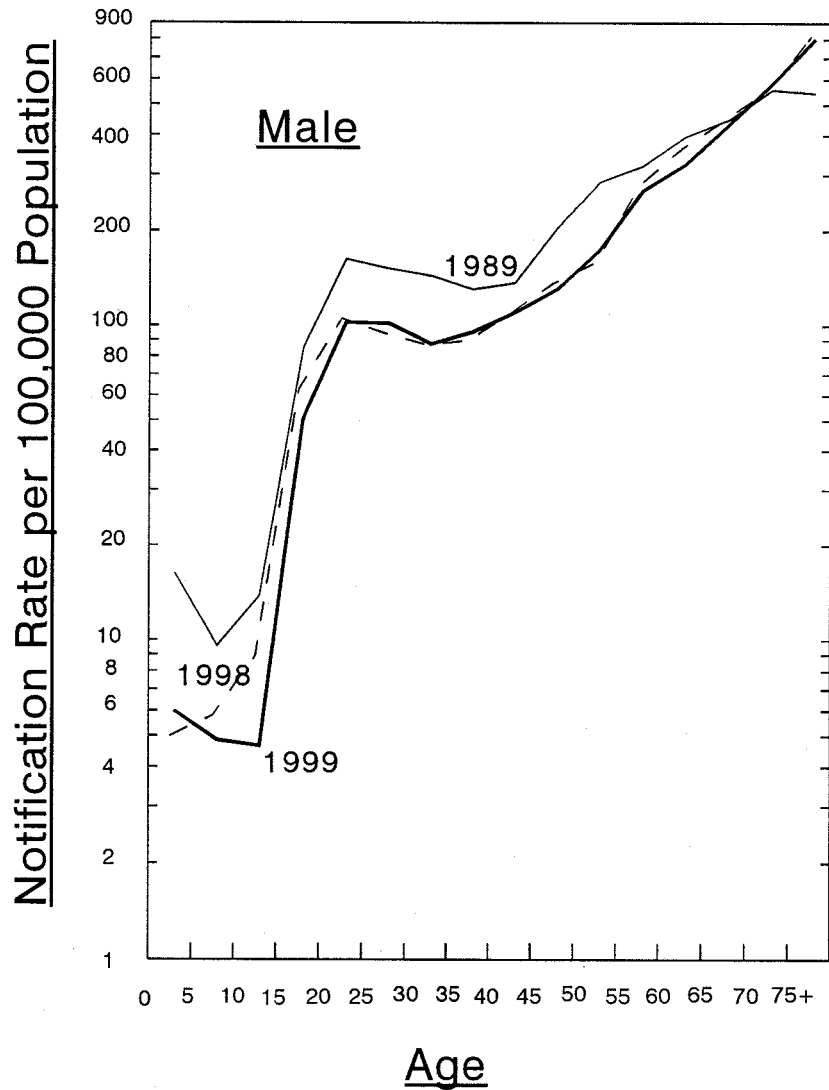
Age Group	Pulmonary TB			Bacteriologically * Positive Pulmonary TB			Smear Positive Pulmonary TB		
	M	F	T	M	F	T	M	F	T
0 - 4	4.6	4.4	4.5	0.6	-	0.3	-	-	-
5 - 9	3.7	5.0	4.4	0.5	0.5	0.5	0.5	0.0	0.2
10 - 14	3.1	10.8	6.9	0.4	3.3	1.8	0.0	3.3	1.6
15 - 19	43.7	52.0	47.7	15.7	17.9	16.8	10.2	11.2	10.7
20 - 24	90.1	85.0	87.6	36.3	33.2	34.8	20.6	20.0	20.3
25 - 29	87.3	81.4	84.1	32.6	31.2	31.8	19.2	20.1	19.7
30 - 34	75.9	52.4	63.0	35.2	21.3	27.6	21.8	15.1	18.1
35 - 39	85.7	49.0	66.2	37.2	20.4	28.2	26.2	13.9	19.7
40 - 44	99.4	47.5	72.8	47.5	20.9	33.8	34.4	12.1	23.0
45 - 49	117.4	48.8	83.1	61.2	19.6	40.4	38.1	10.4	24.2
50 - 54	159.3	40.8	102.5	84.7	20.9	54.2	60.4	11.6	37.0
55 - 59	251.3	57.5	162.1	148.3	32.1	94.9	100.1	17.8	62.2
60 - 64	300.4	68.0	188.8	179.8	39.5	112.4	114.0	23.7	70.6
65 - 69	400.5	101.1	252.0	243.7	57.3	151.3	144.2	36.6	90.8
70 - 74	542.2	126.8	323.2	344.9	76.6	203.5	182.5	40.7	107.7
75+	757.5	271.2	467.3	512.3	178.2	312.9	286.6	85.2	166.4
Total	139.6	63.1	100.6	77.8	30.8	53.9	47.5	17.7	32.3

\*\* Pulmonary TB with or without extrapulmonary TB

\* Either smear or culture positive

## APPENDIX 5

### TB Notification Rate by Age & Sex 1989, 1998 & 1999





APPENDIX 6  
Notifications of Tuberculosis by Type by Age & Sex 1999

Age Group	Respiratory System #			Miliary			Meninges			Bones & Joints			Others		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Under 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	1	3	4	-	-	-	-	-	-	-	-	-	-	2	2
2	-	1	1	-	-	-	1	-	1	-	-	-	1	-	1
3	5	1	6	-	-	-	-	1	1	-	-	-	-	-	-
4	1	2	3	-	-	-	-	-	-	1	-	1	-	1	1
5 - 9	8	10	18	-	-	-	-	-	-	-	1	1	2	1	3
10 - 14	7	22	29	-	-	-	-	-	-	-	-	-	3	6	9
15 - 19	103	111	214	-	2	2	-	1	1	1	-	1	11	19	30
20 - 24	201	182	383	1	2	3	1	1	2	3	2	5	21	35	56
25 - 29	207	219	426	1	-	1	-	-	-	2	3	5	26	50	76
30 - 34	206	174	380	1	-	1	-	-	-	2	4	6	23	57	80
35 - 39	276	178	454	1	1	2	1	4	5	1	4	5	25	38	63
40 - 44	308	151	459	2	1	3	2	1	3	1	5	6	22	50	72
45 - 49	299	122	421	3	4	7	4	-	4	5	4	9	19	31	50
50 - 54	311	74	385	2	-	2	3	1	4	2	2	4	16	28	44
55 - 59	346	68	414	-	-	-	-	1	1	1	1	2	13	13	26
60 - 64	410	84	494	-	2	2	-	1	1	3	2	5	17	21	38
65 - 69	505	124	629	1	1	2	-	-	-	3	5	8	27	21	48
70 - 74	505	131	636	4	2	6	-	2	2	5	7	12	20	20	40
75 - 79	417	148	565	2	2	4	1	-	1	3	4	7	9	17	26
80 - 84	273	134	407	1	4	5	1	1	2	-	3	3	11	14	25
85 & over	161	160	321	1	5	6	1	1	2	2	3	5	-	12	12
<b>Total</b>	<b>4550</b>	<b>2099</b>	<b>6649</b>	<b>20</b>	<b>26</b>	<b>46 (a)</b>	<b>15</b>	<b>15</b>	<b>30 (b)</b>	<b>35</b>	<b>50</b>	<b>85 (c)</b>	<b>266</b>	<b>436</b>	<b>702 *(d)</b>

\* Including: TB Lymph Node 351  
 TB Kidney/Urinary System 25  
 TB Peritonitis 20  
 TB Pleural Effusion 17  
 TB Laryngitis 5  
 TB Skin 11  
 Others 30  
 Unspecified 243

- (a) All Miliary TB cases has coexisting TB of respiratory system; also include 5 cases with coexisting TB of other extrapulmonary sites.
- (b) Including 8 cases with coexisting TB of respiratory system.
- (c) Including 7 cases with coexisting TB of respiratory system and 2 cases with coexisting TB of other extrapulmonary sites.
- (d) Including 54 cases with coexisting TB of respiratory system.

# TB of respiratory system : pulmonary TB only, without extrapulmonary site involvement

APPENDIX 7

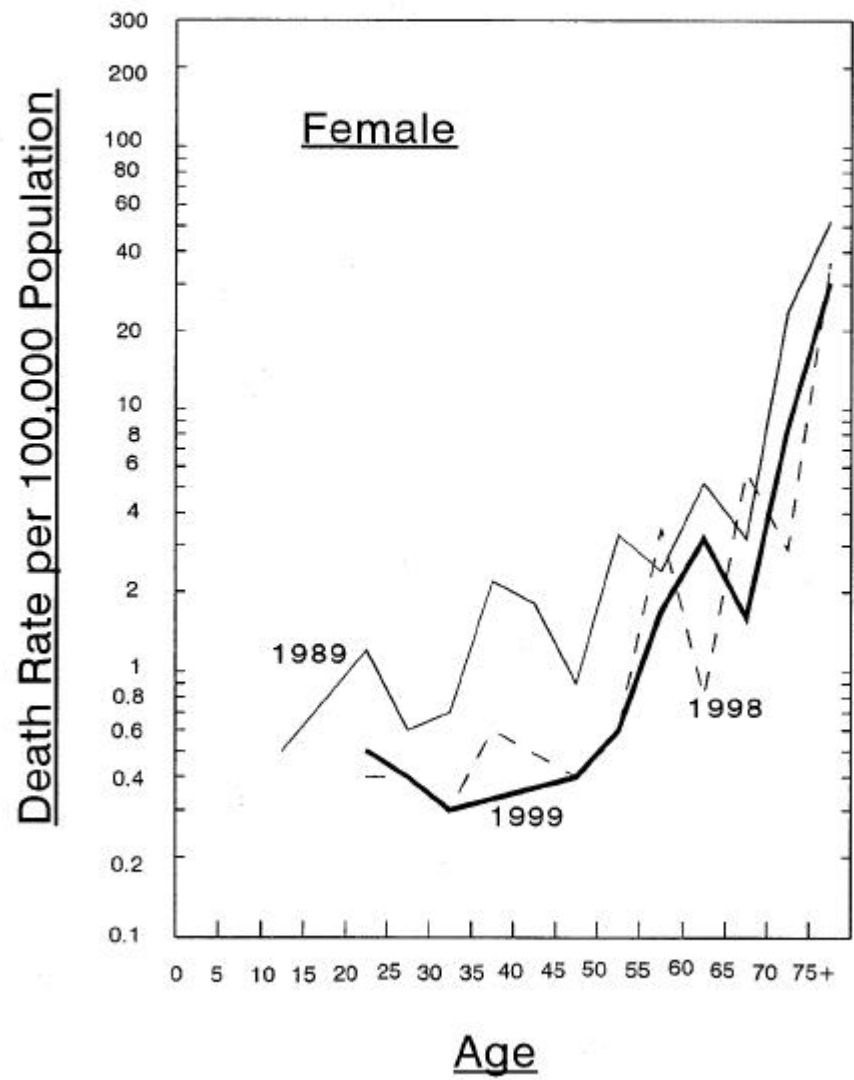
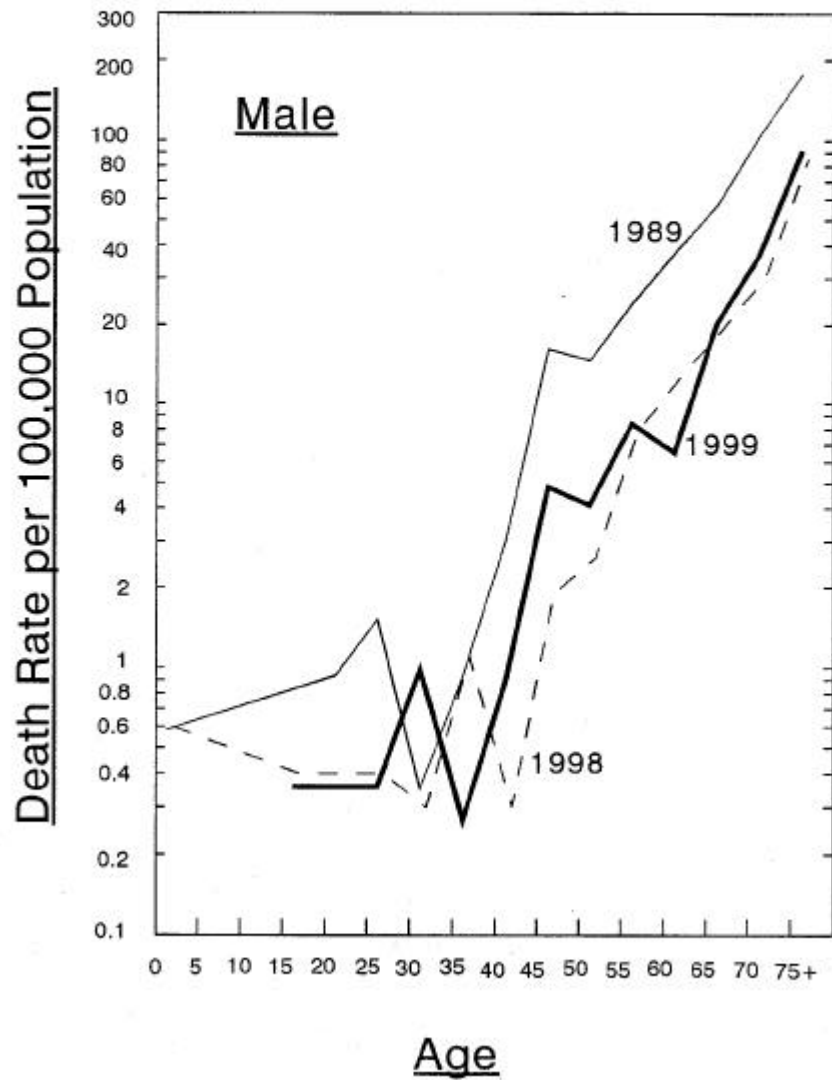
TB Death (All Forms) & Death Rate by Age & Sex

1999

Age Group	Tuberculosis Death (All Forms)			Death Rate (per 100,000 population)		
	M	F	T	M	F	T
Under 1	0	0	0			
1	0	0	0			
2	0	0	0	>	0.0	0.0
3	0	0	0			
4	0	0	0			
5 - 9	0	0	0		0.0	0.0
10 - 14	0	0	0		0.0	0.0
15 - 19	1	0	1		0.4	0.0
20 - 24	0	1	1		0.0	0.5
25 - 29	1	1	2		0.4	0.4
30 - 34	3	1	4		1.1	0.3
35 - 39	1	0	1		0.3	0.0
40 - 44	3	0	3		1.0	0.0
45 - 49	14	1	15		5.4	0.4
50 - 54	9	1	10		4.6	0.6
55 - 59	13	2	15		9.4	1.7
60 - 64	10	4	14		7.3	3.2
65 - 69	29	2	31		22.7	1.6
70 - 74	39	9	48		41.1	8.5
75 - 79	42	8	50			
80 - 84	41	18	59	>	102.3	30.4
85 & over	33	25	58			
Total	239	73	312		7.2	2.1

## APPENDIX 8

### TB Mortality Rate by Age & Sex 1989, 1998 & 1999



APPENDIX 9

TB Deaths by Type by Age & Sex 1999

Age Group	Respiratory System #			Miliary			Meninges			Bones & joints			Others		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Under 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5 - 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10 - 14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 - 19	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-
20 - 24	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
25 - 29	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-
30 - 34	2	1	3	1	-	1	-	-	-	-	-	-	-	-	-
35 - 39	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-
40 - 44	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-
45 - 49	10	-	10	-	1	1	3	-	3	-	-	-	1	-	1
50 - 54	9	1	10	-	-	-	-	-	-	-	-	-	-	-	-
55 - 59	12	-	12	-	-	-	-	1	1	-	-	-	1	1	2
60 - 64	10	3	13	-	1	1	-	-	-	-	-	-	-	-	-
65 - 69	27	1	28	2	1	3	-	-	-	-	-	-	-	-	-
70 - 74	32	5	37	2	1	3	1	-	1	1	-	-	3	3	6
75 - 79	35	7	42	1	1	2	-	-	-	-	-	-	6	-	6
80 - 84	35	14	49	-	3	3	2	-	2	-	-	-	4	1	5
85 & over	30	21	51	1	2	3	-	1	1	-	-	-	2	1	3
Total	207	54	261	8	11	19	6	2	8	1	-	1	17	6	23 *

\* Breakdown of Deaths from other forms of TB: -

Number

Intestines, peritoneum & mesenteric glands  
 Genito-urinary system  
 TB Liver  
 Late effects of TB  
 Total

