Thailand's Present Situation and Future Plan of Tuberculosis and Its Control

Currently, tuberculosis is concerned as a major health problem of country. The morbidity, mortality and infection rate were still high which can be seen as follows :

- the mortality rate reduced from 63.6/100,000 population in 1950 to 10.3/100,000 population in 1985.

- 98.1 per cent of tuberculosis death died from pulmonary tuberculosis.

- the mortality rate of tuberculosis accounted for 2.2 per cent of total death.

In addition, tuberculosis is the fourth leading cause of ten other important causes of death and the one leading cause of death among infectious diseases.

The National Tuberculosis Programme (NTP) has been set up since 1954 by mass BCG campaign, using mobile BCG team for tuberculin test and BCG vaccination to the whole population. In 1967, local health services have undertaken this work by giving only direct BCG vaccination. There also has been established the Central Chest Clinic, Bangkok, since 1949.

-In 1962, the Tuberculosis Division, with the collaboration of WHO/UNICEF, did the first tuberculosis prevalence survey to find out tuberculosis problems in the country. The result revealed that the tuberculosis problem was high in Bangkok and low in rural areas.

After the first survey, the zonal tuberculosis center has been establised scattering all over country, with a total of 12 centers. The zonal tuberculosis center is responsible for BCG vaccination, case finding and treatment activities.

-In 1967, the tuberculosis division handed over the partial integration of tuberculosis programme into local health services. This project was not successful according to little attention and not fully understanding of health officials.

-In 1977, the second tuberculosis prevalence survey was done to evaluate ongoing tuberculosis programmes. Data showed that the tuberculosis problem was high in rural areas which was opposite from the first survey.

When comparing these two surveys, in general there were the reductinn of infection and morbidity rate. But, in considering areas and ages, it found that the infection rate of children 0-9 years in urban and rural areas was increased and the prevalence of smear positive cases in rural area did not go down.

The Expanded Programme on Immunization (EPI), therefore, was launched in this year and the BCG vaccination became a component of EPI. The BCG coverage in children under one year of age increased from 38 per cent in 1977 to 94.75 per cent in 1986. And the BCG coverage of the first grade school children increased from 18.52 per cent in 1982 to 60.60 per cent in 1986.

- In 1982, the total integration of tuberculosis programme was delivered to a provincial level under the responsibility of provincial chief medical officers. Another objective was to bring the tuberculosis programme into community hospitals in the context of primary health care.

There were many hospitals taking part in this program by increasing tuberculosis clinic settlement; general hospitals - 77 %, and community hospitals- 92 %.

- In 1983, the tuberculin/BCG scar survey was carried out to search for trend of tuberculosis problems. Data showed that, by comparing with 1977, the annual risk of infection decreased from 4.9 % to 2.3 % in 1983. The infection rate of children aged 0-14 years also decreased from 15.2 % in 1977 to 8.9 %in 1983.

- In 1985, the short course chemotherapy regimen has been used for smear positive cases. This regimen can be treated approximately 5,000-7,000 patients/year, and ninety per cent can be saved for those completed treatment. Besides, mostly potients have accepted the short course chemotherapy : the regularity of treatment was high and the relapse rate was low. The short course regimens are followings :

-2SHRZ/6HT

-2HRZ/4H_2R_2

and retreatments -2HRZE/4HRE } for failure treatment

-2HRZC/4HRC }

In 1987, the second tuberculin/BCG scar survey was repeated to find the tuberculosis problem in communities. It found that the annual risk of infection was 1.89 per cent and the infection rate of children 0-14 year was 5.18 per cent.

Trend of Tuberculosis Problems

The tuberculosis problem in community has been gradually decreased because of

1. patient delay and doctor delay in diagnosis and treatment.

2. low treatment coverage.(Treatment coverage of incidence cases of smear positive increased from 38.10 % in 1982 to 59.64 in 1986.)

From 1977 to 1987 the situation of tuberculosis problem has been changed as follows :

1. The infection rate of children 0-14 year decreased from 15.2 % to 5.18 % or 10.21 % per year

2. The annual risk of infection decreased from 4.9 % to 1.89 % or 9.09 % per year

3. The humber of tuberculosis patients go up every year for local health services, but they go down in taking care of Tuberculosis Division, both Central Chest Clinic and zonal T.B. centers.

Future Projects

1. Increasing the treatment coverage and regularity up to nearly 100 per cent with short couse chemotherapy by using 2HRZ/4HR regimen in 1989.

2. Increasing the BCG coverage in children under 1 year of age and the 1st grade school children up to 100 per cent.

3. Expanding capability of case finding by using microscope into community hospitals and subdistrict health centers all over the country.

4. Expanding comprehensive health education to all levels of population in order to stop patient delay and increase case finding. Especially, contact patients should encourage both individual and group health education. The regularity is the most importance of tuberculosis treatment either standard or short course chemotherapy.

5. Monitoring researches in laboratory, treatment and prevention aspects.

The Summary of Present Situation of Tuberculosis

1. Infection rate (Tuberculin/BCG scar survey in 1987)

0-1 year	=	0.58 %
0-4 years	=	2.53 %
5-9 years	=	4.51 %
10-14	=	7.61 %
0-14	=	5.18 %
in all ages(1977)	=	40.6 %

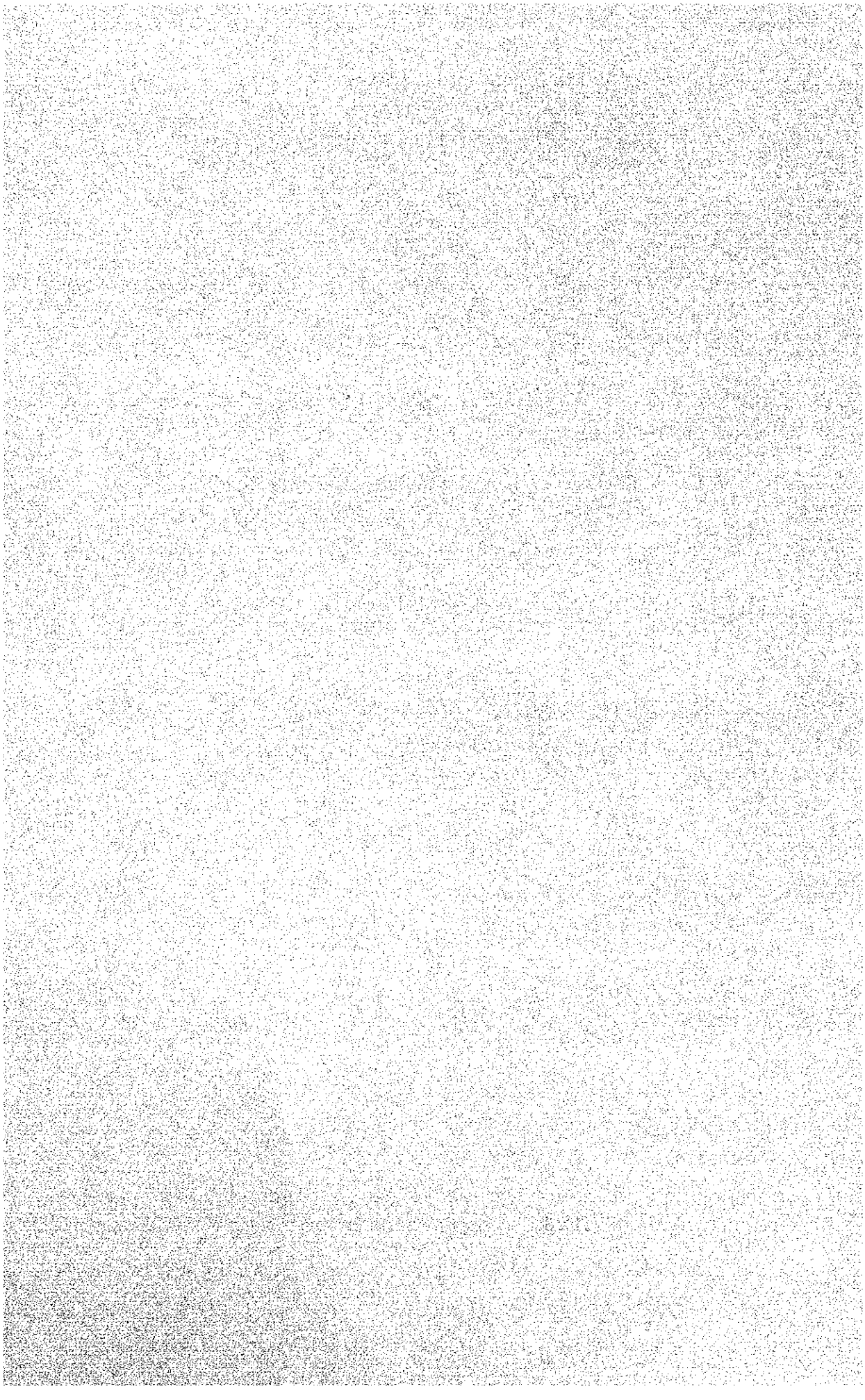
2. Annual risk of tuberculosis infection = 1.89 %

   Annual reduction rate of the risk of tuberculosis infection = 5.86 %

3. Morbidity rate (Data from the second tuberculosis prevalence survey in 1977)

   - prevalence of T.B. suspected cases = 1.4 %
   - prevalence of T.B. cases (DS/C $^{+}$ve) = 0.31 %
   - prevalence of T.B. cases (DS $^{+}$ve only) = 0.2 %

5．タイ Dept. of Commonicable Disease Control



Personnel Division

Department of Communicable Disease Control

Responsibility

Responsibility in personnel administration of civil servants, employees and in legal affairs of the Department.

Feature of Work

1. Working as a core organ of personnel administration in providing manpower, setting work system, post nominating, salary requesting biography recording, position changing, developing, proceeding for civil servant resignition, life pension as well as legal affairs of the department.
2. Working as a counsellor and proceeding the work concerning the legal of the department.