2  
 1  
 1  
 19  
23

# TB of respiratory system : pulmonary TB only, without extrapulmonary site involvement

## APPENDIX 10

Tuberculosis Mortality  
1949 - 1999

Year	% of TB Deaths below 5 years	% of TB Deaths below 1 year	Infant Mort. Rate from TB per 1,000 Registered Live Births	% of TB Deaths among Total Registered Deaths	Average Age of TB Deaths
1949	34.05	8.31	3.96	16.0	25.5
1950	38.34	9.81	5.28	17.7	24.0
1951	34.22	7.73	4.73	20.0	25.0
1952	34.28	7.05	3.50	18.4	25.0
1953	36.27	9.02	3.51	16.1	26.0
1954	31.26	8.17	2.82	14.9	29.0
1955	28.51	8.61	2.67	14.7	31.0
1956	25.22	7.34	1.99	13.6	32.0
1957	21.20	5.76	1.57	13.8	36.0
1958	19.64	7.04	1.52	11.2	36.5
1959	18.92	5.56	1.16	10.8	37.0
1960	10.55	2.21	0.42	10.9	43.0
1961	11.48	2.62	0.46	10.2	43.0
1962	5.74	1.44	0.24	9.3	46.0
1963	5.51	1.08	0.16	8.9	47.0
1964	4.09	0.90	0.12	8.0	48.0
1965	3.36	0.70	0.09	7.3	49.0
1966	2.71	0.73	0.12	8.1	53.0
1967	2.01	0.33	0.06	7.6	54.5
1968	1.15	0.20	0.04	7.7	56.5
1969	0.95	0.27	0.05	7.8	56.0
1970	0.63	0.00	0.00	6.9	57.5
1971	0.64	0.08	0.01	6.2	57.5
1972	0.30	0.15	0.02	6.2	59.0
1973	0.35	0.09	0.01	5.4	58.0
1974	0.82	0.21	0.02	4.4	58.5
1975	1.39	0.31	0.03	3.0	58.5
1976	0.70	0.00	0.00	2.4	59.5
1977	0.38	0.00	0.00	2.3	61.0
1978	0.48	0.24	0.01	1.8	61.0
1979	0.96	0.19	0.01	2.0	61.0
1980	0.73	0.18	0.01	2.1	62.0
1981	0.41	0.00	0.00	2.0	63.0
1982	0.22	0.00	0.00	1.8	63.0
1983	0.45	0.00	0.00	1.7	63.0
1984	0.24	0.24	0.01	1.6	64.5
1985	0.00	0.00	0.00	1.6	65.5
1986	0.00	0.00	0.00	1.6	68.0
1987	0.00	0.00	0.00	1.5	68.5
1988	0.52	0.26	0.01	1.4	69.0
1989	0.25	0.25	0.01	1.4	69.0
1990	0.52	0.52	0.03	1.3	69.0
1991	0.00	0.00	0.00	1.4	69.0
1992	0.00	0.00	0.00	1.3	68.0
1993	0.25	0.25	0.01	1.3	69.0
1994	0.00	0.00	0.00	1.4	71.0
1995	0.00	0.00	0.00	1.4	71.1
1996	0.00	0.00	0.00	0.9	70.6
1997	0.00	0.00	0.00	0.8	72.1
1998	0.37	0.00	0.00	0.8	72.6
1999	0.00	0.00	0.00	0.9	72.9

NOTE : There were no infant death from TB in 1970, 1976, 1977, 1981, 1982, 1983, 1985, 1986, 1987, 1991, 1992, 1994, 1995, 1996, 1997, 1998 & 1999.

APPENDIX 11

Top Ten Causes of Death 1999

Rank	Causes of Death	Detailed List No. 9th Revision	1999		
			Male	Female	Total
	All Causes	001 - 999	18,800	14,582	33,387 ( 5 )
1	Malignant Neoplasms	140 - 208	6,741	4,236	10,977
2	Heart diseases, including hypertensive heart diseases	390 - 429	2,677	2,543	5,220
3	Cerebrovascular diseases	430 - 438	1,646	1,845	3,491
4	Pneumonia, all forms	480 - 486	1,527	1,450	2,977
5	Injury and poisoning	800 - 999	1,390	663	2,053
6	Nephritis, Nephrotic syndrome and Nephrosis	580 - 589	532	636	1,168
7	Diabetes mellitus	250	306	419	725
8	Septicaemia	038	174	238	412
9	Chronic liver disease and cirrhosis	571	274	125	399
10	Aortic aneurysm	441	205	119	324
	Tuberculosis (including late effects of tuberculosis)	010 - 018 137	239	73	312
	All other causes	Residues of 001 - 999	3,089	2,235	5,329 ( 5 )

Note : Figures in brackets denote number of deaths of unknown sex included.

APPENDIX 12 (a)

Origin of Tuberculosis Notifications  
1989 - 1999

Origin	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Origin
East Kowloon Chest Clinic	293	311	269	280	298	280	158	190	175	225	118	East Kowloon Chest Clinic
Kowloon Chest Clinic	1227	1218	1117	950	894	823	788	742	667	529	608	Kowloon Chest Clinic
Kwai Chung Chest Clinic	478	490	515	556	583	552	554	581	547	531	439	Kwai Chung Chest Clinic
Sai Ying Pun Chest Clinic (a)	262	259	245	262	288	271	261	254	180	216	198	Sai Ying Pun Chest Clinic (a)
Shaukiwan Chest Clinic	131	150	141	188	180	176	189	195	181	199	158	Shaukiwan Chest Clinic
								31	31	50	29	Shaukiwan Pneumoconiosis
Shek Kip Mei Chest Clinic	357	331	352	392	290	272	256	243	302	282	266	Shek Kip Mei Chest Clinic
Wanchai Chest Clinic	729	643	580	729	717	603	593	590	502	461	365	Wanchai Chest Clinic
Yaumati Chest Clinic	370	332	264	343	296	349	181	325	280	389	344	Yaumati Chest Clinic
Yan Oi Chest Clinic	226	282	330	291	313	303	363	170	428	419	440	Yan Oi Chest Clinic
Yung Fung Shee Chest Clinic	206	226	238	281	276	296	301	300	240	285	331	Yung Fung Shee Chest Clinic
NT Chest Clinic	406	422	402	422	511	706	650	630	561			NT Chest Clinic (e)
										6	13	Tung Chung Chest Clinic
										420	395	Yuen Chau Kok Chest Clinic
										102	97	Sheung Shui Chest Clinic
										98	92	Tai Po Chest Clinic
										94	94	Yuen Long Chest Clinic
										13	8	Sai Kung Chest Clinic
Sub-total	4685	4664	4453	4694	4646	4631	4294	4251	4094	4319	3995	Sub-total
Tung Wah Group (b)	240	218	238	238	338	274	322	335	384	339	426	Kowloon Hospital
Ruttonjee Hospital	651	544	493	305	346	418	372	330	442	458	431	Wong Tai Sin Hospital
Grantham Hospital	347	323	423	273	269	290	229	235	333	275	324	Ruttonjee Hospital
Haven of Hope Hospital	158	88	51	91	117	208	338	285	360	316	296	Grantham Hospital
Other Govt Institutions (c)	374	466	463	593	612	80	88	97	72	117	105	Haven of Hope Hospital
						18	16	3	5	7	42	Other Govt. Institutions (f)
						327	277	287	740	1244	1682	Other H.A. Hospitals
Maryknoll Hospital	63	79	50	55	48							
United Christian Hospital	13	33	24	32	36							
Caritas Medical Centre	8	13	8	11	29							
Others (d)	165	82	80	219	89	53	253	589	413	343	157	Private Practitioners
Private Hospitals	N.A.	N.A.	N.A.	23	7	20	23	89	229	255	54	Private Hospitals
Total	6704	6510	6283	6534	6537	6319	6212	6501	7072	7673	7512	Total
% of cases from Chest Clinics among the total	69.9	71.6	70.9	71.8	71.1	73.3	69.1	65.4	57.9	56.3	53.2	% of cases from Chest Clinics among the total

- Note :
- (a) Including Notifications from Cheung Chau Chest Clinic.
  - (b) Most of the notifications are from Wong Tai Sin Hospital.
  - (c) Sources are from former Government Hospitals, Public Mortuaries, Prison Hospitals, Army Hospitals.
  - (d) Sources are mainly from Private Practitioners.
  - (e) Including Yuen Chau Kok Chest Clinic.
  - (f) Sources are from Public Mortuaries, Prison Hospitals, & Army Hospitals.

APPENDIX 12 (b)

Breakdown of Origin of TB  
Notifications for "Other H.A. Hospitals" 1999

Name of Hospital	No. of TB Notification
Alice Ho Miu Ling Nethersole Hospital	98
Caritas Medical Centre	91
Duchess of Kent Children's Hospital	1
Hong Kong Buddhist Hospital	3
Kwai Chung Hospital	7
Kwong Wah Hospital	43
North District Hospital	73
Our Lady of Maryknoll Hospital	42
Pamela Youde Nethersole Eastern Hospital	140
Pok Oi Hospital	12
Prince of Wales Hospital	184
Princess Margaret Hospital	209
Queen Elizabeth Hospital	155
Queen Mary Hospital	124
Sha Tin Hospital	12
St. John's Hospital	1
Tai Po Hospital	22
Tuen Mun Hospital	166
Tung Wah Hospital	16
United Christian Hospital	191
Yan Chai Hospital	92
Total	1682



APPENDIX 13

Tuberculosis Notifications & Notification Rates  
by Epidemiological Districts

Epidemiological Districts	1999	
	Notification	Notification Rate (per 100,000 pop.)
<u>Hong Kong Island</u>	1,382	98.2
Central & Western	320	112.8
Wanchai	278	144.6
Eastern	514	79.9
Southern	270	93.8
<u>Kowloon</u>	2,910	137.0
Yau Tsim Mong	561	180.6
Sham Shui Po	546	148.9
Kowloon City	472	116.9
Wong Tai Sin	639	147.1
Kwun Tong	692	113.7
<u>New Territories (East)</u>	1,473	91.4
North	276	104.1
Tai Po	275	87.4
Shatin	608	94.6
Sai Kung	230	74.9
Islands	84	101.7
<u>New Territories (West)</u>	1,713	101.8
Tsuen Wan	286	100.5
Kwai Chung & Tsing Yi	554	115.9
Tuen Mun	450	89.8
Yuen Long	423	100.9
Others	34	
Imported	3	
Vietnamese Refugees	5	
Unknown	26	
Total	7,512	111.8

APPENDIX 14

Establishment & Strength of TB & Chest Service  
As at 31.12.1999

Post	Establishment	Strength
Consultant Chest Physician i/c	1	1
Consultant Chest Physician	1	1
Senior Medical & Health Officer	8 (a)	3
Medical & Health Officer	22	26 (d)
Senior Nursing Officer	-	1
Nursing Officer	15	14
Registered Nurse	55	55
Enrolled Nurse	128	111
Senior Dispenser	4	4
Dispenser	11	9
Senior Inoculator	3	2
Inoculator	23	14
Executive Officer I	1	-
Executive Officer II	-	1
Statistical Officer II	2	2
Personal Secretary I	1	1
Clerical Officer I	16	15
Clerical Officer II	28	18
Clerical Assistant	54	49 (b)
Office Assistant	22	11
Workman II	63	60
Watchman	2	2
Medical Social Worker	-	12 (c)
Senior Radiographer	1	1
Radiographer II	18	18
Senior Radiographic Technician	7	4
Radiographic Technician	8	8
Darkroom Technician	16	16

- (a) Including 1 SMO (Radiologist) in Chest Service
- (b) Including 1 Supernumerary CA post at YMTXSC
- (c) Seconded from Social Welfare Department and some of them are part-time only
- (d) Including 1 MOs as Medical staff exchange programme with Ruttonjee Hospital

APPENDIX 15

Total Attendances at Chest Clinics  
1989 - 1999

Clinic/Hospital	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Shaukiwan Chest Clinic	37,004	41,733	47,614	46,348	45,250	43,128	48215	55737	54639	54732	52446
Shaukiwan Pneumoconiosis	-	-	-	-	-	-	9944	9664	9185	10821	12182
Sai Ying Pun Chest Clinic	52,134	54,239	51,161	52,478	51,036	47,995	48537	55967	50875	56233	58380
Wanchai Chest Clinic	98,548	94,052	89,769	89,945	88,826	85,106	79964	89391	92697	91331	85109
Kowloon Chest Clinic	88,012	87,277	88,930	77,817	80,576	83,223	95667	104572	120663	117678	112291
Yaumati Chest Clinic	80,885	80,088	78,008	74,709	78,565	83,555	79224	80341	89759	103198	108226
Shek Kip Mei Chest Clinic	67,702	64,588	60,032	67,636	59,342	65,676	56871	63462	72274	75610	68971
East Kowloon Chest Clinic	62,829	62,479	58,667	64,659	64,473	64,845	54430	54921	58862	65220	56317
Yung Fung Shee Chest Clinic	50,420	57,085	53,925	53,042	53,726	55,740	56908	58139	58841	66567	74735
Kwai Chung Chest Clinic	79,775	79,395	80,144	84,721	86,912	91,095	94000	101041	111683	113185	108654
Yan Oi Chest Clinic	39,288	46,409	51,660	52,075	51,077	59,698	64091	70741	69581	70979	78840
Yuen Chau Kok Chest Clinic	-	-	-	-	10,944	51,089	54642	55615	61160	76626	71273
Tung Chung	-	-	-	-	-	-	-	-	101	3730	4687
Tai Po Chest Clinic	7,917	8,174	8,504	9,385	10,852	9,620	8083	8773	15760	20350	20758
Yuen Long Chest Clinic	10,474	11,996	10,967	11,149	11,618	8,963	9822	11687	18742	21677	24075
Sheung Shui Chest Clinic	6,298	7,043	6,274	6,770	7,217	7,644	7710	10151	15330	18756	21256
Sai Kung Chest Clinic	1,381	1,960	1,902	1,529	1,504	1,446	1412	1451	1444	1682	1905
Castle Peak Hospital	1,378	1,693	2,695	4,850	3,736	2,442	1932	1773	1169	1283	1151
Cheung Chau Chest Clinic	2,075	1,614	3,114	1,903	1,927	1,781	2414	2490	2808	2943	2706
Hei Ling Chau ATC	2,398	2,159	877	1,636	1,335	1,232	1550	3187	2600	2664	1855
Shek Pik Prison Hospital	444	188	179	584	882	594	1239	943	725	173	266
Stanley Prison Hospital	7,831	9,737	9,430	9,166	7,745	9,991	5925	7751	6053	7380	9062
Pik Uk Prison	178	386	110	112	46	1	87	-	-	-	-
Shatin Chest Clinic	13,887	14,567	14,989	16,567	12,974	-	-	-	-	-	-
Aberdeen Chest Clinic	5,055	1,601	-	-	-	-	-	-	-	-	-
Tai Lam Addiction Rx Centre	-	-	-	-	-	-	-	-	-	-	-
Tai O	63	47	7	-	-	-	-	-	-	-	-
<b>Total</b>	<b>715,976</b>	<b>728,510</b>	<b>718,958</b>	<b>727,081</b>	<b>730,563</b>	<b>774,864</b>	<b>782,667</b>	<b>847,797</b>	<b>914,951</b>	<b>982,818</b>	<b>975,145</b>

APPENDIX 16

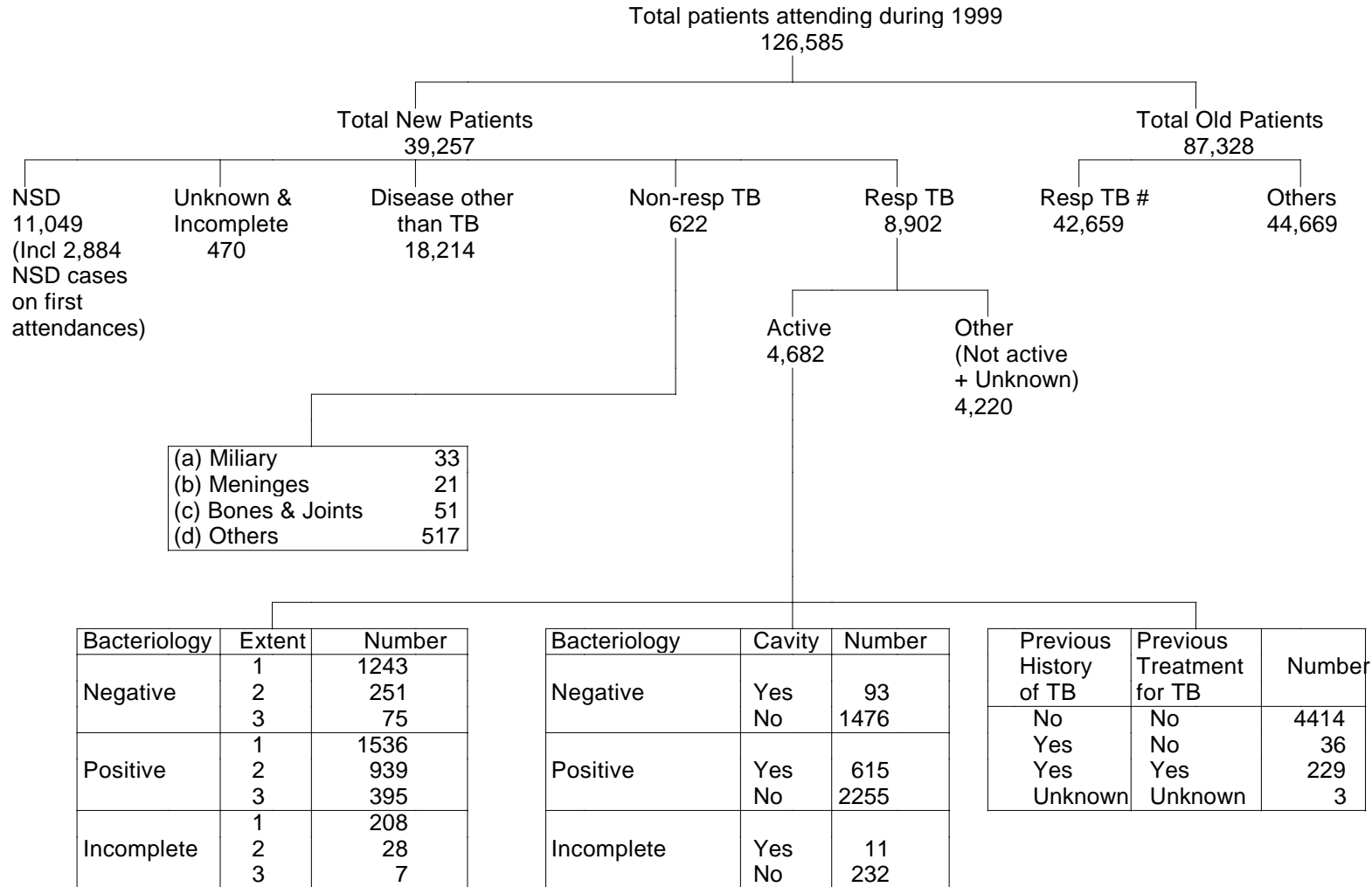
No. of Doctor Sessions, Cases seen by Doctor and Patient/Doctor Session 1999

Clinic/Hospital	Doctor Sessions	Cases seen by Doctor	Patient/Dr Session
East Kowloon Chest Clinic	668	17,715	27
Kowloon Chest Clinic	1,267	44,201	35
Kwai Chung Chest Clinic	1,296	40,786	31
Sai Ying Pun Chest Clinic	649	21,741	33
Shauiwan Chest Clinic	540	18,271	34
Shauiwan Pneumoconiosis	542	9,498	18
Shek Kip Mei Chest Clinic	644	19,752	31
Tung Chung Chest Clinic	539	1,973	4
Wanchai Chest Clinic	1,228	33,971	28
Yan Oi Chest Clinic	895	28,920	32
Yaumati Chest Clinic	1034	36,420	35
Yuen Chau Kok Chest Clinic	923	23,830	26
Yung Fung Shee Chest Clinic	540	19,407	36
Castle Peak Hospital	26	499	19
Cheung Chau Chest Clinic	24	743	31
Hei Ling Chau ATC	12	251	21
Sai Kung Chest Clinic	50	881	18
Sheung Shui Chest Clinic	267	6,264	23
Stanley Prison Hospital	24	602	25
Wong Siu Ching Chest Clinic	283	6,227	22
Shek Pik Prison Hospital	12	266	22
Yuen Long Chest Clinic	393	7,254	18
<b>Total</b>	<b>11,856</b>	<b>339,472</b>	<b>29</b>

Note : Doctor Session - one doctor of a half-day session.

APPENDIX 17

Flow Chart of Patients Attending Chest Clinics, 1999



# Refer to cases with pulmonary TB only, without coexisting TB of extrapulmonary sites.

APPENDIX 18

Classification of Patients of First Attendance with New Case Card Completed  
By Clinics According to International Classification of Diseases Code 1999

Code	Classification	Total
010	Primary Tuberculosis Infection	0
011	Pulmonary Tuberculosis	4,437
012	Other Respiratory Tuberculosis	245
013	Tuberculosis of Meninges	21
014	Tuberculosis of Intestines	18
015	Tuberculosis of Bones & Joints	51
016	Tuberculosis of Genito-urinary System	46
017	Tuberculosis of Other Organs	453
018	Miliary Tuberculosis	33
137	Late effects of Tuberculosis	4,220
160-165	Malignant Neoplasm of Respiratory System	752
212	Benign Neoplasm of Respiratory System	4
460-466	Acute Respiratory Infection	4,036
470-478	Other Diseases of Upper Resp Tract	122
480-486	Pneumonia	1,592
487	Influenza	23
490-491	Bronchitis, (not specified as acute or chronic) & chronic brochitis	6,594
492	Emphysema	136
493	Asthma	303
494	Bronchiectasis	490
495-496	Others	512
501	Asbestosis	0
502	Silicosis	9
505	Pneumoconiosis, unspecified	8
506-508	Others	0
510	Empyema	10
511	Pleurisy	163
512	Pneumothorax	57
513-519	Other Diseases of Respiratory System	325
786	Unknown	3,416
V71	N.S.D.	4,621
	Diseases Other than TB & Resp System	3,078
<b>Total</b>		<b>35,775</b>

APPENDIX 19 (a)

Extent of Active Respiratory TB in First Attenders at Chest Clinics #  
1997 - 1999

Extent	1997		1998		1999	
	No.	%	No.	%	No.	%
1. Minimal	3,078	63.5	3,101	62.5	2,987	63.8
2. Moderate	1,261	26.0	1,316	26.5	1,218	26.0
3. Extensive	512	10.6	545	11.0	477	10.2
Total	4,851	100.0	4,962	100.0	4,682	100.0
No. of first attenders	52,136		41,596		39,257	
% of active TB	9.3		11.9		11.9	

- \* 1. Minimal : Less than right upper lobe  
2. Moderate : More than right upper lobe  
3. Extensive : More than a lung

Percentage on Sputum Results of Active TB  
in First Attenders at Chest Clinics 1999

	Number	%
Smear+	1544	33.0
Smear-Culture+	1272	27.2
Smear-Culture-	1465	31.3
Incomplete	401	8.5
Total	4682	100.0%

# Refer to cases with pulmonary TB only, without coexisting TB of extrapulmonary sites.

Rate of Drug-resistant Tuberculosis

Among patients of chest clinics with date of starting treatment Jan-Dec 1998

Category	% resistant to				% resistant to *			MDR - TB	Total % resistance #	Total no. of cases analysed
	E	R	H	S	1 drug	2 drugs	>2 drugs			
New cases	1.24	1.17	6.78	7.65	4.22	3.47	0.94	1.06	8.63	2653
Previously treated cases	3.51	4.61	11.84	13.82	7.24	4.61	4.17	4.17	16.01	456
Overall	1.58	1.67	7.52	8.55	4.66	3.63	1.41	1.51	9.71	3110

Among patients of chest clinics with date of starting treatment Jan-Jun 1999

Category	% resistant to				% resistant to *			MDR - TB	Total % resistance #	Total no. of cases analysed
	E	R	H	S	1 drug	2 drugs	>2 drugs			
New cases	1.54	1.16	6.64	9.81	6.64	2.70	1.16	1.08	10.50	1295
Previously treated cases	3.32	7.11	14.22	15.17	8.06	3.79	6.16	6.64	18.01	211
Overall	1.86	2.06	7.76	10.62	6.83	2.85	1.92	1.92	11.61	1507

Notes :

E = ethambutol

R = rifampicin

H = isoniazid

S = streptomycin

\* % resistant to one, two or more than two of the four drugs E, R, H and S

# total % resistance : resistant to at least one of the four drugs E, R, H and S

New cases : for cases with no past history of anti-tuberculosis treatment

Previously treated cases : for cases with past history of anti-tuberculosis treatment

Overall : for all cases

NB Yung Fung Shee TB Laboratory is using the absolute concentration method for sensitivity tests.



APPENDIX 20(a)

Treatment Return 1999

Name of clinic/hospital	N p u u m t b e o r n Rx b/f	Service regimen																						N s u t m i b l e l o n Rx c/f	Unsup. Rx	Incomp. super. Rx	No.def. >2m, <3m
		Brought in					Treatment completed				Transfer out to		Interrup. Rx temp.	Died	Drop out				Complete defaulter								
		1	2	3	4	5	<6M	at6m	>6m	%	hops	other cc			Rx by GP	Leave HK	Def. >1x	AMA	<2M	>2M, <3M	>3M	%					
		A	B	C	D	E	F	G	H	I	J	K			L	M	N	O	P	Q	R	S	T				
<b>FULL TIME CLINICS</b>																											
East Kowloon	206	5	0	1	11	4	1	6	15	84.0	6	12	0	1	0	0	1	0	1	2	0	12.0	182	0	6	0	
Kowloon	264	486	10	25	343	262	22	196	373	86.9	271	142	0	15	6	21	11	21	14	6	3	3.5	289	9	179	0	
South Kwai Chung	423	404	29	42	238	126	9	228	381	89.0	119	50	0	35	2	14	7	8	12	3	1	2.3	393	0	176	2	
Sai Ying Pun	197	164	8	17	179	92	5	110	176	91.4	96	20	1	9	1	15	4	2	0	0	0	0.0	218	0	37	0	
Shaukiwan	233	159	5	20	146	141	8	133	201	94.9	120	41	0	2	0	4	0	7	2	1	2	1.4	183	0	77	1	
Shek Kip mei	238	219	5	13	143	105	14	174	146	87.7	88	39	0	12	2	6	4	14	1	1	9	3.0	213	10	59	0	
Wanchai	348	320	8	12	207	128	14	223	227	86.7	121	40	0	5	4	29	2	9	8	5	9	4.2	327	1	202	19	
Yan Oi	377	359	18	20	194	502	13	174	291	79.4	175	40	283	37	2	26	2	14	18	10	14	7.2	371	0	72	18	
Yaumatei	386	296	17	17	160	136	9	229	241	87.4	65	49	1	17	4	8	6	12	1	7	19	5.0	344	0	48	11	
Yuen Chau Kok	358	335	12	10	215	123	15	198	261	89.5	127	65	0	21	1	13	10	10	4	0	5	1.8	323	14	169	0	
Yung Fung Shee	261	299	4	13	206	127	4	175	207	86.2	81	38	2	12	1	11	0	15	6	15	1	5.0	342	0	124	0	
Tung Chung	17	11	1	1	3	17	2	12	15	96.4	6	2	0	0	0	1	0	0	0	0	0	0.0	12	0	1	0	
sub-total	3291	3046	116	190	2042	1746	114	1846	2519	87.4	1269	536	287	166	23	147	47	112	67	50	63	3.6	3185	34	1149	51	
<b>HOSPITAL DISCHARGE CLINICS</b>																											
East Kowloon	1	1	0	0	6	17	1	3	10	92.9	7	0	0	0	0	0	0	0	1	0	0	7.1	3	1	0	0	
Kowloon	0	0	0	0	0	0	0	0	0	ERR	0	0	0	0	0	0	0	0	0	0	0	ERR	0	0	0	0	
sub-total	1	1	0	0	6	17	1	3	10	92.9	7	0	0	0	0	0	0	0	1	0	0	7.1	3	1	0	0	
<b>PART TIME CLINICS</b>																											
Castle Peak	14	7	0	0	2	6	1	3	11	100.0	0	2	3	0	0	0	0	0	0	0	0	0.0	9	0	0	0	
Cheung Chau	11	5	0	1	8	6	0	3	11	82.4	0	3	0	3	0	0	0	0	0	0	0	0.0	11	0	0	0	
Sai Kung	17	7	0	0	5	12	0	9	15	96.0	2	3	0	1	0	0	0	0	0	0	0	0.0	11	0	1	0	
Sheung Shui	106	81	5	3	66	47	0	38	82	88.2	25	16	0	5	1	4	1	2	1	1	2	2.9	130	1	80	3	
Tai Po	119	73	1	7	78	47	1	43	91	89.3	28	12	0	2	1	4	0	8	0	0	1	0.7	134	0	101	6	
Yuen long	89	82	1	1	45	39	3	36	68	92.0	24	22	2	2	2	2	1	2	0	1	0	0.9	92	0	76	21	
sub-total	356	255	7	12	204	157	5	132	278	90.1	79	58	5	13	4	10	2	12	1	2	3	1.3	387	1	258	30	
<b>INSTITUTIONS CORRECTIONAL SERVICE DEPT.</b>																											
Hei Ling Chau	0	0	0	0	0	0	0	0	0	ERR	0	0	0	0	0	0	0	0	0	0	0	ERR	0	0	0	0	
Stanley Prison	23	1	0	0	0	0	0	0	1	100.0	0	0	0	0	0	0	0	0	0	0	0	0.0	23	0	0	0	
Shek Pik Prison	0	35	0	0	0	0	0	0	0	ERR	0	0	0	0	0	0	0	0	0	0	0	ERR	35	0	0	0	
sub-total	23	36	0	0	0	0	0	0	1	100.0	0	0	0	0	0	0	0	0	0	0	0	0.0	58	0	0	0	
<b>TOTAL</b>	<b>3671</b>	<b>3338</b>	<b>123</b>	<b>202</b>	<b>2252</b>	<b>1920</b>	<b>120</b>	<b>1981</b>	<b>2808</b>	<b>87.7</b>	<b>1355</b>	<b>594</b>	<b>292</b>	<b>179</b>	<b>27</b>	<b>157</b>	<b>49</b>	<b>124</b>	<b>69</b>	<b>52</b>	<b>66</b>	<b>3.4</b>	<b>3633</b>	<b>36</b>	<b>1407</b>	<b>81</b>	

APPENDIX 20(b)

Treatment Return 1999 (Cont'd)

Name of clinic/hospital	N p u u m t b e o r n Rx b/f	Other regimens																								
		Brought in					Treatment completed				Transfer out to		Interrup. Rx temp.	Died	Drop out				Complete defaulter				N s u t m i b l e l r o n Rx c/f	Unsup. Rx	Incomp. super. Rx	No.def. >2m, <3m
											hosp	other cc			Rx by GP	Leave HK	Def. >1x	AMA	<2M	>2M, <3M	>3M	%				
		1	2	3	4	5	<6M	at6m	>6m	%	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
<b>FULL TIME CLINICS</b>																										
East Kowloon	21	0	0	0	2	2	0	0	1	50.0	2	3	0	0	0	0	0	0	1	0	0	50.0	18	0	0	0
Kowloon	92	6	3	4	50	29	0	4	16	80.0	18	9	0	2	0	0	0	1	1	1	0	8.0	132	0	8	0
South Kwai Chung	47	5	3	8	43	24	2	10	30	83.3	28	1	0	6	0	0	0	1	0	1	0	2.1	51	0	21	1
Sai Ying Pun	6	0	0	1	11	6	0	0	7	87.5	4	0	0	0	0	0	0	1	0	0	0	0.0	12	0	1	0
Shaukiwan	20	2	2	3	11	8	0	1	16	85.0	13	4	0	1	0	1	0	0	0	1	0	5.0	9	0	6	0
Shek Kip mei	38	2	1	2	38	7	0	2	11	86.7	12	0	2	0	2	0	0	0	0	0	0	0.0	59	2	10	0
Wanchai	31	7	1	2	24	21	1	3	32	92.1	23	4	0	2	0	0	0	0	1	0	0	2.6	20	1	13	0
Yan Oi	1	1	0	2	18	3	0	0	3	60.0	3	2	3	0	0	0	0	1	0	1	0	20.0	12	0	2	0
Yaumatei	24	4	4	3	32	13	4	3	19	71.0	6	4	0	3	0	2	1	2	0	0	2	6.5	34	0	9	1
Yuen Chau Kok	36	7	12	5	27	11	0	5	31	94.7	14	12	0	0	0	0	2	1	0	0	1	2.6	32	2	14	0
Yung Fung Shee	9	4	1	1	27	14	2	2	9	78.6	12	4	0	0	0	0	0	2	1	0	0	7.1	24	0	13	0
Tung Chung	2	0	0	1	0	0	0	0	1	100.0	0	0	0	0	0	0	0	0	0	0	0	0.0	2	0	0	0
sub-total	325	38	27	31	283	138	9	30	175	84.0	135	43	5	14	2	3	3	9	4	4	3	4.5	403	5	97	2
<b>HOSPITAL DISCHARGE CLINICS</b>																										
East Kowloon	11	0	0	2	3	5	0	0	8	80.0	4	1	0	0	0	0	0	0	2	0	0	20.0	6	1	1	0
Kowloon	0	0	0	0	0	0	0	0	0	ERR	0	0	0	0	0	0	0	0	0	0	0	ERR	0	0	0	0
sub-total	11	0	0	2	3	5	0	0	8	80.0	4	1	0	0	0	0	0	0	2	0	0	20.0	6	1	1	0
<b>PART TIME CLINICS</b>																										
Castle Peak	0	0	0	0	0	0	0	0	0	ERR	0	0	0	0	0	0	0	0	0	0	0	ERR	0	0	0	0
Cheung Chau	0	0	0	0	0	0	0	0	0	ERR	0	0	0	0	0	0	0	0	0	0	0	ERR	0	0	0	0
Sai Kung	1	0	0	0	2	0	0	1	0	100.0	0	0	0	0	0	0	0	0	0	0	0	0.0	2	0	0	0
Sheung Shui	4	0	0	1	0	4	0	0	3	60.0	1	0	0	1	0	0	0	0	0	0	1	20.0	3	0	27	0
Tai Po	4	0	1	1	3	8	0	0	2	100.0	4	1	0	0	0	0	0	0	0	0	0	0.0	10	0	8	0
Yuen long	2	1	0	0	3	0	0	1	1	100.0	0	0	0	0	0	0	0	0	0	0	0	0.0	4	0	23	6
sub-total	11	1	1	2	8	12	0	2	6	80.0	5	1	0	1	0	0	0	0	0	0	1	10.0	19	0	58	6
<b>INSTITUTIONS CORRECTIONAL SERVICE DEPT.</b>																										
Hei Ling Chau	4	47	6	4	1	1	6	2	0	100.0	0	1	0	0	0	0	0	0	0	0	0	0.0	54	0	0	0
Stanley Prison										ERR												ERR	0			
Shek Pik Prison	0	0	0	0	0	0	0	0	0	ERR	0	0	0	0	0	0	0	0	0	0	0	ERR	0	0	0	0
sub-total	4	47	6	4	1	1	6	2	0	100.0	0	1	0	0	0	0	0	0	0	0	0	0.0	54	0	0	0
<b>TOTAL</b>	<b>351</b>	<b>86</b>	<b>34</b>	<b>39</b>	<b>295</b>	<b>156</b>	<b>15</b>	<b>34</b>	<b>189</b>	<b>83.8</b>	<b>144</b>	<b>46</b>	<b>5</b>	<b>15</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>9</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>5.3</b>	<b>482</b>	<b>6</b>	<b>156</b>	<b>8</b>