The Department comprize of 457 units (There are 446 units in 3 years plan)

Division	9	units
Hospital	1	"
Technical Cooperation Center in Communicable Disease	1	"
Communicable Disease Control Office	12	"
Regional Center	50	" (57 units in 3 years plan)
Venereal Disease Institute	8	"
Central Skin Clinic	2	"
Nonsomboon Medical Center	1	"
Filariasis Unit	1	"
Vernereal Disease Unit	2	"
Leprosy Unit	22	" (4 units in 3 years plan)
Leprosy Committee	11	"
Malaria Unit	33	"
Malaria Section	320	"
Volunteer in Malaria	37,000	persons

Manpower of
The Department of Communicable Disease Control

Civil Servants

	Number
Previous	4,764
Expected Additional Number	549
Total	5,313
Salary Budget Approved	4,280

Permanent Employees

Number of Manpower Approved.	5,004
Wage Budget Approved	4,869

Monthly Temporary Employees

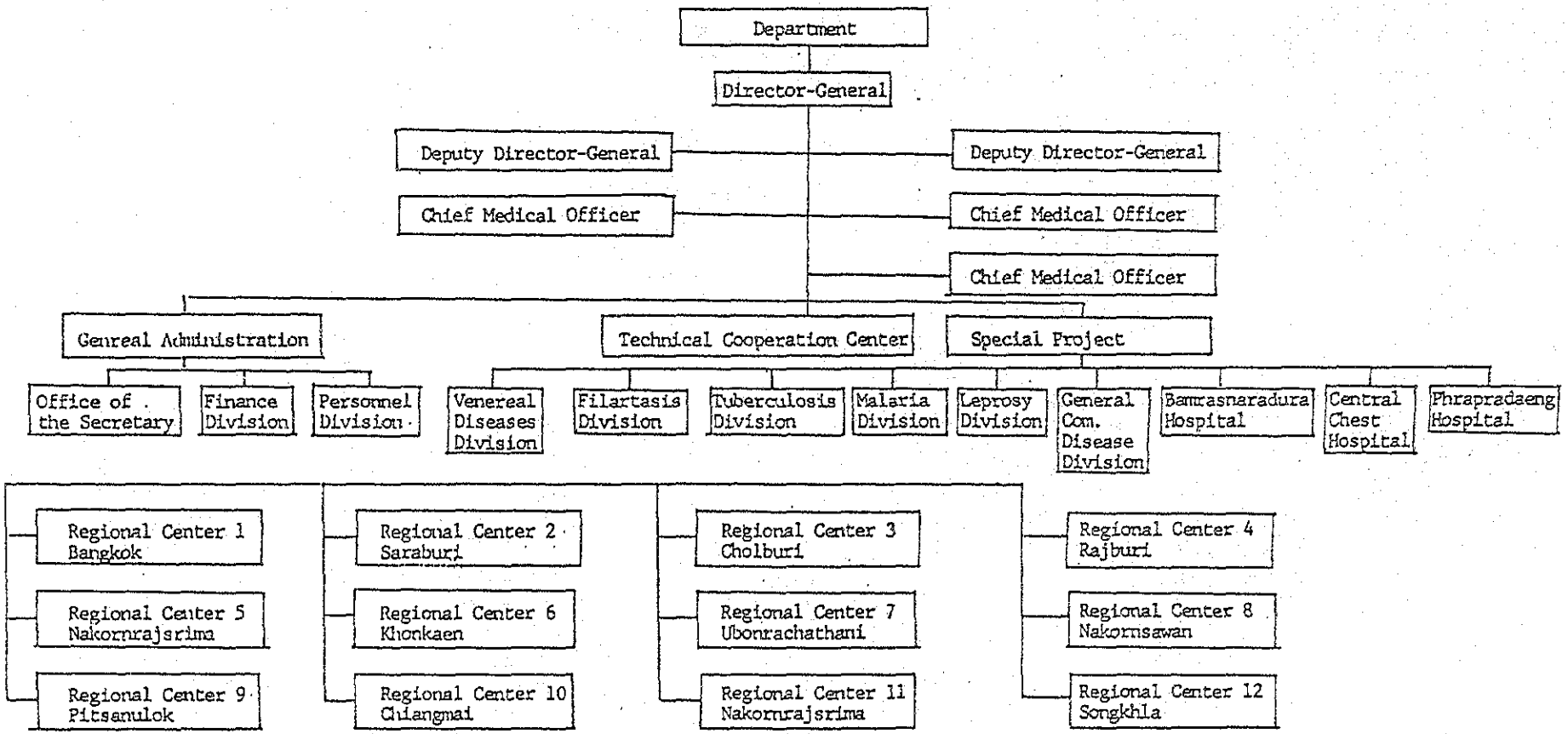
Subsidy	420
Budgetary	2,311

Daily Temporary Employees 5,080

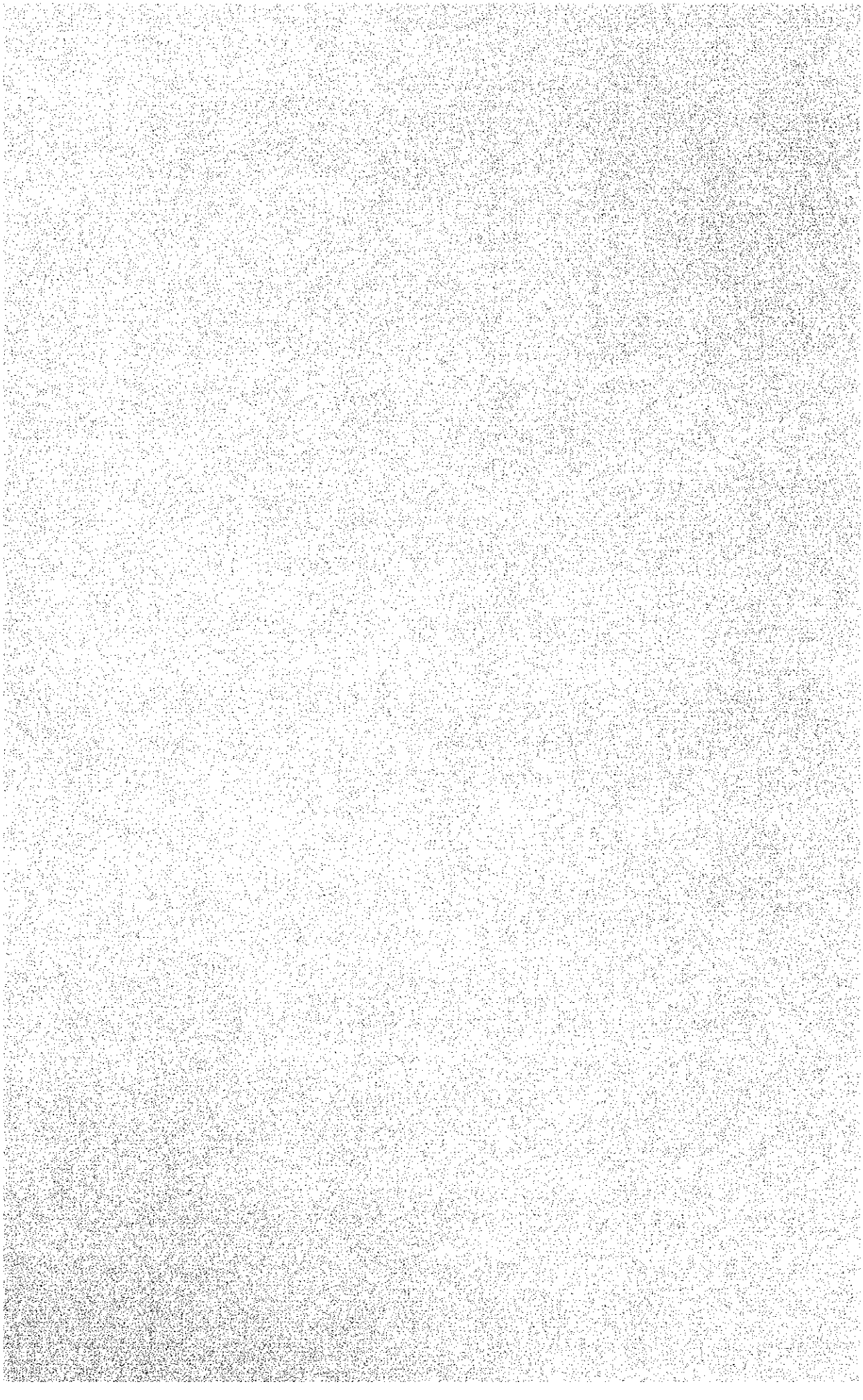
Total Budgetary Approved

Civil Servants & Monthly Employees	11,880
Daily Employees	5,080
Total	16,960

DEPARTMENT OF COMMUNICABLE DISEASE CONTROL CHART



6．掲　載　新　聞　記　事



Seminar On TB Begins

Kathmandu, Mar. 24 (RSS)

A three day seminar on tuberculosis control organised by Japan International Cooperation Agency Nepal began here Wednesday. Speaking on the occasion chief guest acting secretary in the Ministry of Health Basu Dev Pradhan said that Japan had been assisting Nepal in the field of health.

Stating that tuberculosis was a big problem in Nepal, Mr. Pradhan pointed out that the establishment of a tuberculosis centre would speed up treatment of tuberculosis patients.

Chief of JICA's specialist team Dr. Mori said an opportunity had been created for exchanges of experiences between Nepalese and Japanese doctors.

Stating that the seminar would be useful, Dr. Mori expressed the confidence that a solution to the tuberculosis problem would be found.

Chief of Central Chest Clinic Dr. Narmada Lal Maskey, speaking from the chair, said discussions would be held on tuberculosis problem.

About one hundred tuberculosis specialists, X-ray technicians, pathologists and health administration staff members are participating in the seminar.

In the seminar, working papers will be presented on programmes for the control of tuberculosis in Nepal, tuberculosis control administration of Japan and today's condition, basic concept of modern tuberculosis, concept of epidemics in tuberculosis control, B.C.G. vaccination, infection and epidemics.

nual Subscription Rates
ipatra Rs. 340/-
ing Nepal Rs. 510/-
parka Rs. 50/-
Gorkhapatra Sansthan

THE RISI

THMANDU MARCH 21, 1988 (CHA

Majesty s Assent inance Bill

ndu, Mar. 20 (RSS): Majesty the King has sent to the Finance 4 B.S., in accordance ie Constitution of

Bill was adopted by triya Panchayat and ed to His Majesty for al Assent, according Rastriya Panchayat iat.

oslav ident resses dolences

ndu, Mar20(RSS): esident of the ncy of the Socialist al Republic of via Lazar Mojsov xpressed deepest nces at the tragic t of the Dasharath n last week.

a message to His y the King, the nt has also expressed hies to the Nepalese and the bereaved

H Crown ce In ital

ndu, Mar 20 (RSS): s Royal Highness Prince Dipendra Bir Shah Dev returned ndu Sunday from

Premier Shrestha Lays Foundation Of National Tuberculosis Centre

Bhaktapur, Mar. 20 (RSS):

Prime Minister Marich Man Singh Shrestha has said that the laying of the foundation stone of the National Tuberculosis Centre is a concrete step towards realising His Majesty the King's noble wish of meeting basic needs in the health and other fields by the year 2000 A.D.

Mr. Shrestha said this while laying the foundation stone of the National Tuberculosis Centre at Thimi, to be built with Japanese grant assistance.

Mr. Shrestha stating that Japan was helping Nepal in meeting her basic needs programme, thanked the Japanese government for the technical and economic cooperation rendered to Nepal in various fields of development.

Expressing the confidence that the centre would develop as a South Asian regional centre in the future, Mr. Shrestha said the centre would play an important role in the treatment and control of tuberculosis.

Referring to the fact that priority was being given to fulfilling basic needs of the people living below the poverty line, Mr. Shrestha said the centre would contribute towards freeing these people from tuberculosis and increasing their life span.

On the occasion, Minister for Health Mrs. Sushila Thapa said the Health Ministry and various agencies under it were firm in realising the directives given by Their Majesties the King and Queen in the field of health.

Minister Thapa said the ministry would be active towards fulfilling His Majesty the King's noble wish of meeting basic needs of the people in the field of health by the year 2000.

Mrs. Thapa expressed the confidence that the establishment of the National Tuberculosis Centre would help in eradicating tuberculosis.

Health Secretary Basu Dev Pradhan spoke about various programmes and attempts carried out to control tuberculosis in Nepal.