APPENDIX 20 (c)

Explanatory Notes for Appendices 20(a) & 20(b)

Name of clinic/hospital	Number put on Rx b/f	Service regimen / Other regimens *																			Number still on Rx c/f	Unsupervised Rx	Incomplete supervised Rx	No. of defaulters >2M, <3M	
		Brought in				Treatment completed				Transfer out to		Interrop. Rx temp.	Died	Drop out				Complete defaulter							
		B *	C *	D *	E *	F *	<6M	at 6M	>6M	%	hospi- tal			other cc	Rx by GP	Leave BK	Def. >1x	AMA	<2M	>2M, <3M					>3M
A	B *	C *	D *	E *	F *	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
		$J = \frac{H+I}{A+B+C+D+E+F-G-K-L-M-Q-W}$																							
												$V = \frac{S+T+U}{A+B+C+D+E+F-G-K-L-M-Q-W}$													
												$W = (A+B+C+D+E+F) - (G+H+I+K+L+M+N+O+P+Q+R+S+T+U)$													

\* Explanatory Notes :

- Service regimen Upon starting treatment, the regimen contains any combination of drugs including H (isoniazid), R (rifampicin), Z (pyrazinamide), E (ethambutol), and S (streptomycin).
- Other regimens Upon starting treatment, the regimen contains second line drugs apart from H, R, Z, E or S.
- Item B New cases with treatment started in chest clinics.
- Item C Retreatment cases, with treatment newly started. Previous treatment either not completed, or even if claimed to be completed, without documentation in the available clinic record.
- Item D Relapse cases, with treatment newly started. Previous treatment is completed with documentation in the available clinic record.
- Item E Treatment cases transferred in from hospitals, private doctors, etc. without treatment started previously at any chest clinics for this episode of tuberculosis.
- Item F Other transferred in treatment cases, with treatment given previously in any chest clinics for this episode of tuberculosis.

APPENDIX 21

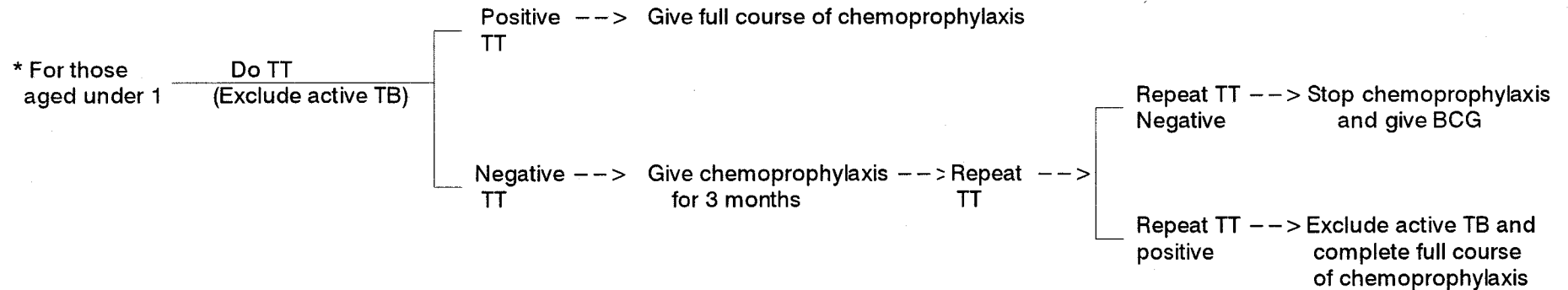
Examination of Contacts in the Chest Clinics 1999

Particulars	Smear Positive Index Cases	Smear Negative Index Cases	Total
No. of patients (new & old) listed	2247	4818	7065
No. of contacts listed	6499	13373	19872
Number of children with negative tuberculin test	131	437	568
Number of children given BCG	126	410	536
Number of contacts x-rayed	5336 ( 100.00% )	10676 ( 100.00% )	16012 ( 100.00% )
<u>Results</u>			
(a) NSD & Unknown	4732 ( 88.68% )	9614 ( 90.05% )	14346 ( 89.60% )
(b) Disease other than TB	303 ( 5.68% )	523 ( 4.90% )	826 ( 5.16% )
(c) Inactive respiratory TB	140 ( 2.63% )	288 ( 2.70% )	428 ( 2.67% )
(d) Active respiratory TB			
A (radiologically)	41 ( 0.77% )	59 ( 0.55% )	100 ( 0.62% )
B (bacteriologically)	9 ( 0.17% )	14 ( 0.13% )	23 ( 0.14% )
C (incomplete)	14 ( 0.26% )	10 ( 0.09% )	24 ( 0.15% )
(e) Non-respiratory TB	5 ( 0.09% )	23 ( 0.22% )	28 ( 0.17% )
(f) Result not yet known	92 ( 1.72% )	145 ( 1.36% )	237 ( 1.48% )

APPENDIX 22

Scheme for Tuberculin Testing and BCG Administration in Hong Kong, 1999

Population Group		Procedure
New borns and within 6 weeks after birth		Direct BCG –Government inoculators with intradermal method Other inoculators with percutaneous method
Infants (excluding contacts)	negative BCG history and/or negative BCG scar	over 6 weeks TT with 1 TU RT 23, negative – BCG positive – observe or no action
	BCG history and BCG scar	no action
Primary School Children (aged 6 – 10)		TT with 1 TU RT 23, negative – BCG positive – no action or chest x-ray
Contact	under 5 (Source DS +ve) *	X-ray, if normal, in 3 months repeat x-ray and do TT, negative – BCG
	under 5 (Source DS –ve)	TT with 1 TU RT 23, negative – BCG positive – x-ray chest
	5 years and over	x-ray chest
Vietnamese Refugees	over 14 years	x-ray chest
	14 years and under	Direct BCG



- Notes :
- (1) Tuberculin Test by intradermal method
  - (2) Reaction to tuberculin  
Criterion for + tuberculin reaction : diameter of induration = 10 mm and above  
Criterion for – tuberculin reaction : diameter of induration = 9 mm and below
  - (3) Evans freeze dried BCG used  
Intradermal strength – viability count of  $8 - 26 \times 10^5$  per 0.1 ml dose  
Percutaneous strength – viability count of  $50 - 250 \times 10^5$  per 0.03 ml dose
  - (4) Any child with symptoms and BCG complication should be seen by a doctor

APPENDIX 23

BCG Vaccinations at Birth, 1999

Institution		No. of Live-births	BCG Vaccination	% Vaccinated
Hospital under HA management	P.Y. Nethersole	3,689	3,687	99.9
	Queen Mary	682	714	104.7 *
	Tsan Yuk	3,785	3,693	97.6
Private Hosp.	Canossa	725	725	100.0
	H.K. Adventist	659	622	94.4
	HK Sanatorium	688	680	98.8
	Matilda	829	779	94.0
	St. Paul's	1,514	1,501	99.1
Total (HK Island)		12,571	12,401	98.6
Hospital under HA management	Caritas	1,061	1,069	100.8 *
	Kwong Wah	5,116	5,092	99.5
	Maryknoll	404	403	99.8
	Queen Elizabeth	4,291	4,314	100.5 *
	United Christian	3,552	3,545	99.8
Private Hosp.	Baptist	4,211	4,161	98.8
	St. Teresa's	3,161	3,100	98.1
Total (Kowloon)		21,796	21,684	99.5
Hospital under HA management	Prince of Wales	5,731	5,736	100.1 *
	Princess Margaret	3,315	3,313	99.9
	Tuen Mun	5,612	5,614	100.0
Private Hosp.	Adventist	740	732	98.9
	Union	1064	1057	99.3
Government Maternity Home		8	7	87.5
Total (NT Areas)		16,470	16,459	99.9
GRAND TOTAL		50,837	50,544	99.4

Note : \* Including vaccinations of live births transferred from other maternity institutions and vaccinations of live births at end of 1999.

Vaccination Method 1999	Percentage
Intradermal	68.2
Percutaneous	31.8

APPENDIX 24 (a)

Tuberculin Tests and BCG Vaccination  
of School Children  
1962 - 1999

Year	Number (a) Eligible	% Agree for TT	Number TT Tested	Number TT Negative	Number Given BCG	% of TT Tested Given BCG
1962			49,567		22,903	46.2
1963			34,793		10,706	30.8
1964			38,871		9,764	25.1
1965			76,407		10,845	14.2
1966			77,447		10,911	14.1
1967	224,666	56.1	125,975	25,794	25,766	20.5
1968	208,029	68.2	141,922	30,328	30,314	21.4
1969	126,906	70.4	89,306	16,831	16,821	18.8
1970	194,298	65.7	127,680	49,655	49,547	38.8
1971	213,457	68.0	145,205	50,115	50,020	34.4
1972	201,537	61.7	124,385	54,340	54,100	43.5
1973	120,797	69.4	83,882	29,713	29,554	35.2
1974	295,287	60.7	179,169	47,591	47,378	26.4
1975	136,175	65.3	88,987	38,334	(b) 39,120	44.0
1976	230,861	63.7	147,057	77,085	76,790	52.2
1977	137,465	55.4	76,143	43,752	43,502	57.1
1978	134,218	66.9	89,732	52,504	54,137	60.3
1979	133,697	66.1	88,375	49,555	49,355	55.8
1980	101,215	66.8	67,633	42,419	43,830	64.8
1981	111,121	68.7	76,342	47,093	47,089	61.7
1982	115,042	71.9	82,675	52,654	52,455	63.4
1983	121,392	77.9	94,578	65,487	65,627	69.4
1984	71,950	85.3	61,359	47,086	47,705	77.7
1985	90,771	82.4	74,802	56,646	56,625	75.7
1986	100,116	82.0	82,057	65,251	64,985	79.2
1987	84,610	79.2	67,038	53,695	53,419	79.7
1988	78,806	89.2	70,318	58,796	59,237	84.2
1989	68,367	91.3	62,390	50,747	50,794	81.4
1990	121,280	86.0	104,263	78,244	78,540	75.3
1991	120,705	91.3	110,193	75,343	75,107	68.2
1992	102,580	91.2	93,533	63,550	(c) 63,234	67.6
1993	100,895	96.3	97,189	69,723	68,598	70.6
1994	91,593	94.8	86,817	65,075	66,372	76.5
1995	94,614	93.4	88,378	65,044	64,005	72.4
1996	73,265	92.3	67,625	49,619	49,113	72.6
1997	61,445	97.2	59,746	49,824	49,336	82.6
1998	91,523	95.4	87,271	74,199	74,008	84.8
1999	106,483	92.1	98,069	80,322	80,103	81.7

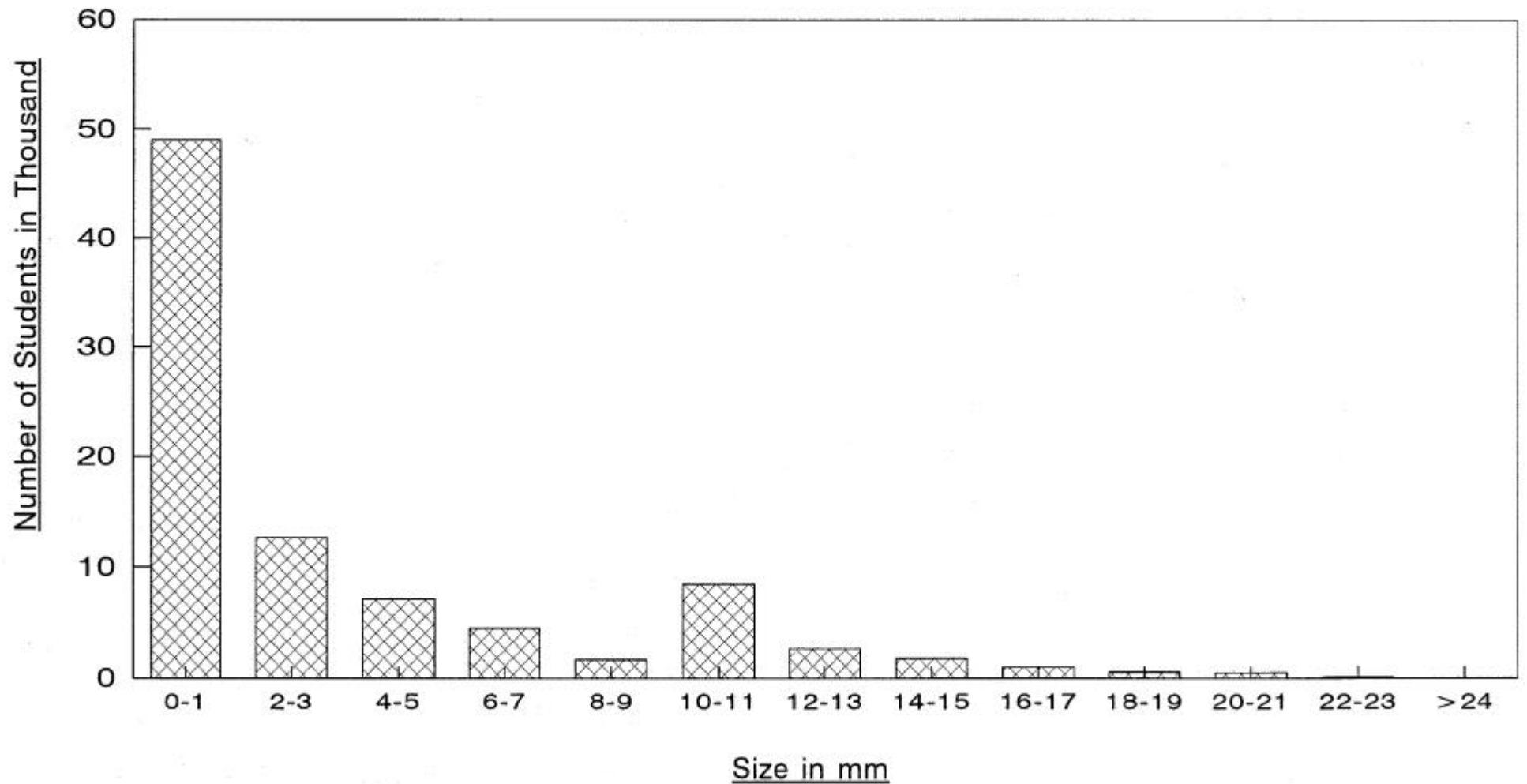
Note : (a) By "number eligible" is meant the total population in the specified age group which it was intended to test and or vaccinate, i.e. the number of persons in each area who could have been tested and/or vaccinated during the period of reporting according to the prevailing policy, by the staff assigned to that area.

(b) Direct BCG was introduced in remote areas w.e.f. 27.10.1975 and number of BCG given includes direct BCG without TT.

(c) No direct BCG was given in 1992 and number of direct BCG given in previous years were not recorded separately.

APPENDIX 24(b)

Frequency Distribution of Tuberculin Test - Reaction Size Among Primary School Students 1999 (1 TU)





APPENDIX 25

Beds for Treatment of Tuberculosis, 1999

	Hospital	No. of TB Beds
Hospital Authority	Grantham Hospital	196
	Kowloon Hospital	122 *
	Ruttonjee Hospital	157
	Haven of Hope Hospital	133
	Wong Tai Sin Hospital	171
Total (Hospital Authority)		779
Private	St. Paul's Hospital	-
	Hong Kong Sanatorium	-
Total (Private)		0
Custody	Victoria Prison Hospital	-
	Stanley Prison Hospital	20
	Tai Lam Correctional Institution	-
Total (Custody)		20
Grand Total (1999)		799
Grand Total (1998)		803
Grand Total (1997)		800

\* Including two beds in the Intensive Care Unit

APPENDIX 26

Annual Admissions to Hospitals  
from Government Chest Clinics  
1989 - 1999

Year	Total Admissions
1989	4,809
1990	5,046
1991	5,056
1992	5,229
1993	5,159
1994	5,176
1995	5,392
1996	4,607
1997	4,597
1998	4,709
1999	5,012

Admissions by Clinic	Year 1999
East Kowloon	328
Kowloon	939
Kwai Chung	446
Sai Ying Pun	419
Shau Kei Wan	254
Shau Kei Wan Pneumoconiosis	78
Shek Kip Mei	289
Wanchai	520
Yaumati	326
NT Unit	154
Yan Oi	441
Yuen Chau Kok	403
Yung Fung Shee	372
Tung Chung	29
Cheung Chau	14
Total	5,012

APPENDIX 27

Unlinked Anonymous Screening (UAS)  
for HIV in TB & Chest Service 1999

Age	No. Tested (No. +ve)		
	Male	Female	Total
<20	28	32	60
20-29	73	92 (1)	165 (1)
30-39	92 (4)	102	194 (4)
40-49	103 (1)	59	162 (1)
50-59	121	29	150
>=60	303 (1)	118 (1)	421 (2)
Unknown	-	-	14
<b>Total</b>	<b>720 (6)</b>	<b>432 (2)</b>	<b>1166 (8)</b>

UAS for HIV in TB & Chest Service 1990 - 1999

Period	Category	Sample	No. Tested (No. +ve)
1.12.90 - 31.1.91	Outpatient	Blood	1548
5.6.91 - 5.8.91	Inpatient	Blood	485
1.4.92 - 30.6.92	Outpatient	Blood	1469 (2)
1.4.92 - 30.6.93	Outpatient	Blood	1173
Sept 95 - Nov 95	Outpatient	Urine	895 (2)
Sept 96 - Dec 96	Outpatient	Urine	998 (4)
Oct 97 - Jan 98	Outpatient	Urine	1003 (2)
Oct 98 - Jan 99	Outpatient	Urine	833 (4)
Sept 99 - Dec 99	Outpatient	Urine	1166 (8)

APPENDIX 28

Number of "Confirmed" Cases of TB in Health Care Staff  
Notified to Labour Department 1993 - 1999

Year	Number
1993	0
1994	1
1995	2
1996	2
1997	10
1998	39
1999	57

"Confirmed" Cases of TB in Health Care Staff Notified  
to Labour Department (1999) by Age and Job Title

Age Group	Doctor	Nurse	Other Allied Health Professional	Other Supporting Staff
0-4				
5-9				
10-14				
15-19		1		
20-24		8		1
25-29	3	15	1	
30-34	2	4		2
35-39		4	2	1
40-44	1	1	1	3
45-49		1	1	1
50-55				3
55-59				
Total	6	34	5	12

APPENDIX 29 (a)

Cohort of TB Patients Seen at Chest Clinics with DOS in 1998

‘Programme Forms’ have been completed for a total of 6309 TB patients who were seen at chest clinics with DOS (date of starting treatment) from 1.1.1998 to 31.12.1998. They are categorised as follows:

(A)	New pulmonary, smear positive	1534
(B)	New pulmonary, smear negative	2912
(C)	New pulmonary, smear not done/ unknown	289
(D)	New extra-pulmonary	698
(E)	Relapse pulmonary, smear positive	221
(F)	Pulmonary smear-positive re-treatment after failure or default	15
(G)	Other re-treatment cases (not included in E and F) [i.e., including relapses (pulmonary, smear negative or unknown or not done; and extrapulmonary) and re-treatment after failure or default (pulmonary, smear negative or unknown or not done; and extrapulmonary)]	597
(H)	Others	43
Total		6309

NB. ‘Pulmonary TB’ includes cases with both pulmonary and extrapulmonary involvement. ‘Extrapulmonary TB’ refers to those with extrapulmonary but without pulmonary involvement.

APPENDIX 29 (b)

Cohort of TB Patients Seen at Chest Clinics with DOS in 1998

Among the cohort of 6309 patients of 1998, 1534 (24.3%) were new smear positive pulmonary TB cases, and 236 (3.7%) were re-treatment smear positive pulmonary TB cases [relapse (221) and re-treatment after failure or default (15)]. Among these smear positive pulmonary TB cases, the outcomes at 12 month (from DOS) were:

Category of outcomes		New cases		Re-treatment cases	
(A)	Treatment completed with sputum converted	1134	73.9%	137	58.1%
(B)	Treatment completed (sputum conversion unknown)	106	6.9%	32	13.6%
(C)	Still on treatment, but sputum smear negative since 5 m	79	5.1%	20	8.5%
(D)	Still on treatment, and sputum smear between 5 m to 1 y still positive	6	0.4%	1	0.4%
(E)	Still on treatment, and sputum smear between 5 m to 1 y not known	14	0.9%	2	0.8%
(F)	Died from TB-related causes	5	0.3%	0	0.0%
(G)	Died from non-TB related causes	32	2.1%	6	2.5%
(H)	Died from unknown causes	23	1.5%	8	3.4%
(I)	Defaulted	62	4.0%	20	8.5%
(J)	Transferred	73	4.8%	10	4.2%
Total		1534	100%	236	100%

## Part 2

# PNEUMOCONIOSIS

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- 1 New Cases of Suspected Pneumoconiosis attending the Pneumoconiosis Clinics in Hong Kong, 1956 – 1999
- 2 Age Distribution of Pneumoconiosis Cases, 1999
- 3 Occupation Distribution of Confirmed Pneumoconiosis, 1999
- 4 Pneumoconiosis Patients by Duration of Exposure to Dust, 1999
- 5 Pneumoconiosis Patients by Degree of Incapacity, 1999
- 6 Confirmed Pneumoconiosis Patients Classified by Radiological Appearance, 1999
- 7 Pneumoconiosis Patients with Tuberculosis, 1999
- 8 Confirmed Pneumoconiosis Patients by Other Particulars, 1999



APPENDIX 1

New Cases of Suspected Pneumoconiosis attending  
the Pneumoconiosis Clinic in Hong Kong 1956 - 1999

Year	Number Notified				Cumulative Total Compensated	
	Government Workers	Non-government Workers	Total	Cumulative Total	R1	R2
1956	1	-	1	1		
1957	4	4	8	9		
1958	9	13	22	31		
1959	5	7	12	43		
1960	9	6	15	58		
1961	8	-	8	66		
1962	3	1	4	70		
1963	9	5	14	84		
1964	21	17	38	122		
1965	9	4	13	135		
1966	7	9	16	151		
1967	3	6	9	160		
1968	4	2	6	166		
1969	4	10	14	180		
1970	22	36	58	238		
1971	9	18	27	265		
1972	9	29	38	303		
1973	3	39	42	345		
1974	-	97	97	442		
1975	5	84	89	531		
1976	15	252	267	798		
1977	3	216	219	1,017		
1978	12	207	219	1,236		
1979	2	210	212	1,448		
1980	12	532 (a)	544	1,992	386 (a)	-
1981	8	608	616	2,608	1,332	162
1982	4	511	515	3,123	1,434	634
1983	2	292	294	3,417	1,469	945
1984	1	231	232	3,649	1,477	1,140
1985	1	179	180 (b)	3,829	1,479	1,322
1986	3	176	179 (3)	4,008	1,485	1,513
1987	4	166	170 (2)	4,178	1,485	1,679
1988	6	172	178 (4)	4,356	1,488	1,877
1989	-	156	156 (1)	4,512	1,488	2,023
1990	2	147	149 (1)	4,661	1,489	2,142
1991	-	171	171 (1)	4,832	1,489	2,151
1992	2	171	173 (3)	5,005	1,490	2,340
1993	2	247	249 (4)	5,254	1,492	2,492
1994	-	327	327 (7)	5,581	1,493	2,770
1995	9	245	254 (9)	5,835	1,494	3,000
1996	4	193	197 (9)	6,032	1,494	3,119
1997	4	154	158 (7)	6,190	1,494	3,242
1998	2	197	199 (5)	6,389	1,494 (d)	3,351
1999	-	291	291 (c)(15)	6,680	1,494 (d)	3,505

- Note: (a) The Pneumoconiosis Compensation Scheme was initiated in 1980, before that reporting were voluntary.
- (b) The figures in this column denote the number of patient with asbestos-related lung disease.
- (c) been assessed and confirmed pneumoconiosis by the Pneumoconiosis Medical Board. And the following tables (Appendix 2 to Appendix 8) are compiled basing on the data of these 154 cases.
- (d) Under Revised Ordinance 1993:581 out of 1,494 pneumoconiosis had joined the pneumoconiosis ex-gratia scheme up to the year 1999. 376 living pneumoconiotics were each receiving a monthly ex-gratia payment of \$4710.00 in 1999.

APPENDIX 2

Age Distribution of Pneumoconiosis Cases 1999

Age	Number of Cases	%
25 - 29	-	-
30 - 34	-	-
35 - 39	2	1
40 - 44	15	10
45 - 49	13	8
50 - 54	20	13
55 - 59	25	16
60 - 64	26	17
65 - 69	26	17
70 - 74	15	10
75+	12	8
Total	154	100

### APPENDIX 3

#### Occupation Distribution of Confirmed Pneumconiosis 1999

Type of Occupation	Number of Cases	%
Construction	101	66
Construction/Quarry	26	17
Others	27	17
Total	154	100

### APPENDIX 4

#### Pneumoconiosis Patients by Duration of Exposure to Dust 1999

Duration	Number of Cases	%
<5 years	2	1
5 - 9	6	3
10 - 14	14	9
15 - 19	30	20
20 - 24	30	20
25 - 29	15	10
30+	55	36
Unknown	2 *	1
Total	154	100

\* Fatal cases, no reliable information available.

APPENDIX 5

Pneumoconiosis Patients by Degree of Incapacity, 1999

Degree of Incapacity (%)	No. of New Cases Compensated under Compensation Ordinance
5	63
10	42
15	10
20	13
25	4
30	3
35	1
40	2
45	3
50	4
55	-
60	1
65	1
70	2
80	2
100	1
N.A.*	2
Total	154

\* Fatal cases.

## APPENDIX 6

### Confirmed Pneumoconiosis Patients Classified by Radiological Appearance, 1999

Type of Opacity	Profusion			Sub-Total
	1	2	3	
<u>Small opacities</u>				
<u>Rounded</u>				
p (up to 1.5 mm diameter)	40	1	1	42
q (1.5 to 3.0 mm diameter)	39	14	1	54
r (3.0 to 10.0 mm diameter)	1	3	1	5
<u>Irregular</u>				
s (fine irregular or linear)	10	-	1	11
t (medium irregular)	5	1	-	6
u (coarse irregular)	2	-	-	2
Sub-total	97	19	4	120
<u>Combined opacities</u>	25	3	-	28
<u>N.A.</u>	-	-	-	6
<b>Total</b>				<b>154</b>

29 out of the 154 patients have large opacities as follows:

<u>Large opacities</u>	
A (Single opacity 1 - 5 cm or multiple opacities >1 cm each but sum of diameter <5 cm)	18
B (Single or multiple opacities with combined area < the equivalent of right upper zone)	10
C (Single or multiple opacities with combined area > the equivalent of right upper zone)	1
<b>Total</b>	<b>29</b>

APPENDIX 7

Pneumoconiosis Patients with Tuberculosis, 1999

Type of T.B.	Number of Cases	%
Bacteriological Positive	29	19
Bacteriological Negative	32	21
No T.B.	91	59
N.A.	2	1
Total	154	100

APPENDIX 8

Confirmed Pneumoconiosis Patients by Other Particulars 1999

Characteristics		Number of Cases	%
Smoking	Smoker/Ex-smoker	134	87
	Non-smoker	18	12
	Unknown	2	1
	Total	154	100
Still exposed to dust when seen by the Pneumoconiosis Clinic	Yes	49	32
	No	103	67
	Unknown	2	1
	Total	154	100
General Condition	Good	142	92
	Fair	10	7
	Poor	-	-
	Died	2	1
	Total	154	100

## Part 3

### ANNEX

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- 1 (a) Tuberculosis Notifications (All Forms) & Rate by Age & Sex 1996
- 1 (b) Tuberculosis Notifications (All Forms) & Rate by Age & Sex 1997
- 1 (c) Tuberculosis Notifications (All Forms) & Rate by Age & Sex 1998
- 2 (a) TB Death (All Forms) & Death Rate by Age & Sex 1996
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- 3 (a) Pulmonary TB Notifications by Age & Sex 1996
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- 8 Ambulatory Treatment and Public Health Measures for a Patient with  
Uncomplicated Pulmonary Tuberculosis



## Annex 1(a)

Tuberculosis Notifications (All Forms) & Rate by Age and Sex 1996 \*\*\*

Age Group	Tuberculosis Notification (All Forms)			Tuberculosis Notification Rate (per 100,000 population)		
	M	F	T	M	F	T
Under 1	0	0	0			
1	3	0	3			
2	3	0	3	>	4.1	1.7
3	0	1	1			
4	2	2	4			
5 - 9	16	14	30		7.9	7.4
10 - 14	28	27	55		12.4	12.8
15 - 19	137	112	249		59.4	51.8
20 - 24	265	224	489		111.6	94.4
25 - 29	290	249	539		114.8	85.6
30 - 34	282	202	484		88.8	57.7
35 - 39	333	195	528		98.1	57.6
40 - 44	282	156	438		100.2	57.4
45 - 49	290	106	396		121.0	49.5
50 - 54	276	81	357		184.4	66.3
55 - 59	356	77	433		250.2	64.1
60 - 64	475	88	563		336.9	68.2
65 - 69	448	121	569		374.9	100.5
70 - 74	388	119	507		459.2	123.6
75 - 79	292	87	379			
80 - 84	181	99	280	>	606.9	199.3
85 & over	92	98	190			
Unknown	2	2	4		0.0	0.0
Total	4441	2060	6501		136.5	63.8

\*\*\* Notification Rate for 1996 revised due to revised population figures

## Annex 1(b)

Tuberculosis Notifications (All Forms) & Rate by Age and Sex 1997 \*\*\*

Age Group	Tuberculosis Notification (All Forms)			Tuberculosis Notification Rate (per 100,000 population)		
	M	F	T	M	F	T
Under 1	0	0	0			
1	4	3	7			
2	4	2	6	>	7.3	4.5
3	2	1	3			
4	4	2	6			
5 - 9	16	17	33		7.8	8.9
10 - 14	18	26	44		8.2	12.5
15 - 19	117	106	223		50.0	48.3
20 - 24	243	267	510		103.5	114.9
25 - 29	251	259	510		101.6	89.4
30 - 34	272	231	503		89.7	66.9
35 - 39	320	229	549		94.6	65.5
40 - 44	330	154	484		112.3	52.6
45 - 49	330	124	454		133.4	54.0
50 - 54	319	87	406		193.6	62.0
55 - 59	379	84	463		272.7	72.3
60 - 64	442	131	573		313.5	101.2
65 - 69	502	130	632		406.1	106.1
70 - 74	426	141	567		484.6	141.4
75 - 79	378	130	508			
80 - 84	236	110	346	>	754.0	228.5
85 & over	137	105	242			
Unknown	1	2	3		0.0	0.0
Total	4731	2341	7072		144.6	71.1

\*\*\* Notification Rate for 1997 revised due to revised population figures

## Annex 1(c)

## Tuberculosis Notifications (All Forms) &amp; Rate by Age and Sex 1998 \*\*\*

Age Group	Tuberculosis Notification (All Forms)			Tuberculosis Notification Rate (per 100,000 population)		
	M	F	T	M	F	T
Under 1	0	0	0			
1	3	1	4			
2	3	1	4	>	5.0	5.4
3	2	2	4			
4	1	5	6			
5 - 9	12	13	25		5.7	6.7
10 - 14	19	37	56		8.6	17.6
15 - 19	142	129	271		60.0	58.1
20 - 24	247	264	511		106.6	116.8
25 - 29	242	264	506		99.2	92.0
30 - 34	268	274	542		92.5	80.2
35 - 39	324	239	563		96.9	65.9
40 - 44	354	187	541		116.0	59.6
45 - 49	364	124	488		143.4	50.6
50 - 54	301	106	407		165.7	66.0
55 - 59	387	86	473		281.5	74.8
60 - 64	514	113	627		369.0	88.3
65 - 69	555	121	676		440.1	97.7
70 - 74	512	145	657		562.6	141.6
75 - 79	432	150	582			
80 - 84	279	145	424	>	813.4	282.9
85 & over	152	154	306			
Unknown	0	0	0		0.0	0.0
Total	5113	2560	7673		155.5	76.2