Japanese envoy Kajuaki Arichi, who also spoke on the occasion, referred to the economic and technical cooperation between Nepal and Japan.

The establishment of National Tuberculosis Centre will in its own way help enhance the friendly relations existing between the two countries, Mr. Arichi said.

Mr. Arichi also shed light on the utility of the centre.

Chief of National Tuberculosis Centre Dr. Narbada Lal Maskey, speaking on the various aspects of the centre, said Japan was providing grants worth two hundred twenty million rupees.

The centre will consist of a main building, training centre, dormitory and annex. The buildings are to be completed within a year.

Besides the National Tuberculosis Centre, a Regional Tuberculosis Centre is to be established at Pokhara in the Western Development Region.

UK Likely To Increase

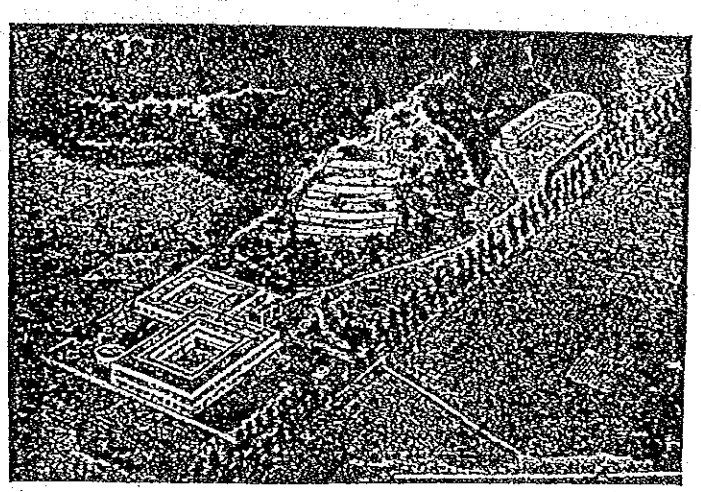
Shankaracharya Gate Opened

7．ネパール NTC

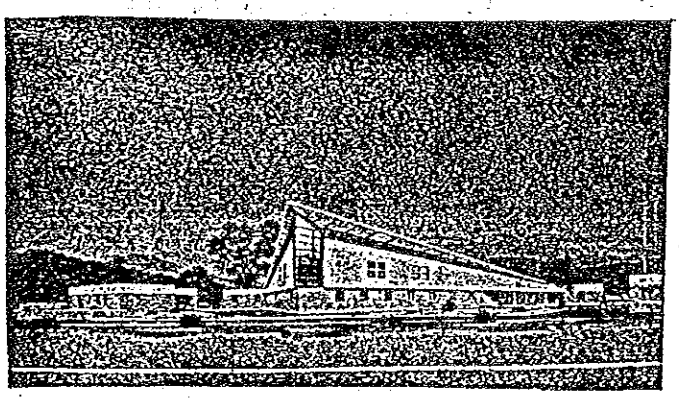
TECHNICAL COOPERATION PROJECT FOR NATIONAL TUBERCULOSIS PROGRAM

Objectives:

To set up an efficient organization plan for National Tuberculosis Center at Kathmandu and a Regional Tuberculosis Center at Pokhara; to train the manpower required for TB control; and to establish TB control methods applicable to Nepali Society.



National Tuberculosis Center: Perspective Drawing for the Planned Complex in Kathmandu



Regional Tuberculosis Center: Perspective Drawing for the Pokhara Office

Activities:

Major activities of this project are - operational research on case finding and case holding of tuberculosis patients, training of manpower, and a National Tuberculosis Prevalence Survey. Other activities include training of Nepali counterparts in Japan and middle-level manpower in Nepal. To support these activities, National TB Center in Kathmandu and Regional TB Center in Pokhara are expected to be constructed by the grant-aid cooperation of the Government of Japan.

Duration: April 1987 - April 1992

Ministry concerned: Ministry of Health, HMG, Nepal

Project Area: Kathmandu and Pokhara

Personnel involved:

Team Leader; Public Health Nurse; Nurse; X-ray Technicians

Programme
of
Foundation Stone Laying of the National Tuberculosis Centre
by the Rt. Hon'ble Prime Minister Marich Man Singh Shrestha.

Time	Programme	Date:- 20th March 1988
10:30 A.M.	Arrival of the Rt. Hon'ble Prime Minister	
10:35 A.M.	National Anthem.	
10:40 A.M.	Garlanding on the Portraits of Their Majesties the King and the Queen.	
10:45 A.M.	Welcome Address --- The Secretary, Ministry of Health.	
10:50 A.M.	Highlights on N.T.C. --- The Chief, National Tuberculosis Centre.	
10:55 A.M.	Foundation Stone Laying --- Rt. Hon'ble Prime Minister.	
11:10 A.M.	Address --- His Excellency the Ambassador of Japan.	
11:15 A.M.	Address --- Hon'ble Health Minister	
11:20 A.M.	Vote of Thanks --- Dr. N. G. Amatya.	
11:25 A.M.	Tea.	

NEPAL - JAPAN CO - OPERATION

Donor : Government of Japan

Name of the Project : National Tuberculosis Centre in Nepal

Aid Amount : Japanese Yen 1,431,000,000

Consultant : GKK (Gendai Kenchiku Kenkyujo) Consultants, Inc.

Contractor : Shimizu - C. Itoh Consortium

Period of Construction : One Year

Facilities :-

(i) National Tuberculosis Centre, Thimi, Bhaktapur

a) Main Building : two storied, including a one storey section with total floor area of 2,550 sq. mtr.

b) Training Building : two storied, 1,375 sq. mtr.

c) Dormitories : one storey, 795 sq. mtr. three buildings

d) Annex : 40 sq. mtr.

e) Medical Equipment

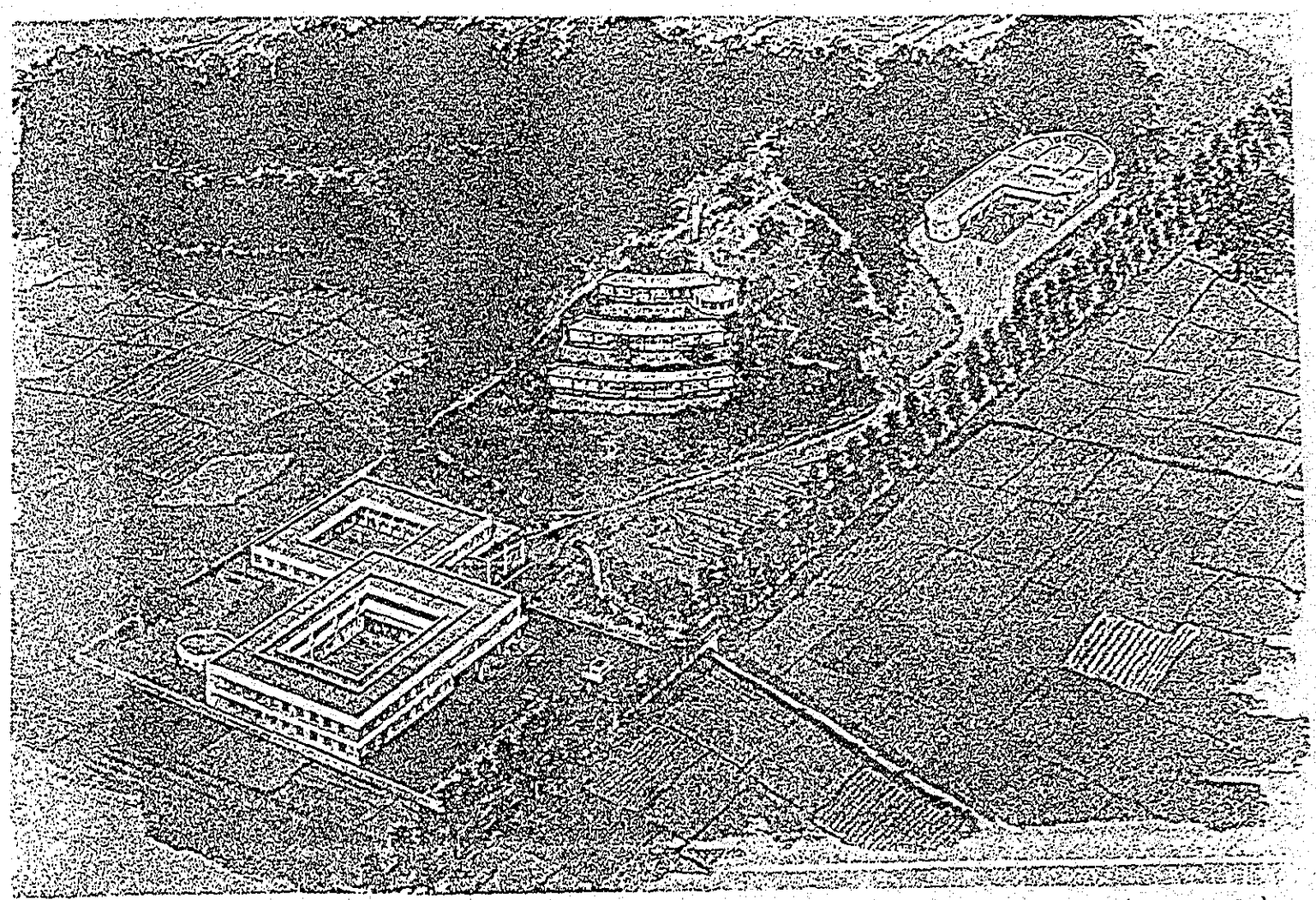
(ii) Western Development Regional Tuberculosis Centre, Pokhara

a) Main Building : one storey, including two storied section with total area of 1,554 sq. mtr.

b) Guest House : one storey, 162 sq. mtr.