\*\*\* Notification Rate for 1998 revised due to revised population figures

## Annex 2(a)

TB Death (All Forms) & Death Rate by Age & Sex 1996 \*\*\*

Age Group	Tuberculosis Death (All Forms)			Death Rate (per 100,000 population)		
	M	F	T	M	F	T
Under 1	0	0	0			
1	0	0	0			
2	0	0	0	>	0.0	0.0
3	0	0	0			
4	0	0	0			
5 - 9	1	0	1		0.0	0.0
10 - 14	0	0	0		0.0	0.0
15 - 19	0	0	0		0.0	0.0
20 - 24	3	0	3		0.0	0.6
25 - 29	2	1	3		0.8	0.3
30 - 34	0	0	0		0.0	0.0
35 - 39	2	1	3		0.6	0.3
40 - 44	11	4	15		3.9	0.0
45 - 49	6	2	8		2.5	0.9
50 - 54	6	0	6		4.0	0.0
55 - 59	13	2	15		9.1	1.7
60 - 64	20	5	25		14.2	3.9
65 - 69	27	4	31		22.6	3.3
70 - 74	37	10	47		43.8	10.4
75 - 79	29	13	42			
80 - 84	33	14	47	>	89.2	35.1
85 & over	21	23	44			
Unknown	2	0	2		0.0	0.0
Total	213	79	292		6.5	2.4

\*\*\* Death Rate for 1996 revised due to revised population figures

## Annex 2(b)

TB Death (All Forms) & Death Rate by Age & Sex 1997 \*\*\*

Age Group	Tuberculosis Death (All Forms)			Death Rate (per 100,000 population)		
	M	F	T	M	F	T
Under 1	0	0	0			
1	0	0	0			
2	0	0	0	>	0.0	0.0
3	0	0	0			
4	0	0	0			
5 - 9	0	0	0		0.0	0.0
10 - 14	0	0	0		0.0	0.0
15 - 19	0	0	0		0.0	0.0
20 - 24	1	2	3		0.0	0.9
25 - 29	0	1	1		0.0	0.3
30 - 34	1	0	1		0.3	0.0
35 - 39	4	1	5		1.2	0.3
40 - 44	7	1	8		2.4	0.0
45 - 49	5	1	6		2.0	0.4
50 - 54	3	1	4		1.8	0.7
55 - 59	13	0	13		9.4	0.0
60 - 64	15	5	20		10.6	3.9
65 - 69	28	3	31		22.7	2.4
70 - 74	24	3	27		27.3	3.0
75 - 79	29	13	42			
80 - 84	32	13	45	>	87.3	30.5
85 & over	26	20	46			
Unknown	0	0	0		0.0	0.0
Total	188	64	252		5.7	1.9

\*\*\* Death Rate for 1997 revised due to revised population figures

## Annex 2(c)

TB Death (All Forms) & Death Rate by Age & Sex 1998 \*\*\*

Age Group	Tuberculosis Death (All Forms)			Death Rate (per 100,000 population)		
	M	F	T	M	F	T
Under 1	0	0	0			
1	0	0	0			
2	0	0	0	>	0.6	0.0
3	1	0	1			
4	0	0	0			
5 - 9	0	0	0		0.0	0.0
10 - 14	0	0	0		0.0	0.0
15 - 19	1	0	1		0.4	0.0
20 - 24	0	1	1		0.0	0.4
25 - 29	1	1	2		0.4	0.3
30 - 34	1	1	2		0.3	0.3
35 - 39	4	2	6		1.2	0.6
40 - 44	1	0	1		0.3	0.0
45 - 49	5	1	6		2.0	0.4
50 - 54	5	1	6		2.8	0.6
55 - 59	11	4	15		8.0	3.5
60 - 64	18	1	19		12.9	0.8
65 - 69	24	7	31		19.0	5.6
70 - 74	28	3	31		30.8	2.9
75 - 79	34	12	46			
80 - 84	27	18	45	>	84.8	35.9
85 & over	29	27	56			
Unknown	0	1	1		0.0	0.0
Total	190	80	270		5.8	2.4

\*\*\* Death Rate for 1998 revised due to revised population figures

Annex 3(a)

Pulmonary TB Notifications by Age & Sex 1996 \*\*

Age Group	Pulmonary TB			Bacteriologically * Positive Pulmonary TB			Smear Positive Pulmonary TB		
	M	F	T	M	F	T	M	F	T
Under 1									
1	3	0	3						
2	1	0	1						
3	0	0	0						
4	0	1	1						
5 - 9	14	7	21	2	1	3	0	1	1
10 - 14	21	19	40	5	5	10	3	5	8
15 - 19	127	97	224	49	44	93	32	31	63
20 - 24	251	193	444	78	70	148	53	47	100
25 - 29	274	203	477	74	84	158	46	59	105
30 - 34	246	174	420	84	59	143	59	43	102
35 - 39	305	137	442	121	47	168	85	35	120
40 - 44	259	129	388	132	54	186	86	38	124
45 - 49	266	74	340	128	34	162	90	20	110
50 - 54	264	60	324	111	27	138	68	15	83
55 - 59	346	62	408	179	30	209	119	15	134
60 - 64	452	69	521	242	38	280	166	25	191
65 - 69	437	108	545	228	49	277	148	30	178
70 - 74	380	111	491	205	59	264	135	30	165
75 - 79	285	74	359	163	46	209	89	27	116
80 - 84	177	89	266	117	42	159	62	21	83
85 & over	90	91	181	46	55	101	34	30	64
Total	4198	1698	5896	1964	744	2708	1275	472	1747

\*\* Pulmonary TB with or without extrapulmonary TB

\* Either smear or culture positive

Annex 3(b)

Rate of Pulmonary TB Notification by Age & Sex 1996 \*\*

(Rate per 100,000 Population)

Age Group	Pulmonary TB			Bacteriologically * Positive Pulmonary TB			Smear Positive Pulmonary TB		
	M	F	T	M	F	T	M	F	T
0 - 4	2.0	0.6	1.3	-	-	-	-	-	-
5 - 9	6.9	3.7	5.4	1.0	0.5	0.8	0.0	0.5	0.3
10 - 14	9.3	9.0	9.2	2.2	2.4	2.3	1.3	2.4	1.8
15 - 19	55.1	45.0	50.2	21.3	20.4	20.8	13.9	14.4	14.1
20 - 24	105.7	81.3	93.5	32.9	29.5	31.2	22.3	19.8	21.1
25 - 29	108.4	69.8	87.7	29.3	28.9	29.1	18.2	20.3	19.3
30 - 34	77.5	49.7	62.9	26.4	16.9	21.4	18.6	12.3	15.3
35 - 39	89.8	40.5	65.2	35.6	13.9	24.8	25.0	10.3	17.7
40 - 44	92.0	47.4	70.1	46.9	19.9	33.6	30.6	14.0	22.4
45 - 49	111.0	34.5	74.9	53.4	15.9	35.7	37.6	9.3	24.2
50 - 54	176.4	49.1	119.2	74.1	22.1	50.8	45.4	12.3	30.5
55 - 59	243.1	51.6	155.4	125.8	25.0	79.6	83.6	12.5	51.0
60 - 64	320.6	53.4	192.9	171.6	29.4	103.7	117.7	19.4	70.7
65 - 69	365.7	89.7	227.2	190.8	40.7	115.5	123.8	24.9	74.2
70 - 74	449.7	115.3	271.6	242.6	61.3	146.0	159.8	31.2	91.3
75+	592.9	178.2	342.1	350.2	100.4	199.1	198.7	54.7	111.6
Total	129.0	52.6	90.9	60.4	23.0	41.8	39.2	14.6	26.9

\*\* Pulmonary TB with or without extrapulmonary TB

\* Either smear or culture positive



Annex 3(c)

Pulmonary TB Notifications by Age & Sex 1997 \*\*

Age Group	Pulmonary TB			Bacteriologically *			Smear		
	M	F	T	Positive Pulmonary TB			Positive Pulmonary TB		
	M	F	T	M	F	T	M	F	T
Under 1									
1	3	2	5	1	1	2	1	1	2
2	2	1	3	0	0	0			
3	1	1	2	0	0	0			
4	3	1	4	0	0	0			
5 - 9	14	9	23	3	2	5	2	1	3
10 - 14	16	26	42	5	10	15	1	9	10
15 - 19	105	94	199	42	39	81	34	33	67
20 - 24	224	237	461	85	72	157	59	53	112
25 - 29	226	217	443	82	81	163	59	58	117
30 - 34	242	191	433	84	74	158	61	55	116
35 - 39	297	182	479	115	71	186	75	45	120
40 - 44	317	117	434	132	46	178	98	33	131
45 - 49	315	109	424	134	48	182	108	32	140
50 - 54	310	65	375	129	30	159	91	18	109
55 - 59	370	68	438	192	36	228	128	25	153
60 - 64	424	104	528	219	56	275	145	35	180
65 - 69	487	111	598	278	53	331	183	34	217
70 - 74	413	128	541	244	78	322	151	42	193
75 - 79	367	109	476	232	72	304	131	36	167
80 - 84	230	100	330	147	53	200	83	31	114
85 & over	133	98	231	83	53	136	47	24	71
Total	4499	1970	6469	2207	875	3082	1457	565	2022

\*\* Pulmonary TB with or without extrapulmonary TB

\* Either smear or culture positive

Annex 3(d)

Rate of Pulmonary TB Notification by Age & Sex 1997 \*\*

(Rate per 100,000 Population)

Age Group	Pulmonary TB			Bacteriologically * Positive Pulmonary TB			Smear Positive Pulmonary TB		
	M	F	T	M	F	T	M	F	T
0 - 4	4.7	2.8	3.8	0.5	0.6	0.5	0.5	0.6	0.5
5 - 9	6.8	4.7	5.8	1.5	1.0	1.3	1.0	0.5	0.8
10 - 14	7.3	12.5	9.8	2.3	4.8	3.5	0.5	4.3	2.3
15 - 19	44.9	42.8	43.9	18.0	17.8	17.9	14.5	15.0	14.8
20 - 24	95.4	102.0	98.7	36.2	31.0	33.6	25.1	22.8	24.0
25 - 29	91.5	74.9	82.5	33.2	28.0	30.4	23.9	20.0	21.8
30 - 34	79.8	55.3	66.8	27.7	21.4	24.4	20.1	15.9	17.9
35 - 39	87.8	52.1	69.6	34.0	20.3	27.0	22.2	12.9	17.4
40 - 44	107.9	39.9	74.0	44.9	15.7	30.3	33.3	11.3	22.3
45 - 49	127.3	47.4	88.9	54.2	20.9	38.1	43.7	13.9	29.3
50 - 54	188.1	46.3	122.9	78.3	21.4	52.1	55.2	12.8	35.7
55 - 59	266.2	58.5	171.6	138.1	31.0	89.3	92.1	21.5	60.0
60 - 64	300.7	80.4	195.3	155.3	43.3	101.7	102.8	27.0	66.6
65 - 69	394.0	90.6	243.0	224.9	43.3	134.5	148.1	27.8	88.2
70 - 74	469.9	128.4	288.4	277.6	78.2	171.6	171.8	42.1	102.9
75+	732.9	203.3	413.8	463.9	117.9	255.4	262.0	60.3	140.5
Total	137.6	59.8	98.5	67.5	26.6	47.0	44.5	17.2	30.8

\*\* Pulmonary TB with or without extrapulmonary TB

\* Either smear or culture positive

Annex 3(e)

Pulmonary TB Notifications by Age & Sex 1998 \*\*

Age Group	Pulmonary TB			Bacteriologically * Positive Pulmonary TB			Smear Positive Pulmonary TB		
	M	F	T	M	F	T	M	F	T
Under 1									
1	3	1	4						
2	2	1	3	1	0	1	1	0	1
3	2	2	4	0	0	0	0	0	0
4	1	3	4	1	2	3	1	0	1
5 - 9	11	8	19	2	1	3	2	1	3
10 - 14	17	34	51	5	13	18	5	6	11
15 - 19	133	117	250	34	40	74	25	25	50
20 - 24	226	226	452	69	81	150	48	57	105
25 - 29	223	236	459	78	89	167	53	60	113
30 - 34	250	210	460	104	88	192	67	54	121
35 - 39	297	182	479	125	71	196	85	43	128
40 - 44	331	142	473	153	55	208	103	38	141
45 - 49	346	87	433	151	41	192	105	32	137
50 - 54	283	82	365	145	32	177	97	21	118
55 - 59	374	71	445	204	31	235	130	23	153
60 - 64	495	95	590	268	55	323	170	28	198
65 - 69	541	112	653	314	77	391	169	42	211
70 - 74	496	133	629	289	71	360	164	40	204
75 - 79	424	139	563	270	92	362	144	55	199
80 - 84	276	136	412	175	92	267	97	56	153
85 & over	145	147	292	90	93	183	36	50	86
Total	4876	2164	7040	2478	1024	3502	1502	631	2133

\*\* Pulmonary TB with or without extrapulmonary TB

\* Either smear or culture positive

Annex 3(f)

Rate of Pulmonary TB Notification by Age & Sex 1998 \*\*

(Rate per 100,000 Population)

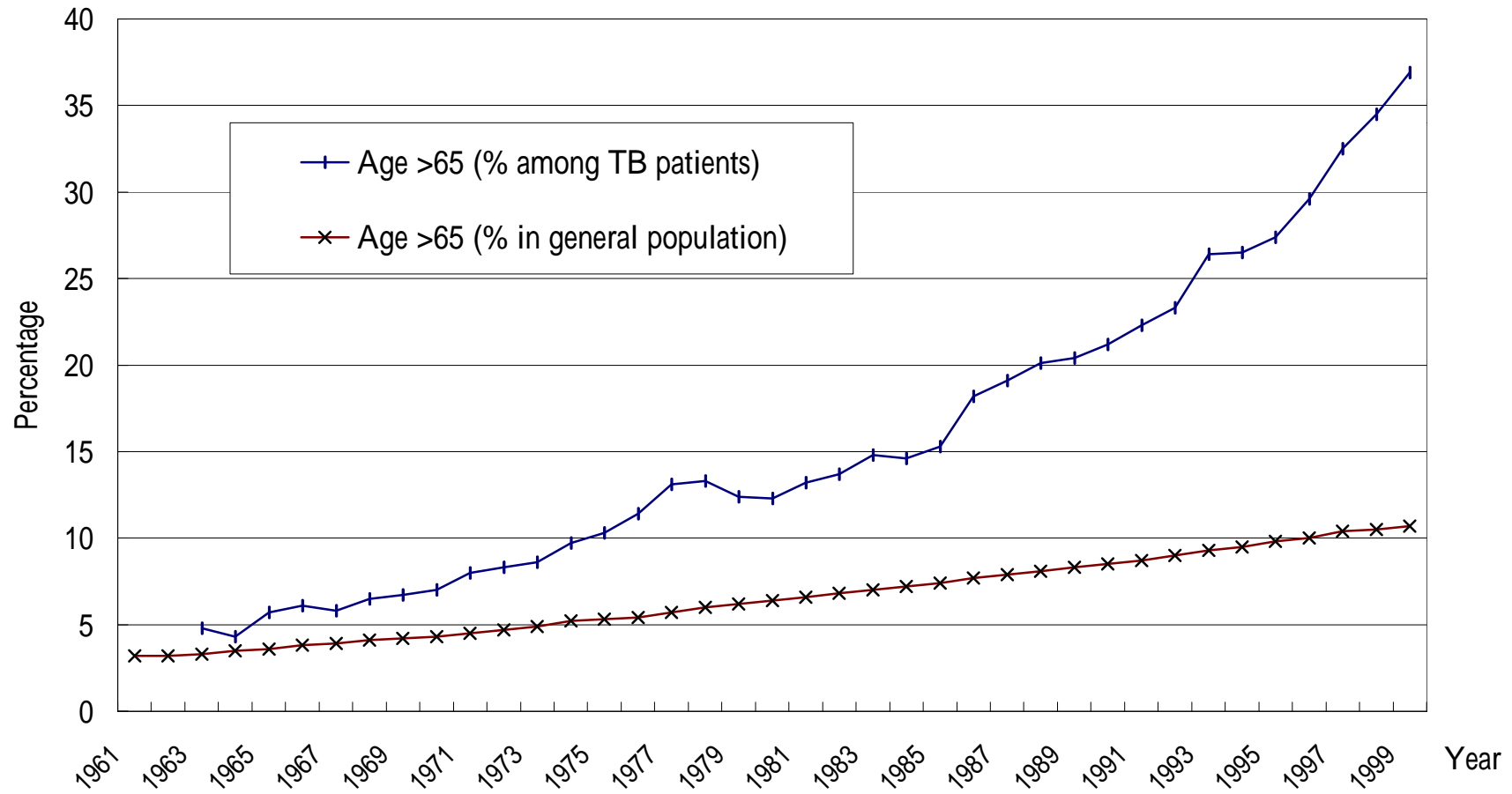
Age Group	Pulmonary TB			Bacteriologically * Positive Pulmonary TB			Smear Positive Pulmonary TB		
	M	F	T	M	F	T	M	F	T
0 - 4	4.4	4.2	4.3	1.1	1.2	1.1	1.1	-	0.6
5 - 9	5.3	4.1	4.7	1.0	0.5	0.7	1.0	0.5	0.7
10 - 14	7.7	16.2	11.8	2.3	6.2	4.2	2.3	2.9	2.6
15 - 19	56.2	52.7	54.5	14.4	18.0	16.1	10.6	11.3	10.9
20 - 24	97.5	100.0	98.7	29.8	35.8	32.8	20.7	25.2	22.9
25 - 29	91.4	82.3	86.5	32.0	31.0	31.5	21.7	20.9	21.3
30 - 34	86.3	61.5	72.9	35.9	25.8	30.4	23.1	15.8	19.2
35 - 39	88.9	50.2	68.7	37.4	19.6	28.1	25.4	11.9	18.4
40 - 44	108.4	45.3	76.4	50.1	17.5	33.6	33.7	12.1	22.8
45 - 49	136.3	35.5	86.8	59.5	16.7	38.5	41.4	13.1	27.5
50 - 54	155.8	51.0	106.6	79.8	19.9	51.7	53.4	13.1	34.5
55 - 59	272.0	61.7	176.2	148.4	27.0	93.1	94.5	20.0	60.6
60 - 64	355.3	74.2	220.7	192.4	43.0	120.8	122.0	21.9	74.1
65 - 69	429.0	90.4	261.2	249.0	62.1	156.4	134.0	33.9	84.4
70 - 74	545.1	129.9	325.2	317.6	69.3	186.1	180.2	39.1	105.5
75+	796.4	265.9	478.5	504.2	174.5	306.6	261.1	101.4	165.4
Total	148.3	64.4	105.9	75.4	30.5	52.7	45.7	18.8	32.1

\*\* Pulmonary TB with or without extrapulmonary TB

\* Either smear or culture positive

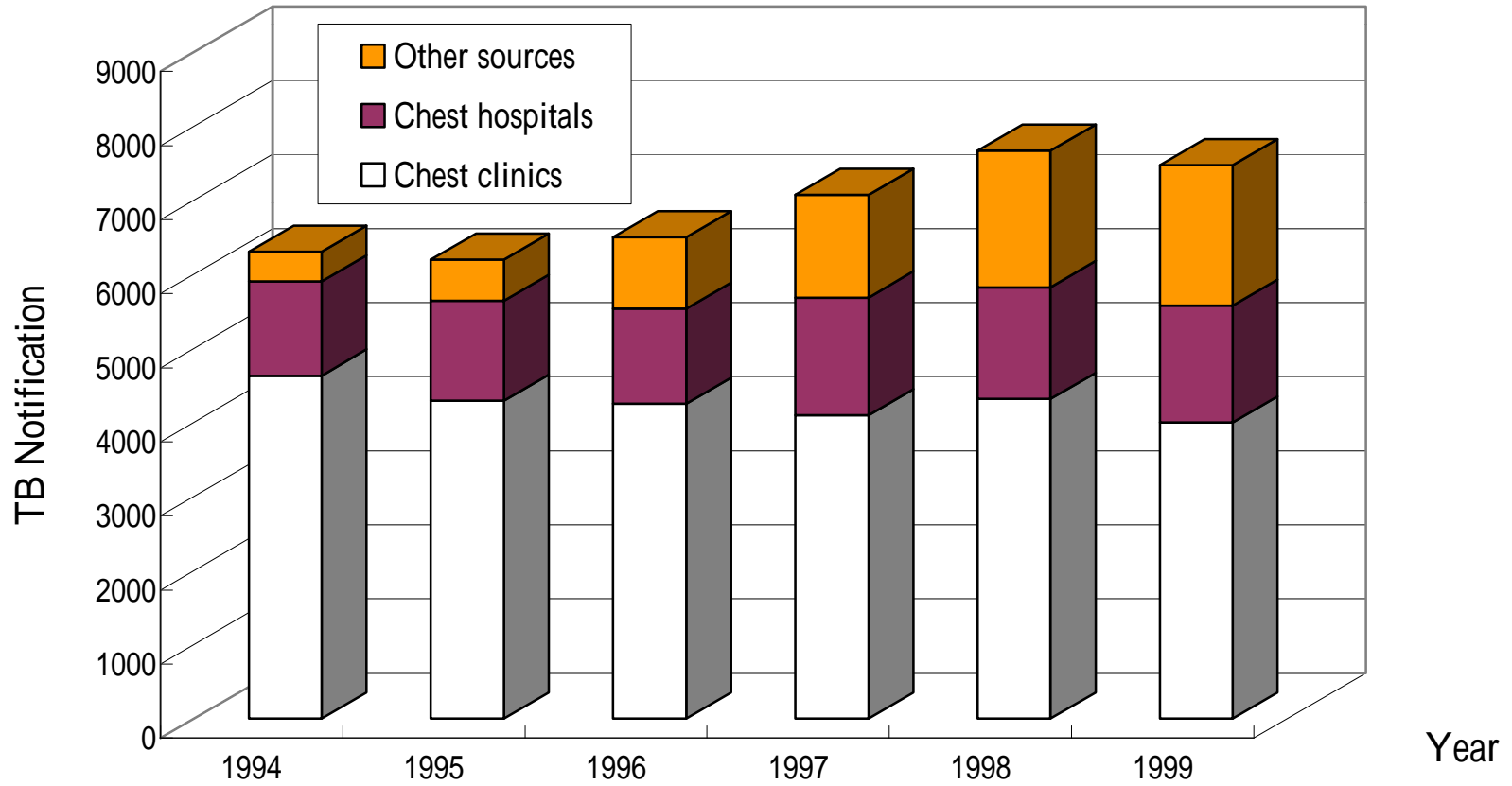
### TB in the Elderly (1961-1999)

Annex 4



### Sources of TB Notification

Annex 5



NB: 'Other sources' include HA general hospitals, the private sector, and other government institutions

## A REVIEW OF THE RATE OF DRUG-RESISTANT TUBERCULOSIS IN HONG KONG

(20<sup>th</sup> ERIUATLD Conference 1999 [Abstract] P162)

*Objective:* A retrospective analysis is performed on the rate of drug-resistant tuberculosis (DR-TB) in Hong Kong in the past thirty years.

*Method:* A literature search was done to look for available data on DR-TB in Hong Kong. This includes information from the annual reports of the Tuberculosis & Chest Service (TB&CS) of the Department of Health, and the various reports on past studies including clinical trials and drug-resistance surveys done in Hong Kong. Retrospective analysis of data extracted from samples of clinic records of the TB&CS and data from the reference TB laboratory is done to provide information on the more recent drug-resistance pattern (Table 1).

*Summary of results:* (Tables 2, 3 and 4) The TB&CS manages the great majority (over 80%) of TB patients in Hong Kong. The rate of initial DR-TB (resistant to at least one of the three first-line drugs) was about 20-30% thirty years ago and it has decreased to around 10-15% in recent years. On the other hand, the acquired drug-resistance rate (resistant to at least one of the three drugs) was very high in the past, amounting to 50-70% thirty years ago. The corresponding figure in recent years has decreased to around 20-30%. The current rate of MDR-TB is on average around 2%.

*Discussion:* There are limitations of the study when comparison is made between the rates of different years.

- (1) *Sampling methods:* Samples were derived from TB patients of chest clinics of TB&CS. This would depend on the referral and attendance pattern at the chest clinics. For example, the increase in rates of MDR-TB in 1997 was probably due to an increase in referral of drug-resistant TB patients to chest clinics for DOT after a widely reported outbreak of TB. Some of the rates were derived from samples of patients who participated in clinical trials of certain drug regimens.
- (2) *Clinical:* There could be a problem of misclassification of initial and acquired resistance.
- (3) *Laboratory:* Different methodologies for drug sensitivity analysis had been used over the years, like absolute concentration method (MIC), resistance ratio, and proportion method (Table 1).

*Conclusion:* Despite the limitations of the survey, the result of the survey shows an overall reduction in the rate of DR-TB in Hong Kong in the past thirty years. The most important contributory factor is probably the use of directly observed treatment (DOT) since the 1970's and the use of effective drugs in the short course service programme. In line with WHO's recommendations, DOT should continue to remain as one of the most important TB control measures. Rates of drug-resistance TB should continued to be monitored using standardised methods.

Table 1: DEFINITIONS OF DRUG RESISTANCE

Year	Source of drug resistance data (References)	Definition of drug resistance			
		H	S	PAS	R
62 67-69	Tubercle 1964(45):77 Tubercle 1974(55):169	Growth on 1 µg/ml or more in 1, or growth on 0.2 µg/ml in 2 cultures	A resistance ratio (RR) of 8 or more in 1, or an RR of 4 in 2 cultures	RR of 8 or more in 1, or a RR of 4 in 2 cultures	
68, 69, 70, 71	Annual Reports 1968, 1969, 1970, 1971	Not specified	Not specified	Not specified	
72-73 74-76 74-76	Am Rev Respir Dis 1977 (115):727 Tubercle 1979 (60):201 Am Rev Respir Dis 1984 (130):23	Growth (≥ 20 colonies) on 0.2 µg/ml or more	Growth (≥ 20 colonies) on 16 µg/ml or more in 1 culture, or on 8 µg/ml in each of 2 cultures		
76-78 78-82 83-86	Am Rev Respir Dis 1987 (136):1339 Am Rev Respir Dis 1989 (139):871 Am Rev Respir Dis 1991 (143):700	Growth (≥ 20 colonies) on 0.2 µg/ml or more	A geometric mean MIC of 32 µg/ml		Growth (≥ 20 colonies) on 64 µg/ml in at least 1 culture
89 91-95 92,93,94, 95, 96, 97, 98	Unpublished survey Am J Respir Crit Care Med 1998;157:1726-33 Review of clinic records	MIC ≥ 1 µg/ml	MIC ≥ 32 µg/ml		MIC ≥ 64 µg/ml



Table 2: TB DRUG RESISTANCE IN TB & CHEST SERVICE, DH, HONG KONG (INITIAL RESISTANCE)

Year	% resistance to				% resistance to			MDR-TB (%)	% res. to any 1 drug	Sample size
	S	H	R	PAS	1 drug	2 drugs	>2 drugs			
62	10.9	14.2		3.3	13.6	5.0	1.7		20.2 *	302
67-69	19.3	19.1		11.1	17.7	6.4	6.4		30.4 *	566
68	15.6	11.3		25.8	27.4	6.8	3.9		38.1 *	1895
69	15.2	12.7		24.1	22.9	6.8	5.2		34.9 *	2805
70	15.6	11.8		12.7	16.4	5.1	4.5		26.0 *	2079
71	15.0	12.5		1.9	13.1	7.1	0.7		20.9 *	1300
72-73	16.3	11.9							21.4 @	514
74-76									16.9 @	769
74-76	11.1	6.8							14.1 @	370
76-78	10.4	9.1	0.4		9.5	4.7	0.3	0.3	14.6 #	975
78-82	10.8	8.6	0.5		10.6	4.4	0.2	0.2	15.2 #	592
83-86	10.2	8.6	1.1		9.6	3.9	0.7	1.0	14.2 #	1040
89	11.6	3.8	0.2		10.7	2.1	0.2	0.2	13.1 #	475
91-95	6.7	4.3	0.5		6.9	2.1	0.2	0.2	9.1 #	581
92	9.4	5.5	1.3		7.6	3.9	0.3	0.8	11.7 #	384
93	11.3	5.0	1.4		8.8	3.6	0.6	0.8	13.0 #	363
94	7.7	3.7	0.3		7.2	2.2	0.0	0.0	9.4 #	403
95	6.6	5.6	0.2		7.5	2.4	0.0	0.0	10.0 #	412
96	6.6	4.2	1.0		6.1	2.1	0.5	0.7	8.7 #	815
97	7.4	7.4	1.4		7.9	3.4	0.6	1.1	11.9 #	353
98	6.6	6.0	0.8		5.3	3.5	0.4	0.8	9.2 #	513

\* Sensitivity test to S, H, PAS

@ Sensitivity test to S, H

# Sensitivity test to S, H, R

Table 3: TB DRUG RESISTANCE IN TB & CHEST SERVICE, DH, HONG KONG (ACQUIRED RESISTANCE)

Year	% resistance to				% resistance to			MDR-TB (%)	% res. to any 1 drug	Sample size
	S	H	R	PAS	1 drug	2 drugs	>2 drugs			
62	40.9	62.5		13.0	34.6	24.5	11.1		70.2 *	208
68	38.9	40.9		34.5	24.5	19.5	16.9		60.9 *	563
69	34.2	39.7		33.0	26.7	15.5	16.4		58.6 *	567
70	33.8	31.6		23.5	22.1	14.7	12.5		49.3 *	408
71	31.2	44.1		2.9	29.6	20.9	2.2		52.7 *	311
89	13.9	14.8	2.6		14.8	7.0	0.9	1.7	22.6 #	115
92	15.0	13.8	3.8		15.0	5.0	2.5	2.5	22.5 #	80
93	15.6	16.9	3.9		13.0	7.8	2.6	3.9	23.4 #	77
94	12.4	13.6	3.7		4.9	7.4	3.7	3.7	16.1 #	81
95	16.7	11.1	2.2		16.7	3.3	2.2	2.2	22.2 #	90
96	9.8	12.1	0.8		12.9	4.6	0.0	0.0	18.2 #	132
97	20.9	20.9	9.0		13.4	7.5	7.5	9.0	28.4 #	67
98	15.2	10.9	4.4		15.2	4.4	2.2	3.3	21.7 #	92

\* Sensitivity test to S, H, PAS

# Sensitivity test to S, H, R

Table 4: TB DRUG RESISTANCE IN TB & CHEST SERVICE, DH, HONG KONG (OVERALL RESISTANCE)

Year	% resistance to				% resistance to			MDR-TB (%)	% res. to any 1 drug	Sample size
	S	H	R	PAS	1 drug	2 drugs	>2 drugs			
68	21.4	18.7		34.5	26.4	10.0	7.2		43.6 <sup>*</sup>	2541
69	19.1	18.1		33.0	23.7	8.5	7.5		39.7 <sup>*</sup>	3490
70	18.9	15.5		23.5	17.5	6.9	6.0		30.4 <sup>*</sup>	2553
71	18.2	19.6		2.9	16.8	10.0	1.0		27.8 <sup>*</sup>	1695
89	12.0	5.9	0.7		11.5	3.1	0.3	0.5	14.9 <sup>#</sup>	590
92	10.3	6.9	1.7		8.8	4.1	0.7	1.1	13.6 <sup>#</sup>	464
92	12.3	8.0	2.2		11.8	3.3	1.4	1.8	16.5 <sup>#</sup>	2121
93	12.3	7.0	1.8		9.9	4.3	0.9	1.4	15.0 <sup>#</sup>	446
93	11.5	6.3	1.4		9.8	3.2	1.0	1.1	12.8 <sup>#</sup>	1682
94	8.5	5.6	0.6		6.8	3.1	0.6	0.6	10.5 <sup>#</sup>	485
94	10.3	6.3	1.8		9.3	2.8	1.1	1.3	13.2 <sup>#</sup>	2613
95	8.4	6.6	0.6		9.2	2.6	0.4	0.4	12.2 <sup>#</sup>	502
96	7.2	5.6	1.4		7.0	2.5	0.7	1.0	10.2 <sup>#</sup>	990
97	9.9	11.0	3.3		9.2	4.7	1.9	3.1	15.7 <sup>#</sup>	426
98	7.9	6.8	1.3		7.0	3.6	0.7	1.1	11.2 <sup>#</sup>	618

\* Sensitivity test to S, H, PAS

# Sensitivity test to S, H, R

## GUIDANCE NOTES FOR NOTIFICATION OF TUBERCULOSIS

### **Background**

According to the Prevention of the Spread of Infectious Diseases Regulations under the Quarantine and Prevention of Disease Ordinance (Cap. 141) in Hong Kong, a medical practitioner who makes a diagnosis of TB should notify the case to the Director of Health, using the notification form DH1A(s) (Rev.96). The aims of notification are to allow close surveillance of the disease and facilitate implementation of public health measures like contact tracing and examination. In order to minimize variations in notification practice and improve the quality of data in the local TB surveillance system, the following set of guidance notes and case definitions are prepared for the local professionals' reference.

### **Guidance notes<sup>1</sup>**

#### 1. *Case Definition of Tuberculosis*

##### (a) Clinical Description

TB is a chronic bacterial infection caused by *Mycobacterium tuberculosis*, characterized pathologically by the formation of granulomas. The most common site of disease is the lung, but other organs may be involved. Classical symptoms of pulmonary tuberculosis include persistent cough, haemoptysis, afternoon fever, night sweating and weight loss. However, these may not always be present and symptom combinations vary from case to case. Involvement of extrapulmonary sites may cause clinical features referable to the respective organ/ system. In cases of late or disseminated disease, overt systemic symptoms and signs affecting the general being of the individual may predominate.

##### (b) Clinical Case Definition

A case that meets the following criteria:

- (i) Signs and symptoms compatible with active tuberculosis;
- (ii) Supporting evidences from relevant and clinically indicated diagnostic evaluation (e.g., abnormal, unstable [i.e., worsening or improving] chest radiographs);
- (iii) The attending physician forms the opinion that treatment for active tuberculosis with a combination of anti-tuberculosis medications is required.

##### (c) Laboratory Criteria for Diagnosis

- (i) Isolation of *Mycobacterium tuberculosis* from a clinical specimen (through culture and identification tests); or
- (ii) Demonstration of *Mycobacterium tuberculosis* from a clinical specimen by nucleic acid amplification test (e.g., polymerase chain reaction together with species-specific probe); or
- (iii) Demonstration of acid-fast bacilli in a clinical specimen (e.g., histological examination);

where the clinical picture is compatible with the diagnosis of active tuberculosis.