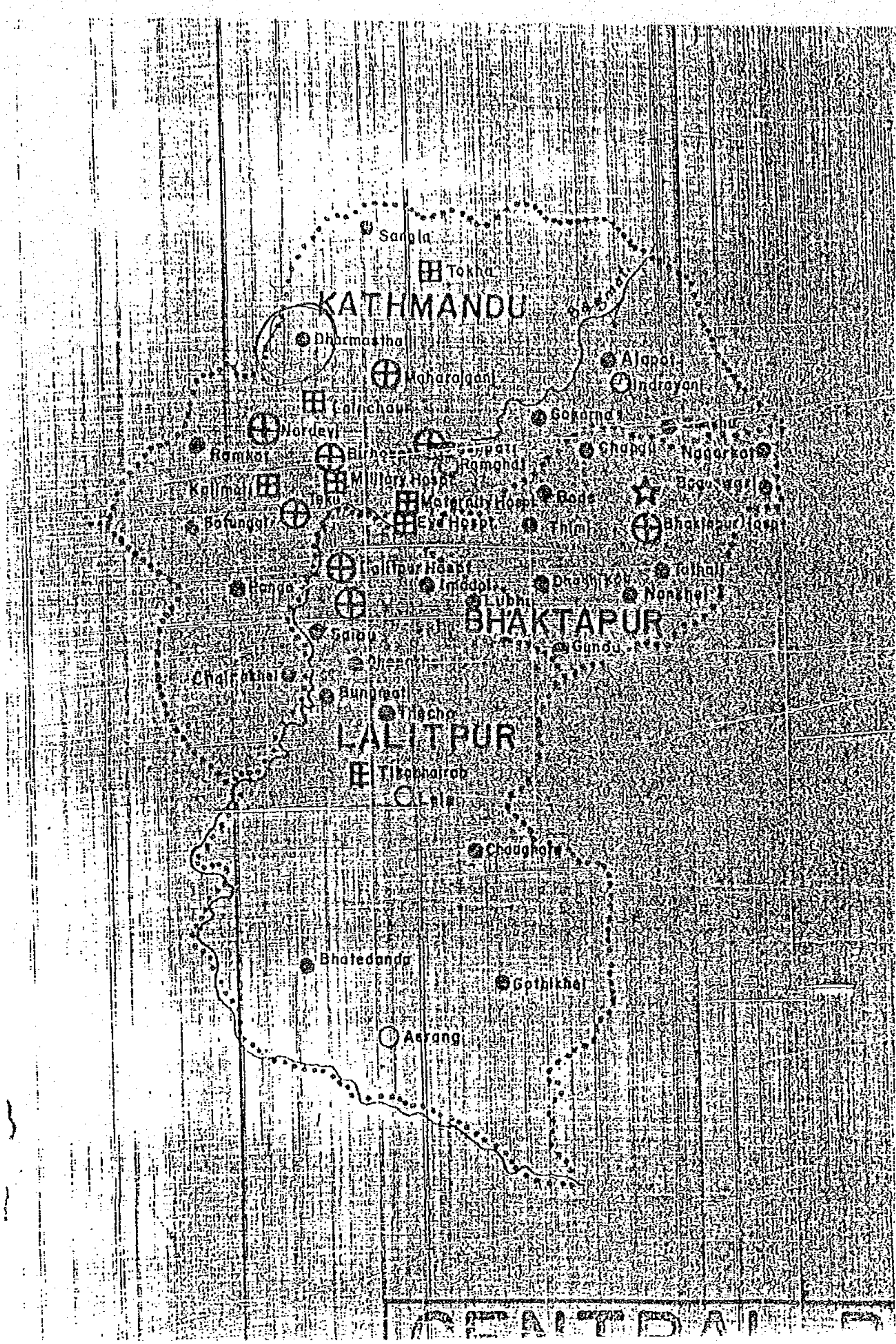
c) Annex : 89 sq. mtr.

d) Medical Equipment



PERSPECTIVE DRAWING NTC (Kathmandu)

8．ネパール Dharmasthal ヘルスポスト位置図



Sankhu
Tokha
KATHMANDU
Dharmasthali
Maharajganj
Ajapat
Indrayani
Lainchaur
Gokarna
Nardevi
Ramkot
Bir Hosp.
Ramghat
Changu
Nagarkot
Kalimati
Military Hosp.
Bageswori
Teku
Maternity Hosp.
Bode
Balungal
Eye Hosp.
Thimi
Bhaktapur Hosp.
Lalitpur Hosp.
Tathali
Imadol
Nanghel
BHAKTAPUR
Saibu
Gundu
Chalnakhel
Bungmati
Thecho
LALITPUR
Tikabhairab
Lele
Chaughare
Bhatedanda
Gothikhel
Aerang

9．講演に使用したテキスト

Case-holding and Management

Toru Mori

1. Meaning of Case-holding

cf. - premature discharge from treatment
- self-stopping of chemotherapy
- irregular drug taking/collection
- defaulting/absconding

2. Epidemiological Significance of Poor Case-holding

a) direct : longer duration of disease
- to which extent ?
- more TB deaths

b) indirect : more primary-resistant cases
- infectivity of chronic excretors
- virulence of highly drug-resitance strain

* loss of people's confidence on the public service

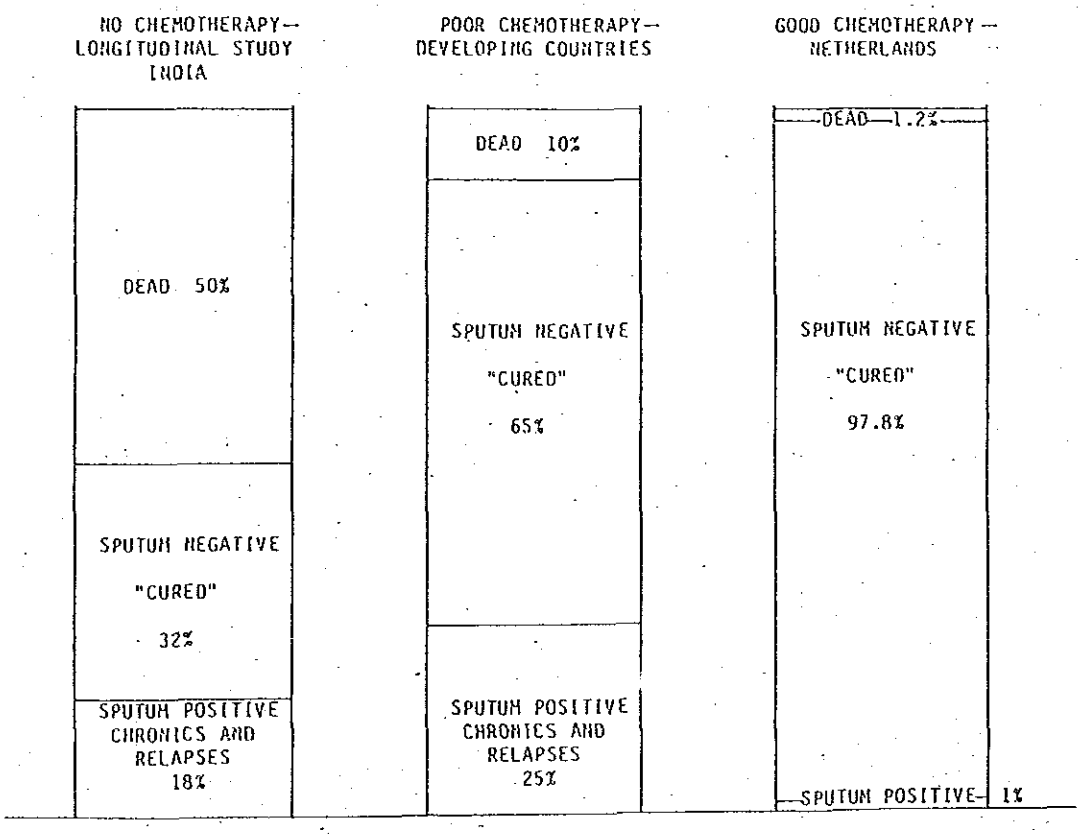


Figure 1. Fate of smear-positive cases according to treatment.

(Grzybowski, S. Tubercle, 68 (suppl): 33-37, 1987)

3. Studies on the factors influencing "patient defaulting"

<Example : Yamaguchi,T:Kekkaku.47:327,1972.>
Outcome of the 712 cases who have started ambulatory treatment at about 3 years' end:

stopped treatment as prescribed	42.6%
hospitalized	6.3%
moved to other doctors	9.8%
self-stopping	28.7%
still under treatment	12.6%

A multivariate analytical study to investigate the relative importance of the patient's background factors was made of the 82 cases having defaulted during the first treatment year and 59 regular cases as controls. The relative importance of the factors was determined with the method similar to multiple discriminant analysis, so that the system of weighting for each of the factors to optimumly differentiate these two groups is sought.

* Factors studied (in order of importance)

Regularity during the first 3 months
History of past treatment
Education level
Age
Extent of disease
Side effect/Deterioration
Marriage
Initial disease type

Fresh/Old Cavity
Infiltrative/Fibrotic lesion
Mode of detection
Sex
Personality test (Cornell Medical Index)

Using the weighting system thus solved, one can predict whether a case will default or not with the accuracy of 75%.

4. From "Defaulting" to "Motivation" - IUAT Study
(Rouillon,A : Problems in organizing effective ambulatory treatment of tuberculosis patients. Bull.IUAT, 47:68-83,1972.)

K. Toman – A. Rouillon:

'DEFAULT IS AN OMISSION ON THE PART OF THE PATIENT OR THE SERVICES, AN OMISSION WHICH NECESSITATES A CORRECTIVE INTERVENTION, IN THE INTERESTS OF THE PATIENT AND/OR IN THOSE OF THE COMMUNITY.'

Paradoxes:

- The *normal* patient is the one who defaults
- The patient has to play a *dual role* (in the treatment of tuberculosis): that of patient and that of healthy person
- The dilemma: *to industrialise/to humanise*
  to standardise/to personalise

Who needs to be motivated?

1. POLITICIANS, LEGISLATORS, LEADERS
2. PLANNERS
3. DOCTORS AND STAFF OF THE PUBLIC HEALTH SERVICES
4. THE COMMUNITY
5. THE PATIENT

The order of priority:

1. A CORRECT PUBLIC HEALTH POLICY
2. THE EXISTENCE OF ADEQUATE SERVICES
3. THE PRESENCE OF A COMPETENT STAFF
4. THE MOBILISATION OF THE COMMUNITY AND OF PATIENTS

5. Methodology of "Motivational work" evaluation
< Example : Korea/Japan Cooperative Study >
An intensive motivation programme was introduced to seven areas, each from one Health Centre, while in another 7 areas each from a corresponding HC with similar background a routine service was maintained. An intensive programme includes a special course for the personnels in charge of the areas, frequent seminars/meeting and supervison. A total of 1,300 cases, 651 in intensive programme areas and 649 in routine service areas, were observed during one year's treatment course for their bacteriologicaly outcome, treatment regularity. At the same time, the performance of the personnels was also observed.

	Intensive	Routine
No. Cases	303	295
Status of Patients Discharged		
Completed	248	216
Prematurely discharged		
Died	8	15
Transferred out	20	7
Defaulted	16	41
Rediagnosed	1	2
Other	10	14
Total	55	79
ditto rate	18.2	26.8
Performance of Bact. Exams		
Initial Exam.		
No. Exams required	606	590
No. Perfromed		
None	-	-
Once only	12	83
Twice	291	212
Total	594	507
ditto (%)	99.1	85.9
Follow-up Exam.		
No. completed	248	216
No. Exams required	996	864
No. Perfromed		
None	-	8
Once only	-	35
Twice	8	62
3 times	38	70
4 times	202	41
Total	938	533
ditto (%)	94.6	61.7
Performance of Follow-up X-ray		
No. required	496	432
No. Performed		
None	-	10
Once only	12	65
Twice	236	141
Total	484	347
ditto (%)	97.6	80.3
Regularity of Drug Collection		
No. patient-months	3,254	3,099
No. days behind due date (pt-mos)		
on time	2,549	2,183
1-6 days	533	517
7-10 days	101	142
11-20 days	58	107
>20 days	4	30
No Collection	7	120
Irregular Coll. (delay >7 days)	318	398
ditto (rate)	4.7	12.8

	Intensive	Routine
Treatment Results		
No. assessed	248	216
Favourable	227	135
ditto rate	91.5	62.5
Unfavourable	21	81
Impact of TX (Favourable/Cases)	74.9	45.8

Fig. 1 Course of discharge by treatment months

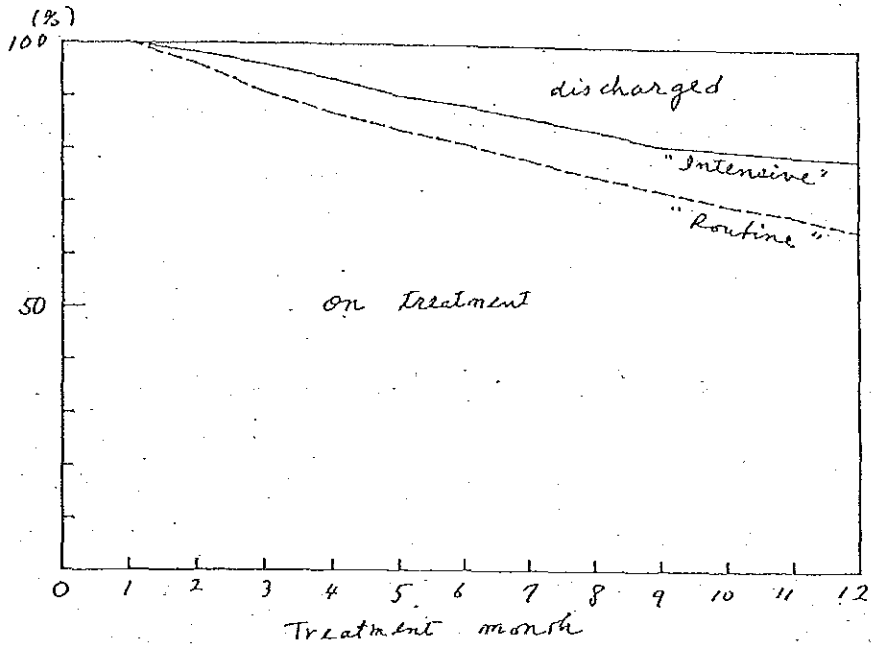
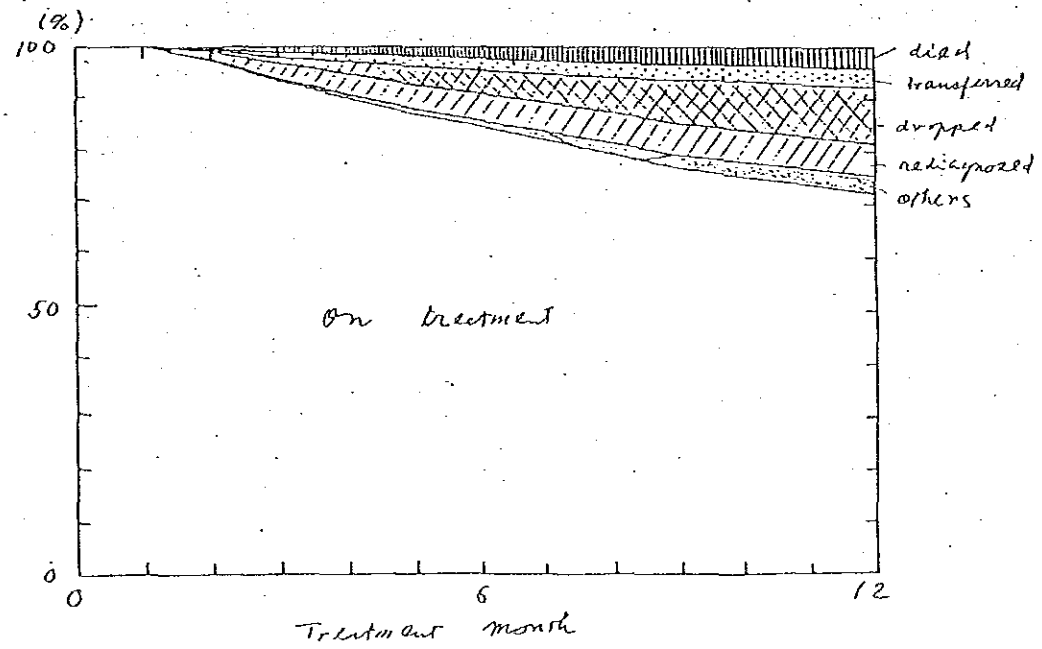


Fig. 2 Change of Status by treatment months (All subjects)



1. Tuberculosis Control Program

1.1 Mortality and morbidity

Tuberculosis used to be prevalent throughtout the country and on the top rank among the major causes of death for many years in the past.

However,the status of tuberuclosis control in this country has been markedly improved after World Wor Ⅱ by succesful operation of tuberuclosis prevention program,advancement of chemotherapy, promotion of public health and elevation of the standard of nation's living condition.

During 1986,that there were 4,171 deaths (3.4 per 100,000 population),which ranked 17th among all causes of death.The age specific mortality indicates that high death rates occured among the elderly group,e.g.,17.9-39.3 death rates per 100,000 population for those aged 70 and over,while it was only 0.0-0.1 for the younger generation,0-19 years.

The number of newly registered cases during 1986 was 56,690 (incident rate was 46.6 per 100,000 population),and 40,8 percent of them were either bacteriologically confirmed or cases with cavity.The total number of registered cases as of the end of 1986 was 282,084,and 47,7 percent of them were active tuberculosis (prevalence rate of active tuberculosis was 110,5 per 100,000 population).

(1) Mortality

	Deaths	Death rate (per 100,000 population)
1900	71,771	163.7
1910	113,203	230.2
1918	140,747	257.1
1930	119,635	185.6
1940	153,154	212,9
1950	121,769	146.4
1960	31,959	34.2
1970	15,899	15.4
1980	6,429	5.5
1981	5698	4.9
1982	5,343	4.5
1983	5,329	4.5
1984	4,950	4.1
1985	4,692	3.9
1986	4,171	3.4

(2) Incidence

	Incidende rate by age (per 100,000 population)			
	(1970)	(1980)	(1985)	(1986)
Total	172.3	60.7	48.4	46.6
0 - 4	75.3	7.9	5.4	4.5
5 - 9	96.8	6.5	3.5	2.6
10 - 14	47.0	6.3	3.9	3.2
15 - 19	65.4	18.5	12.6	11.2
20 - 29	130.7	38.0	28.1	26.4
30 - 39	162.9	44.9	29.9	28.6
40 - 49	217.6	63.1	42.7	40.5
50 - 59	294.1	107.6	78.3	72.3
60 - 69	413.3	161.0	122.7	117.7
70 -	416.0	218.3	183.8	176.4

(3) Prevalence Rate of Active TB (per 100,000 population)

1961	1011.9
1965	945.8
1970	657.8
1975	389.4
1980	204.2
1981	178.3
1982	160.8
1983	145.7
1984	134.0
1985	121.9
1986	110.5

1.2 Tuberculosis Control Program

1. Legal Aspect

The tuberculosis control program is completely defined in the Tuberculosis Cotrol Law which was enacted in 1951 (the original law 1919).The law provides the responsibility of national and prefectural heath authorities,and provides for the health examination for case-finding,BCG vaccinanation,reporting and registration of new cases,and medcal care services.

2. Case-finding program
   regular health examination(see Fig-6:Flow chart of TB prevention/early detection program in Japan)
   extraordinary health examination
3. Preventive vaccination
4. Case-surveillance
   registration
   follow-up examination
5. Provision of free medical treatment and/or hospitalization

6. Surveillance system

the new surveillance system (see Fig-7)

7. Tuberculosis Control Budget

Fig-6 Flow chart of TB prevention/early detection program in Japan

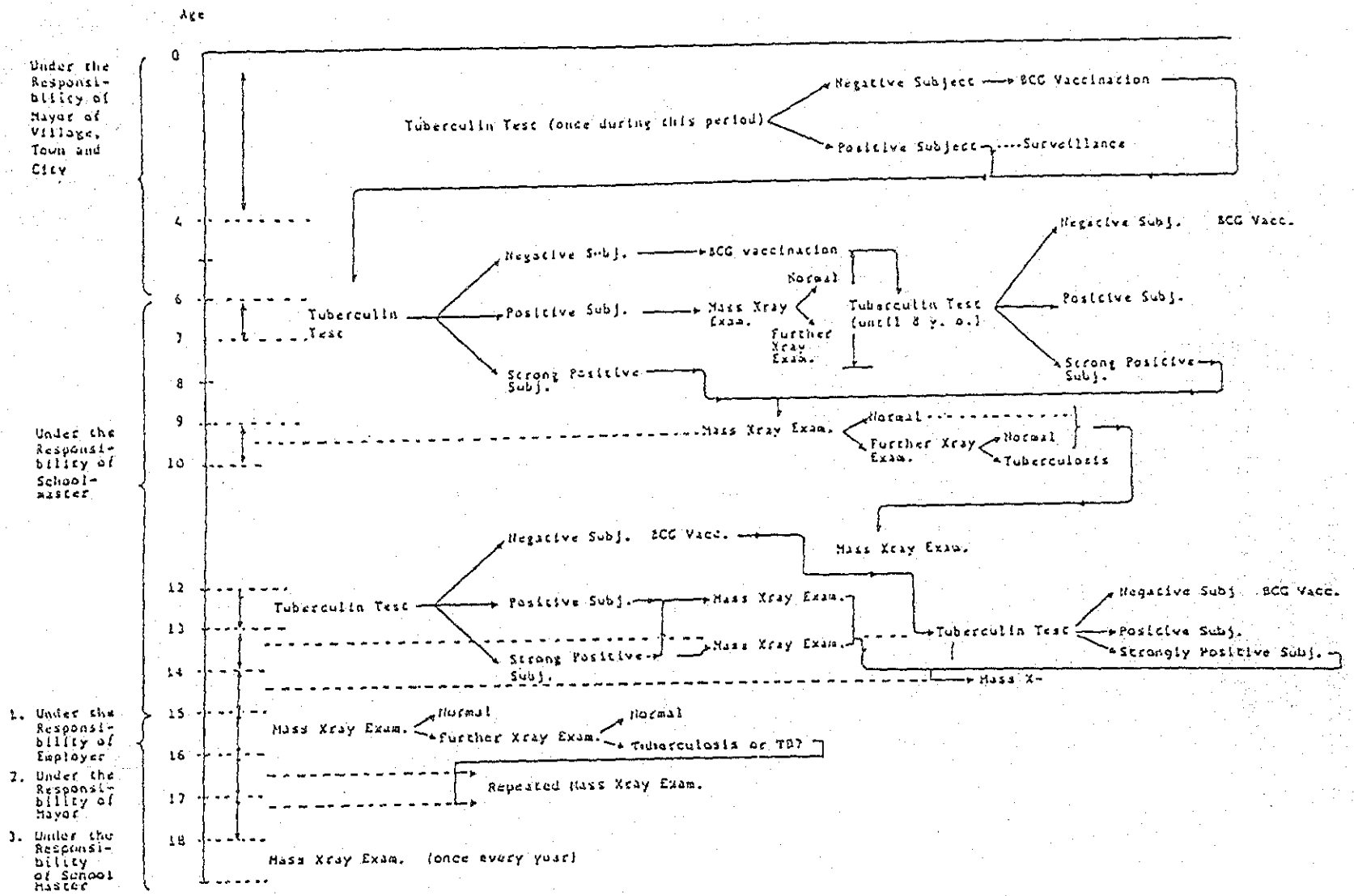


Fig-7 The surveillance system for tubecuiosis and other infectious diseases in Japan