#### 2. *Cases which should be notified:*

- (a) All cases that meet the clinical case definition should be notified. Where there is strong clinical suspicion of active tuberculosis, cases may be notified before all the criteria for clinical case definition are met, so as to facilitate early implementation of public health measures.
- (b) All cases that meet the laboratory criteria for diagnosis of TB should be notified. In case the diagnosis of TB is made after the patient has died, notification is still required.

- (c) For those cases where anti-tuberculosis treatment has been given as an empirical trial, the attending physician may judge, or seek expert advice, on whether or not and when to notify on a case-by-case basis.
  - (d) When a fresh episode of active tuberculosis (e.g. relapse of pulmonary tuberculosis) occurs in the same patient, notification should be made again.
3. *Cases for which TB notification is not required:*
- (a) For cases without evidence of currently active disease, notification is not required. Examples include persons who are found to have old TB scars on chest radiographs which, according to the opinion of the attending physician, do not require treatment.
  - (b) Recent conversion of tuberculin skin test from negative to positive does not, by itself, indicate active disease. In the absence of supporting clinical and / or radiographic evidences, persons with such skin test conversion should not be considered as cases for notification.
  - (c) Cases given medications for treatment of latent TB infection only ( or “TB chemoprophylaxis” ) are not required to be notified.
  - (d) Cases diagnosed as having disease caused by non-tuberculous mycobacteria instead of *Mycobacteria tuberculosis* are not required to be notified.

### *Notification Forms*

Notification forms can be obtained from the headquarters of the Department of Health (Tel: 2961 8570, Fax 2893 9425), Statistics Unit in the Tuberculosis and Chest Service (Tel: 2572 3487, Fax: 2834 6627) or from any nearby chest clinic. Alternatively, notification forms may be downloaded from the homepage of the Department of Health (<http://www.info.gov.hk/dh/>). Prompt notification and accurate completion of all items on the form will facilitate the implementation of any necessary public health measures. In case certain information (e.g. culture results) is not yet available at the time of notification, supplementary information can be sent at a later date when available.

### *Summary*

Today, TB is still a major public health problem in the HKSAR. A vigilant surveillance system is essential for a good TB control programme. It is a statutory requirement for TB cases to be notified to the Department of Health. It is noted that grey areas and confusion do exist as on when to notify. These guidance notes aim at providing clarification and minimising the variation in notification practice. Complete and accurate data obtained from notification will allow continuous evaluation of the trend of the disease. Cooperation of all medical practitioners is necessary to achieve this goal. With a quality surveillance programme, public health measures for TB can be planned, implemented and monitored more effectively.

### *References*

1. CDC. *Case definitions for infectious conditions under public health surveillance. MMWR 1997;46:40-41.*

*(Extracted from Public Health & Epidemiology Bulletin 1999;8(4):36-9)*

**FORM 1**

**QUARANTINE AND PREVENTION OF DISEASE ORDINANCE**

**(Cap. 141)**

**TUBERCULOSIS NOTIFICATION**

**Particulars of Infected Person**

Name in English		Name in Chinese		Age/Sex:		I.D. Card/Passport No.	
Address:						Telephone Number:	
Place of Work/ School Attended:						Telephone Number:	
Site of TB		Sputum			Disposal		Hospital/Clinic sent to (if any):
Resp. System			Smear	Culture	On Treatment		
Meninges		Positive			On Observation		
Bone & Joint		Negative			Referred		
Other(s)		Unknown			Died		Hospital No.:
Duration of stay in Hong Kong: _____ Years							
Does patient have a history of past treatment for tuberculosis? __Yes __No							
If yes, please state the YEAR in which he first received treatment: _____							

Notified under the Prevention of the Spread of Infectious Diseases Regulations by

Dr. \_\_\_\_\_ on \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
(Full Name in BLOCK Letters) (Date)

Telephone Number: \_\_\_\_\_ (Signature)

<p>(Please DELETE whichever is not applicable)</p> <p>"I will arrange for examination of contacts myself."</p> <p>"Please arrange for examination of contacts to be done by the Government Chest Service."</p> <p>Further Remarks:</p>
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## **AMBULATORY TREATMENT AND PUBLIC HEALTH MEASURES FOR A PATIENT WITH UNCOMPLICATED PULMONARY TUBERCULOSIS**

### **INTRODUCTION**

In Hong Kong, there are more than 7000 notified cases of tuberculosis (TB) each year. Ambulatory chemotherapy has been the mainstay of anti-TB treatment. The majority of notified TB cases are managed in the chest clinics of the Tuberculosis & Chest Service (TB&CS) under the administration of the Department of Health (DH). Others are treated at various medical units of the Hospital Authority and in the private sector. It is a statutory requirement for every case of active TB to be notified to DH according to the Prevention of the Spread of Infectious Diseases Regulations under the Quarantine and Prevention of Disease Ordinance (Cap. 141). Notification serves two main purposes, namely, epidemiological surveillance and contact investigation. Prompt notification facilitates contact tracing procedures and helps to contain the spread of the infection. Details of the notification procedure can be found in the “Guidance notes for notification of tuberculosis”<sup>1</sup>.

The TB&CS operates 18 chest clinics located at various sites in the Hong Kong Special Administrative Region. The services are free of charge to ensure that TB patients will not be denied access because of financial difficulty. Today, emphasis is placed on encouraging patients with symptoms suggestive of TB to seek medical attention early, so called “passive case finding”, rather than indiscriminate screening of asymptomatic individuals. This article provides a general view of the practice of the TB&CS in the management of a patient with uncomplicated pulmonary TB.

### **MANAGEMENT OF THE PATIENT WITH TB**

As TB is endemic in Hong Kong, a high index of suspicion should be maintained, especially for patients presenting with symptoms like persistent cough for over 3 to 4 weeks, blood in sputum, weight loss, persistent fever, or night sweating. In assessing a patient presenting with persistent chest and/ or constitutional symptoms, a full medical history is essential. Particularly important issues in the history include previous history of TB, coexisting medical illnesses, occupational history, contact history, and smoking status. If a positive culture of *Mycobacterium tuberculosis* has been isolated from the sputum of the probable source case, the sensitivity pattern may help in the choice of initial drug regimen for the patient. Any evidence of previous BCG vaccination is to be noted especially if the patient is a child.

Physical examination often yields negative findings. Some features may be worth mentioning, including: general condition, cervical lymph node enlargement, features of pleural effusion, and unilateral wheeze related to endobronchial involvement. The physical findings may help in the consideration of differential diagnoses, e.g., a lung nodule is more likely to be a carcinoma than a tuberculoma in the presence of finger clubbing.

Chest radiograph and sputum examination for acid fast bacilli (AFB) are essential tools employed for the diagnosis of pulmonary TB. The chest radiograph is a relatively simple and sensitive test. Typical radiographic changes, like apical lesions, tend to have a higher positive predictive value for TB in an endemic area like Hong Kong. Sputum samples, preferably collected on two to three consecutive mornings, are sent for direct smear and culture examination. Identification and sensitivity tests should be done for positive culture isolates. Positive smear results are reported back to the clinics over the phone or by fax so that patients can be called back for early commencement of treatment. If direct smears are negative, clinico-radiological correlation is essential in deciding the next step of action. In certain situations, trial of antibiotics, and follow-up chest radiograph in one to two weeks may be required to differentiate TB from other types of community-acquired

pneumonia. In more difficult cases, it may be necessary to resort to further investigations like CT scan, fibreoptic bronchoscopy, and percutaneous transthoracic fine needle aspirate. Thus, the diagnosis of active pulmonary TB may be based on any combination of clinical, radiological, bacteriological, and sometimes histological grounds. The use of tuberculin test is rather limited in the local setting, partly as a result of widespread BCG vaccination and revaccination. Despite such limitation, the test may still give useful information in certain clinical situations, especially among the younger age group.

Cases diagnosed as active pulmonary TB should be notified promptly to DH<sup>1</sup>. If the patient happens to be a health-care worker with increased risk of exposure to TB as a result of his / her job, notification to the Labour Department is required under the Occupational Safety and Health Ordinance.

“Short course chemotherapy” is the current standard treatment for active pulmonary TB. The regimen consists of a two-month initial phase comprising four drugs, namely, isoniazid, rifampicin, pyrazinamide, and either ethambutol or streptomycin, plus a four-month continuation phase of two drugs, namely, isoniazid and rifampicin, making a total duration of six months<sup>2</sup>. The drugs can be given either daily or three times weekly at the appropriate dosages (Tables 1 and 2). The drugs should, as far as possible, be taken together in one single dose each time and not in split doses in order to achieve good therapeutic efficacy. Combined drug preparations (e.g. rifater, rifinah) are useful alternatives but have to be given daily. While they help to avoid monotherapy with a single drug, they do not allow flexible dosage adjustment of the individual components of the regimen.

Contraindications to the use of the anti-TB drugs should be noted prior to commencement of therapy, in particular: history of major diseases such as liver and renal diseases, visual problem, hearing problem, drug allergy, and concomitant treatment with other medications. Young females are counselled on pregnancy-related issues, especially the reduced efficacy of oral contraceptives due to interaction with rifampicin, and alternative contraceptive methods may have to be recommended. Pretreatment blood tests for liver function, renal function, and HIV antibody (after counselling and obtaining patient’s consent) are performed, as well as screening tests for vision if ethambutol is to be prescribed. Health education is given on the nature of the disease, personal hygiene, necessity for full adherence with drug treatment, and the possible pharmacological and side effects of the anti-TB drugs (e.g., discoloration of urine, faeces, tear and other body fluids). This is supplemented by written educational materials. Self-reporting of side effects is also advised. The establishment of good rapport from the very beginning is essential for the success of the treatment programme.

The health nurses will enquire the patient about his close contacts (usually the household members), and contact screening will be offered to them. Casual contacts are, in general, not targeted for screening because of the low cost-effectiveness, although this has to be assessed on a case-by-case basis. Contact tracing normally follows the “stone-in-the-pond principle”. Under this principle, contact tracing will be limited first to the innermost circle with the highest degree of close contact, and if more cases are found, consideration may be given to screen successively the outer circles with lesser degree of contact. However, examination of contacts should be considered mainly as an adjunctive measure in the overall TB control programme as only a relatively small proportion of TB cases can be found through this route. A more effective approach would be to emphasize on health education and early awareness of symptoms.

The sputum smear status is a general guide to the infectiousness of the TB patient. Those patients with severe cough, cavitary disease, and positive sputum smear are likely to be highly infectious. Prompt initiation of treatment is crucial as infectiousness rapidly decreases with effective treatment. Health education, personal hygiene measures, maintenance of good indoor ventilation and screening of close contacts are useful adjunctive measures to reduce the risk of transmission. Sick leave may be granted for the period during which infectivity is considered significant on a case-by-case basis. In general, infectivity is reduced very significantly when two weeks of anti-TB treatment containing



rifampicin has been taken. Particular concern should be paid to infectious patients who are in frequent contact with susceptible people, such as teachers, staff of homes for the elderly, and medical personnel working for debilitated patients, where more stringent measures may be necessary.

In the chest clinics, anti-TB medication is given under direct observation by the health nurses to ensure full adherence. Directly observed treatment, complemented by holistic care, is strongly recommended by WHO as one of the most important TB control measures, and is crucial for the success of the treatment programme. During the initial phase of chemotherapy, the patient is followed up at least monthly so as to reinforce patient education, and to watch out for adverse drug reactions. Routine follow-up blood tests for liver function is not necessary unless clinical features suspicious of hepatitis arise, such as fever, nausea, vomiting, anorexia and jaundice, or when the patient has underlying liver problems like chronic viral hepatitides and alcoholic liver diseases. Transient rise of liver enzymes may occur, but it does not represent genuine hepatotoxicity. A chest radiograph is usually taken at the second or third month to assess progress. If the pretreatment bacteriology is positive, sputum examination after the second month will be done to assess whether there is conversion to negativity. If the bacteriology then is still positive, a further sputum examination after the third month is indicated.

Treatment defaulters will be approached by the health nurses through various means, including telephone calls, visits, and mail. Adherence is positively enhanced through health education and an assisting approach. The underlying reasons for defaulting should be identified and possible solutions are provided to restore adherence. Through the work of the medical social workers, incentives like nutrition allowance or other forms of social assistance may be introduced for eligible patients to enhance treatment adherence. Minimizing non-adherence is vital for the overall success of the TB control programme.

At the end of six months' treatment, the patient is assessed with a repeat chest radiograph and sputum examination. After stopping treatment, further health education is delivered to the patient on issues like maintenance of a healthy lifestyle, and returning for assessment should symptoms suspicious of TB recur. Relapse of TB should be uncommon after adequate chemotherapy and regular follow up is not a necessity in general. However, for the purposes of outcome evaluation, TB patients are followed up in the chest clinics periodically for two or more years. In fact, standardized "Programme Forms" are being used for continuous evaluation of the service programme in the TB&CS. Data collected include information on demography, past history of treatment, type of TB (pulmonary or extrapulmonary), extent of disease (if pulmonary), case category (new, relapse, treatment after default and treatment after failure), date of start of treatment (DOS), bacteriological status at certain time points, sensitivity test results, and treatment outcome at selected time intervals from DOS. Monitoring of treatment outcome is an essential component of the Directly Observed Treatment-Short Course Programme (DOTS) advocated by the WHO. A similar but modified set of the Programme Forms is going to be used for TB patients managed in other health care sectors as well.

From time to time, more complicated issues arise, including extensive disease, poor general condition, diagnostic dilemma, treatment failure related to poor adherence and drug resistance, concurrent medical diseases, and adverse drug reactions etc. Opinion from experienced physicians in this field has to be sought and hospital admission may be required. Modification of the drug regimen may be necessary, for example, in cases with drug-induced hepatitis. Care should also be taken not to add a single drug to a failing regimen (the addition phenomenon), otherwise resistance to the newly added drug will soon develop. Desensitization may be required with drug-induced hypersensitivity skin rash, but care should be taken not to induce emergence of drug-resistant organisms during this process. TB in children is more difficult to diagnose, and treatment with ethambutol should be avoided especially for those under six years old as they may not be able to report visual symptoms reliably. Thus, childhood TB should be managed by an experienced physician. On the other hand, TB in the elderly may have atypical presentations, and there is a higher incidence

of side effects from drugs among this population.

## CONCLUSION

The most important reason for failure of anti-tuberculous treatment is poor adherence. Studies have shown that there is no good way to predict adherence to drug therapy. Directly observed treatment is thus the best available tool to ensure drug adherence. The cost of directly observed treatment is justified because it avoids the greater cost required for the management of failure cases, relapse cases, complications, late effects and even worse, drug-resistant cases. Furthermore, without an effective treatment programme, the spread of TB would lead to an even higher healthcare and economic burden. The management of a case of TB demands the combination of good professional knowledge in clinical medicine as well as adequate attention on public health measures.

Although the local TB situation has much improved in the past 40 years, it is certainly still a major public health concern. The maintenance of a strong infrastructure for the delivery of anti-TB service, together with the dissemination and promulgation of up-to-date medical knowledge and practice among the medical professionals, will be required to combat and prevent the resurgence of this disease. The rate of latent infection in the population, especially among senior citizens, is still high and many years' of work will be required before any hope for the elimination of the disease comes to light.

## REFERENCES

1. Leung CC, Tam CM. Guidance notes for notification of tuberculosis. *Public Health & Epidemiology Bulletin* 1999;8(4):36-9.
2. The Tuberculosis Control Coordinating Committee of the Hong Kong Department of Health and the Tuberculosis Subcommittee of the Coordinating Committee in Internal Medicine of the Hospital Authority, Hong Kong. *Chemotherapy of tuberculosis in Hong Kong: a consensus statement. Hong Kong Med J* 1998;4:315-20.

Table 1: Standard regimen for anti-tuberculosis treatment

Initial phase (2 months)	Isoniazid+Rifampicin+Pyrazinamide+Ethambutol/Streptomycin
Continuation phase (4 months)	Isoniazid+Rifampicin

Table 2: Usual dosages of first line anti-tuberculosis drugs

Drug	Daily dosage			Intermittent dosage		
	Adults and Children (mg/kg)	Adults		Adults and Children (mg/kg)	Adults	
		Weight (kg)	Dose		Weight (kg)	Dose
Isoniazid	5	-	300 mg	10-15 three times/week	-	-
Rifampicin	10	<50 ≥50	450 mg 600mg	10-12 three times/week	-	600 mg
Streptomycin	12-15	<50 ≥50	500-750mg 750-1000 mg	12-15	<50 ≥50	500-750mg 750-1000 mg
Pyrazinamide	25-30	<50 ≥50	1.0-1.5 g 1.5-2.0 g	30-40 three times/week	<50 ≥50	2.0 g 2.5g
Ethambutol	15	-		30 three times/week	-	-

\* Some authorities recommend higher dosages of isoniazid, rifampicin, and streptomycin for children