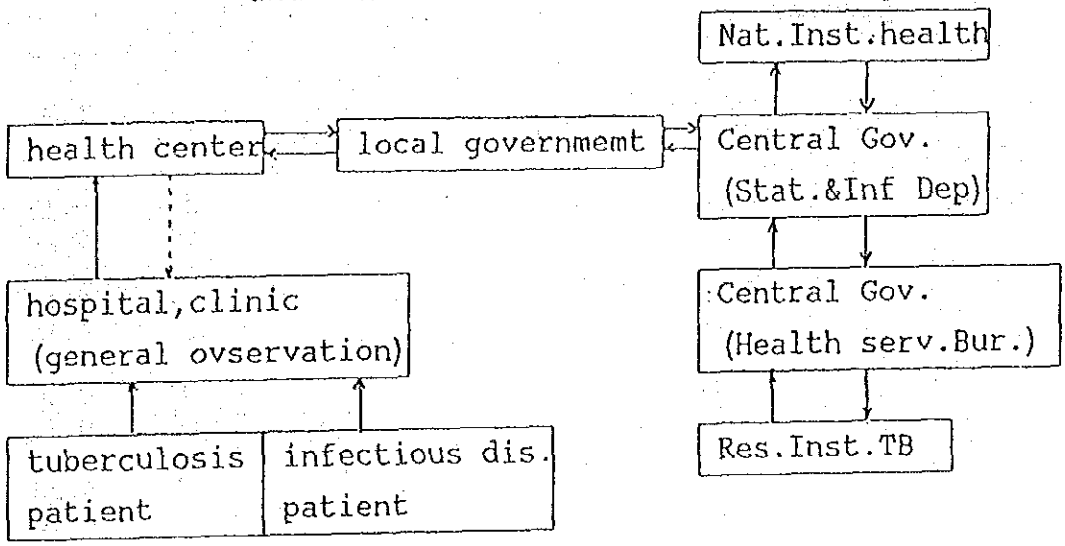


Table 7. Relative risk for children with a score of 8 or higher according to sex and age (Score)

Age	Sex	All contacts			Final score 8+			R.R.
		Vacc.	Unvacc.	Total	Vacc.	Unvacc.	Total	
0-1	M	97	36	133	7	16	23	0.16
	F	124	28	152	9	10	19	0.20
1-2	M	84	31	115	3	6	9	0.18
	F	86	24	110	5	9	14	0.16
2-3	M	78	47	125	3	5	8	0.36
	F	77	48	125	3	9	12	0.21
3-4	M	75	48	123	2	15	17	0.09
	F	70	56	126	3	8	11	0.30
4-5	M	54	58	112	3	5	8	0.64
	F	61	41	102	2	4	6	0.34
Total	M	388	220	608	18	47	65	0.22
	F	418	197	615	22	40	62	0.26
Total		806	417	1 223	40	87	127	0.24
Summary R.R. (Calculated from the stratified data)								0.21

Table 8. Tuberculin reactions according to vaccination and clinical status

Induration (mm)	Healthy		Cases	
	Unvaccinated	Vaccinated	Unvaccinated	Vaccinated
0-1	111(33.3)	187(24.6)	1(1.2)	5(11.1)
2-3	33(9.9)	71(9.3)	0	1(2.2)
4-5	8(2.4)	38(5.0)	2(2.4)	0
6-7	7(2.1)	31(4.1)	0	1(2.2)
8-9	6(1.8)	29(3.8)	2(2.4)	1(2.2)
10-11	6(1.8)	34(4.5)	3(3.6)	1(2.2)
12-13	10(3.0)	37(4.9)	3(3.6)	8(17.8)
14-15	21(6.3)	71(9.3)	6(7.1)	5(11.1)
16-17	27(8.1)	88(11.6)	24(28.6)	3(6.7)
18-19	35(10.5)	73(9.6)	26(31.0)	9(20.0)
20 +	32(9.6)	45(5.9)	14(16.7)	11(24.4)
N.A.	37(11.1)	57(7.5)	3(3.6)	0
Total	333	761	84	45

Basis (Figures & Tables)

Fig 1

Local Reaction at The Site of BCG Inoculation According To Intensity of Prevaccination Tuberculin Reaction

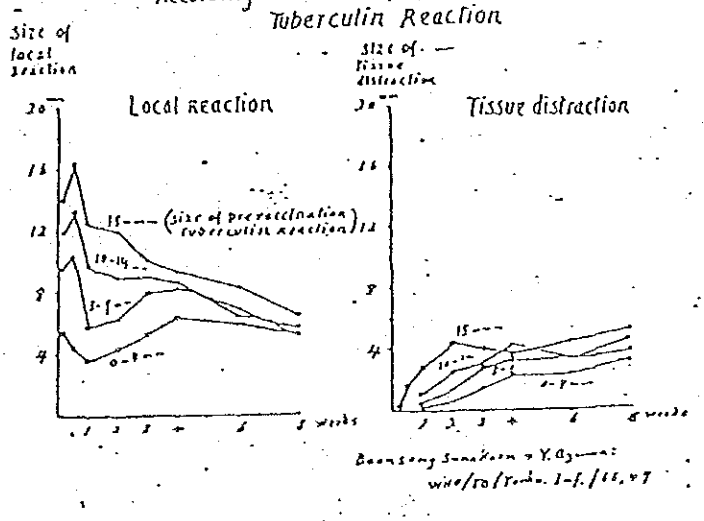


Table 0 Abcess Formation of Regional Lymphnode after BCG Inoculation

Vaccine	Strain of BCG	viable unit. $\times 10^6$/mg	Infants (0.05mg)* no. of inoculated	abcess formation	perforation	Primary school children (0.1mg)* no. of inoculated	abcess formation	perforation
A	French	10.4	1,053	51 4.8%	42 4.0%	151	0	0
B	French	5.2	1.208	19 1.6%	10 0.8%	162	0	0
C	Japanese	41.1	1.181	4 0.3%	1 0.1%	140	0	0
D	Danish	3.3	1,039	10 1.0%	4 0.4%	150	0	0

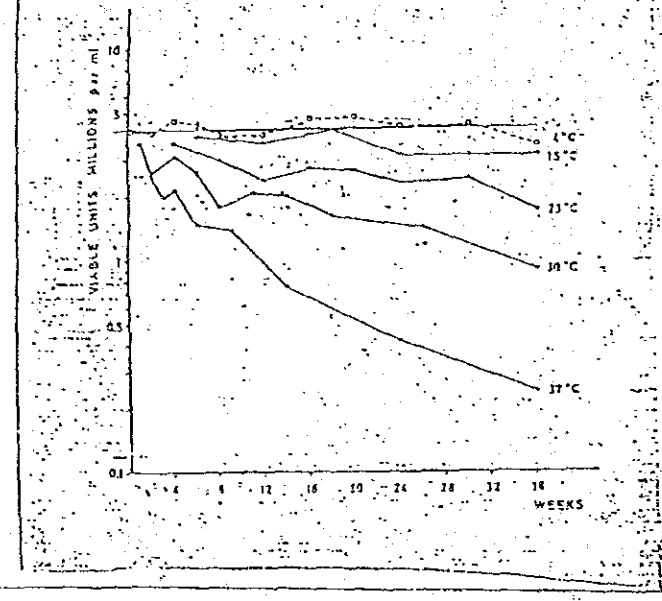
* dosis of inoculation

Report on Field Assesment of Freeze-dried Vaccine. BCG from Alabang Serum and Vaccine Laboratories. Manila, Philippines, 1977.

Fig 2

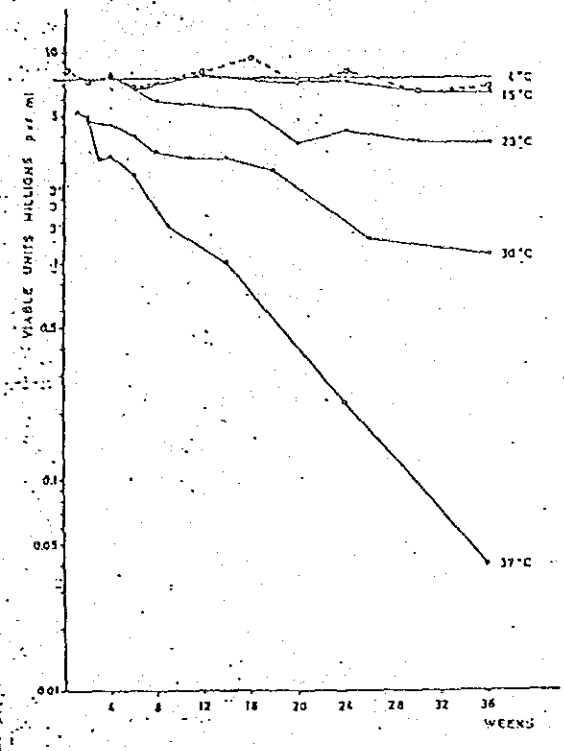
Number of Viable Units in BCG Vaccin according to Temperature and Time of Exposure

PRODUCT: DANISH VACCINES



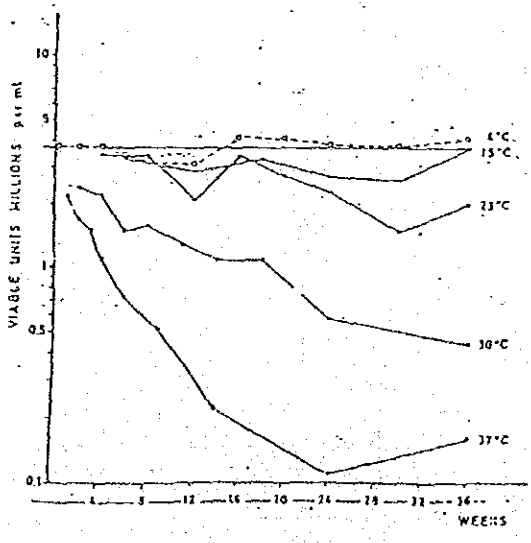
Number of Viable Units in BCG Vaccin according to Temperature and Time of Exposure

PRODUCT: GLAXO VACCINES



Number of Viable Units in BCG Vaccin according to Temperature and Time of Exposure

PRODUCT: DAKAR VACCINES



Number of Viable Units in BCG Vaccin according to Temperature and Time of Exposure

PRODUCT: JAPANESE VACCINES

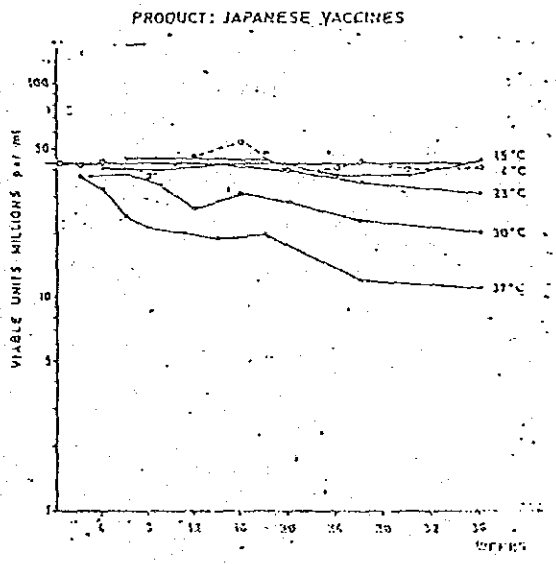
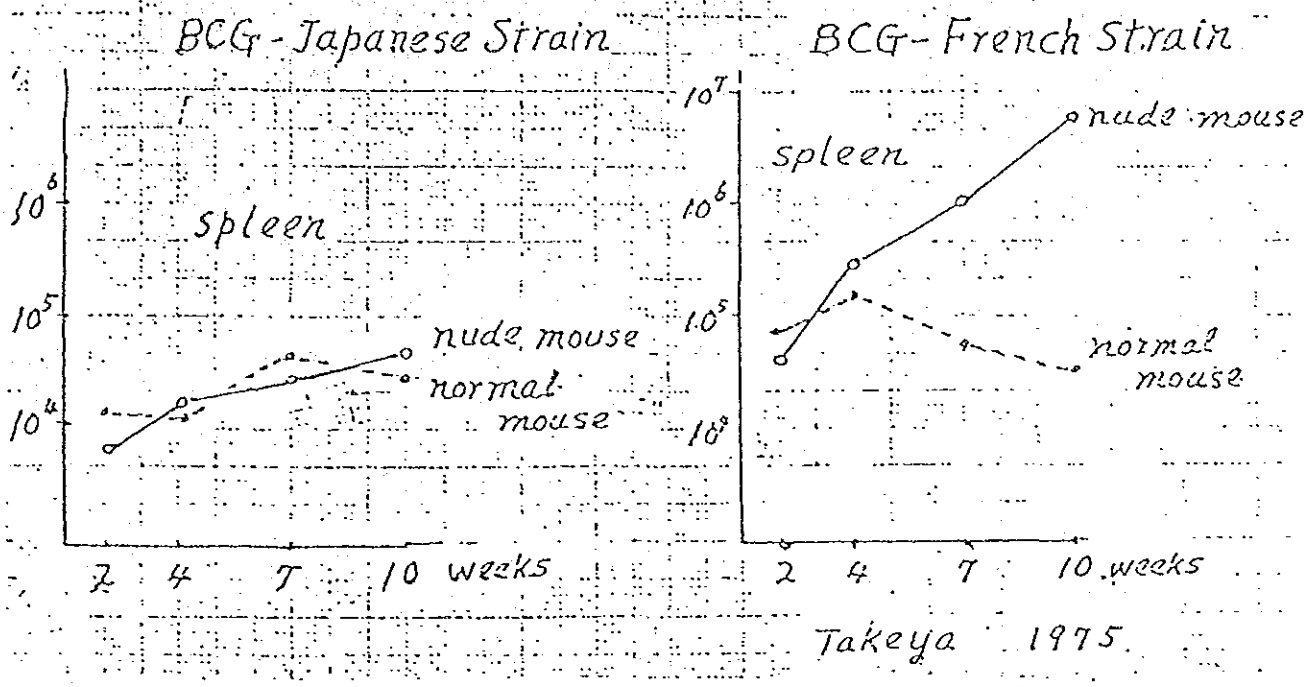


Fig 3 Multiplication of Japanese & French Strain of BCG in Normal & Nude Mouse



Tabl 1 Serious Complications after BCG Vaccination

(IUAT, Committee on Prophylaxis)

	Whole world		Europe(exclud.USSR)		Scandinavia		Japan	
No. vac. 1948-73	1,385,900,000		174,600,000		9,584,000		129,790,000	
Complications	No.	Rate per 1 mil.	No.	Rate per 1 mil.	No.	Rate per 1 mil.	No.	Rate per 1 mil.
Lupus vulgaris	63°	0.049	62	0.355	16	1.652	3	0.023
Osteitis	171	0.123	168	0.962	149	15,386	2	0.015
BCG confirmed	86	0.062	83	0.475	77	7.951	2	0.015
BCG not confirmed	85	0.061	85	0.487	72	7.435	0	-
Generalized infection	40	0.029	32	0.183	7	0.723	1	0.008
Fatal case	30°°	0.022	22	0.126	6	0.620	1	0.008
Non-fatal case	10°°°	0.007	10	0.057	1	0.103	0	-
Total	279	0.201	262	1,500	172	17.761	6	0.046

Notes ° : BCG confirmed in 17 cases °° : BCG confirmed in all cases

°°° : BCG confirmed in 5 cases

Fig. 4 Number of New Tb Patients Registered, Coverage of MMR of Total Japanese Population & Percentage of New Patients Found by MMR

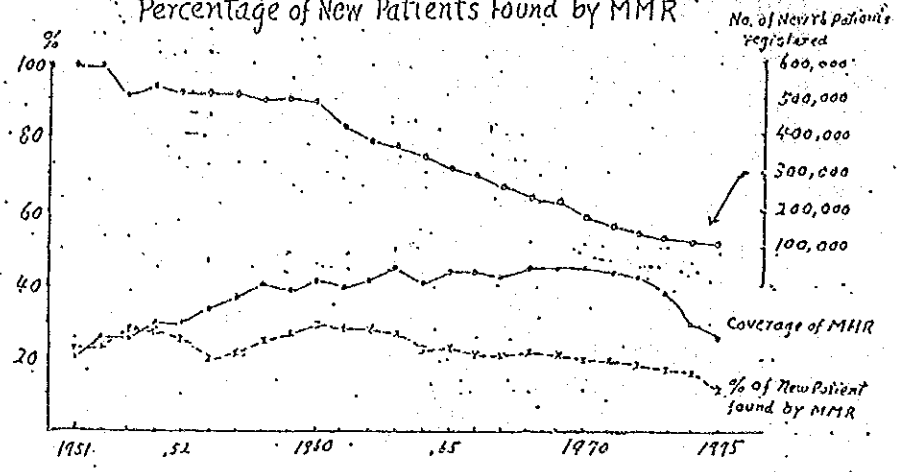


Fig. 5 Incidence of Smear(+) & Smear(−) Tuberculosis Found by Active & Passive Case-Finding in Kolin District

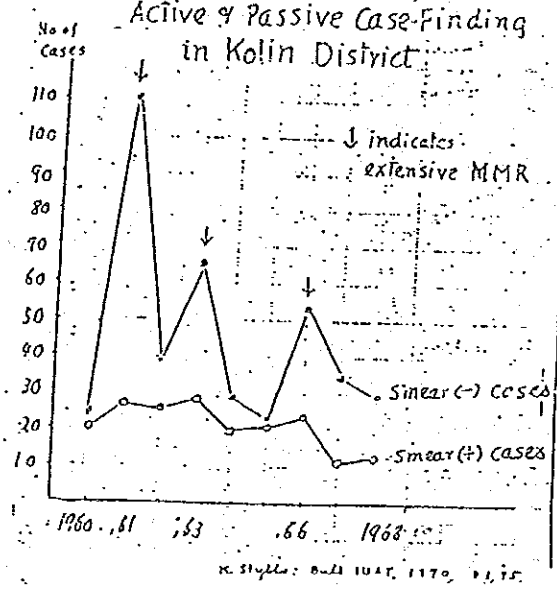


Table 2 Number of New Patients of Pulmonary Tuberculosis among Employees of Tokyo District of Telegraph and Telephone Public Corporation According to Mode of Case-finding

Year	No. of examined	Coverage of MMR	No. of new patients								
			smear (+)			smear (−) culture (+)			smear (−) culture (−)		
			Total	found by MMR	found by visiting clinic	total	found by MMR	found by visiting clinic	total	found by MMR	found by visiting clinic
1973	42,492	98%	1	0	1	5	2	3	20	17	3
1974	42,918	97%	0	0	0	3	0	3	27	23	4
1975	43,866	98%	2	0	2	1	0	1	20	18	2
1976	44,446	97%	2	0	2	3	2	1	12	12	0
Total	173,722	98%	5 (100%)	0	5 (100%)	12 (100%)	4 (33.3%)	8 (66.7%)	79 (100%)	70 (88.6%)	9 (11.4%)

Table 3 : Interval between Previous Normal Chest X-ray and First Chest X-ray with Tuberculosis Lesion

Initial status of disease	total No. of cases	Previous Normal chest X-ray taken within				
		~1 year	~2 years	~3 years	3 years~	X-ray not available
Smear (+) cavitary.....	135 (100.0)	70 (51.9)	17 (12.5)	9 (6.6)	21 (15.6)	18 (13.3)
Other cases with (+) bacilli	159 (100.0)	102 (64.2)	23 (14.5)	7 (4.4)	18 (11.3)	9 (5.7)
cavitary but bacilli(−) or unknown	209 (100.0)	144 (70.3)	17 (8.1)	12 (5.7)	22 (10.5)	11 (5.3)
non-cavitary bacilli(−) or unknown	439 (100.0)	348 (74.2)	49 (10.4)	13 (2.3)	30 (6.4)	29 (6.2)
pleurisy	110 (100.0)	72 (65.5)	12 (10.9)	4 (3.6)	12 (10.9)	10 (9.1)

5 year observation in Maki district.

Table 4

Interval between the last negative chest X-ray and diagnosis of bacillary tb, Kolin 1962-1968

Interval (months)	Tubercle bacilli by microscopy	Tubercle bacilli by culture only	Post mortem
0-12	9	21	6
13-24	22	49	7
25-36	21	43	2
0-36 sub-total	52 (85%)	113 (89%)	15 (83%)
37 +	7	13	2
No information (children)	2	1	1
37 or more and no information sub-total	9 (15%)	14 (11%)	3 (17%)
- Total	61 (100%)	127 (100%)	18 (100%)

K. Styblo · Bull. IUAT, 43, 75, 1970

Table 5

Prevalence of The Four Main Symptoms by Bacteriological and X-Ray Classification

	No. of cases	Cases with cough	with chest pain	with fever	with haemoptysis *	at least one symptom
sputum (+) cases	36	69.4%	19.4%	33.3%	11.1%	69.4%
X-ray active or probably active cases	282	46.1%	22.3%	9.2%	7.1%	51.8%
X-ray inactive cases	541	21.8%	15.3%	3.1%	4.3%	29.0%
non-cases	919	9.4%	8.6%	2.0%	1.0%	15.4%

D. Banerji & S. Andersen:
Bull. W.H.O. 1963, 29, 665-683

Table 6

Rate of Cases with Symptom among Smear Positive Cases

	No. of cases interviewed	symptomatic
Smear positive	23	18 78.3%
Smear negative culture positive	13	7 53.8%
Total	36	25 69.4%

D. Banerji & S. Andersen:
Bull. W.H.O. 1963, 29, 665-683

Table 7 Duration of Cough and Positive Rate of Tubercle Bacilli in Spuram

Duration of Cough	1 w	2 w	3-4 w	5-8 w	9-13 w	14-26 w	27-52 w	>53 w	計
No. of cases examined	241	106	96	42	25	29	36	47	622
Tubercle bacilli positive case	1	6	12	7	5	6	4	3	44
positive rate	0.4	5.7	12.5	16.7	20.0	20.7	11.1	6.4	7.1

G.V.I. Baily et al: Bull. W.H.O. 1967, 37, 375-892

Table 8 Comparison of Smear (+) and Culture (+) Cases Acording to Countries

Cities	Spurum (+) Tuberculosis	
	Smear (+)	Smear (-) Culture (+)
London (1954-62)	35.4%	64.6%
Kolin (1961-64)	38 %	62. %
Lille (1961-66)	53 %	47 %
Alger (1969)	77 %	23 %
Madras (1956-58)	82.4%	17.6%
Kuala Lumpur (1957-58)	83.7%	16.3%

D. Jarboe, ... Bull. IUAT, Vol 6, No.2 1975 p.30.

Table 9 An Evaluation of Ambulatory VS Non-Ambulatory Treatment of Hospitalized Patients with Pulmonary Tuberculosis

Total number of patients	Ambulatory		Rest		
	108		95		
Far advanced	38		22		INH 10mg/kg
Mod. advanced	62		78		PAS 12g daily
Bacteriologically positive	97	(92%)	78	(82%)	
No previous treatm.	58		54		
less than 30 days	36	(87%)	23	(81%)	

Table 10 Radiological Change

	120 day		180 day		240 day	
	Amb.	Rest	Amb.	Rest	Amb.	Rest
Significantly improved	55 (51)	40 (42)	61 (62)	50 (59)	59 (82)	48 (75)
Slight	46	44	31	27	12	14
No change	6	9	2	7	1	2
Worse	1	2	4	1	0	0
Total evaluated	108	95	98	85	72	64
Cavity closure	21 of 90 (23%)	13 of 70 (19%)	39 of 82 (48%)	27 of 61 (44%)	40 of 58 (69%)	26 of 43 60%

Table 11 Bacteriological Result

	120		180		240	
	Amb.	Rest	Amb.	Rest	Amb.	Rest
Number of positive on admission	74	61	67	54	57	45
Negative at evaluation	74	56	65	51	57	45

sus. -- 109 191 Wiers et al: Trans: 16 conf Chemother. Tbc VA-Armed Force 1957

Table 12

Back Ground Factors of Home and Sanatorium Patients

Sex	Treatment series	No. of cases	cases with extensive cavitation	cases with extensive lesion	cases with m Smear
♂	Home	49	39 %	55 %	59 %
	Sanatorium	50	32 %	38 %	44 %
♀	Home	33	58 %	55 %	45 %
	Sanatorium	31	23 %	39 %	26 %

Tbc Chemoth. Center Madras: Bull. W.H.O. 1959. 21. 51-14

Table 13

Physical Activity of Home and Sanatorium Patients During 12 Months

Home					Sanatorium				
Physical activity	6 months		12 months		Physical activity	6 months		12 months	
Resting	5	6%	1	1%	Complete bed rest	1	1%	0	0
Slight	42	53%	10	13%	Up to toilet only	6	8%	0	0
Part time	29	37%	34	44%	up 2 hours	62	81%	66	85%
Full time	3	4%	32	42%	up 4 hours	8	10%	12	15%
total	79	100%	77	100%	total	77	100%	78	100%

C.V. Ramakrishnan et al: Bull. W.H.O. 1961. 25.

TABLE 14

TOTAL CALORIE INTAKE: ASSESSMENTS BEFORE TREATMENT AND DURING TREATMENT [a]

Calories	Before treatment				During treatment			
	Home		Sanatorium		Home		Sanatorium	
	No.	%	No.	%	No.	%	No.	%
Less than 1 000	17	22	17	22	4	5	0	0
1 000–	10	13	5	6	3	4	0	0
1 200–	18	23	13	17	4	5	0	0
1 400–	9	11	5	6	13	16	0	0
1 600–	2	3	13	17	9	11	1	1
1 800–	5	6	11	14	6	8	2	3
2 000–	4	5	3	4	6	8	14	18
2 200–	10	13	7	9	15	19	49	63
2 600–	2	3	0	0	3	10	11	14
3 000 or more	2	3	4	5	11	14	1	1
Total patients	79	102	78	100	79	100	78	100

[a] Assessed in the second six months of treatment.

TABLE 15

TOTAL PROTEIN INTAKE: ASSESSMENTS BEFORE TREATMENT AND DURING TREATMENT [a]

Proteins (g)	Before treatment				During treatment			
	Home		Sanatorium		Home		Sanatorium	
	No.	%	No.	%	No.	%	No.	%
0–	0	0	1	1	0	0	0	0
5–	5	6	1	1	0	0	0	0
10–	2	3	1	1	0	0	0	0
15–	8	10	4	5	1	1	0	0
20–	8	10	7	9	2	3	0	0
25–	10	13	9	12	3	4	0	0
30–	19	24	21	27	18	23	0	0
40–	11	14	18	23	18	23	0	0
50–	12	15	6	8	13	15	3	4
60–	1	1	3	4	13	16	23	29
70–	2	3	3	4	4	5	32	41
80 or more	1	1	4	5	7	9	20	26
Total patients	79	100	78	100	79	100	78	100

[a] Assessed in the second six months of treatment.

Fig. 6

WEIGHT CHANGES IN THE 12-MONTH PERIOD, ACCORDING TO SEX OF PATIENTS AND PLACE OF TREATMENT

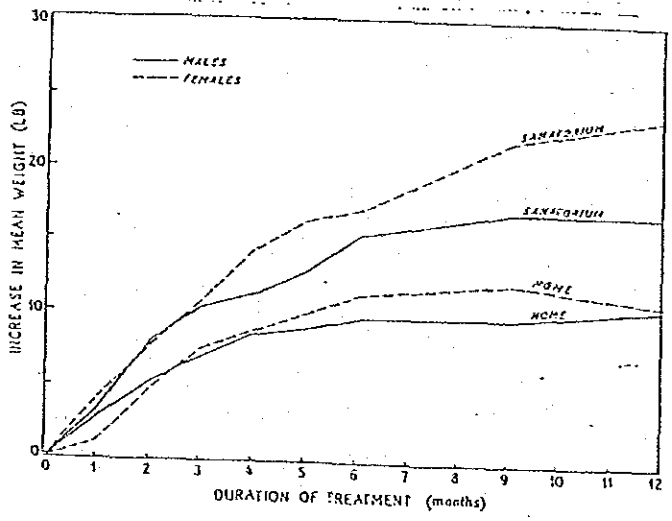
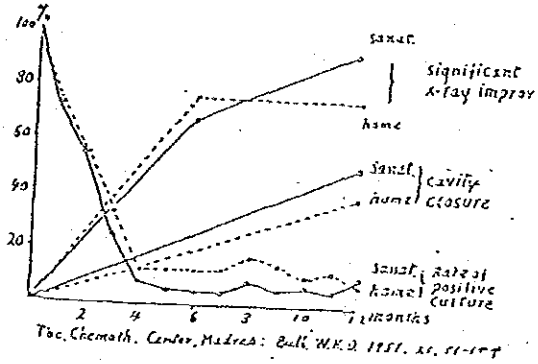


Fig. 7

Comparison of Home and Sanatorium Treatment of Pulmonary Tuberculosis



The Chemoth. Center, Madras: Bull. W.H.O. 1951, 4, 61-107

Table 16 Tuberculin Converter of Home & Sanatorium Contacts by One Year, and Total Cases Who Developed Active Tuberculosis

Diameter of Reaction to initial 5 TU test	Home + Sanatorium Contacts		Contacts in whom the Reaction exceeded the initial diameter by: 10 mm		8 mm		Total cases who developed active tuberculosis	
0 ~ 4 mm	H	78*	20	26%	24	31%	7/88*	8.1%
	S	84	19	23%	23	27%	5/87	5.7%
5 ~ 7 mm	H	44	15	34%	21	48%	1/46	2.2%
	S	36	13	36%	13	50%	2/39	5.1%
8 mm ~	H	114					1/114	
	S	140					10/140	
Total	H	246					9/246	3.7%
	S	266					17/253	6.4%

* No. of examined sisters

R.H. Andrews et al.: Bull WHO Hlth Org 33, 463, 1950

Table 17 Estimated Number Resistant Mutants in Population of 10^7 & 10^5 Bacilli

Regimen	Intracavitary drug concentration		Population size 10^7	Population size 10^5
	INH µg/ml	SM µg/ml	No. of bacilli resistant to the regimen	No. of bacilli resistant to the regimen
INH	1		330	0
	0.2		560	0
	0.1		4×10^4	0
SM		20	90	0
		4	4×10^3	4
		2	$> 5 \times 10^7$	> 100
INH + SM	1	20	0	0
	1	4	0	0
	1	2	> 1.6	0
	0.2	20	0	0
	0.2	4	0	0
	0.2	2	> 2.5	0
	0.1	20	0	0
	0.1	4	0	0
	0.1	2	> 20	0

Canetti, G. & Grosset, J.: Ann. Inst. Pasteur

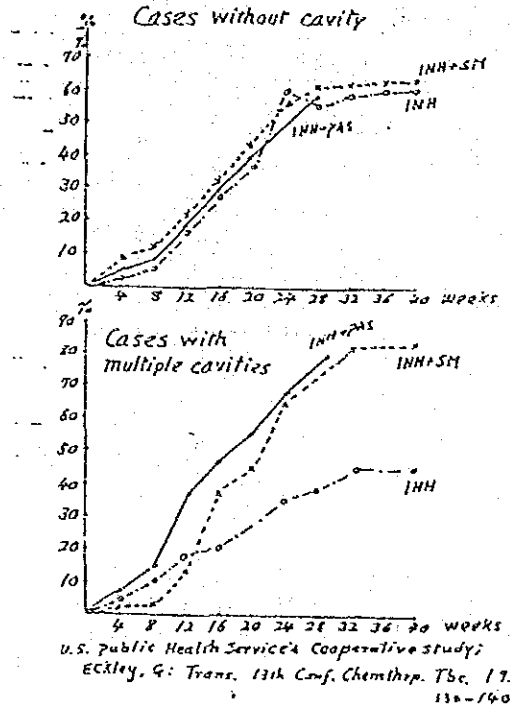
Table 18 Amount of Tubercle Bacilli in Different Tuberculous Lesions

Average number of bacilli in 100 field histological specimens

Tubercle	55
Intra-alveolar exsudate	581
solid casecum	6
Softning caseum	ca 1000 in one field
Tuberculous cavity	8000

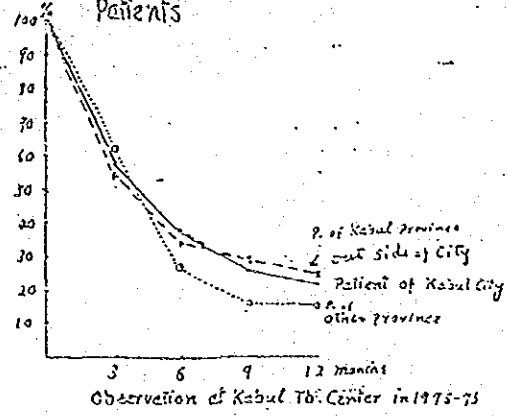
G.Canetti: The Tubercle Bacilli. 1955. New York

Fig 8. Significant and Marked Improvement of X-ray Finding of Pulmonary Tuberculosis Treated with INH+SM, INH+PAS and INH alone



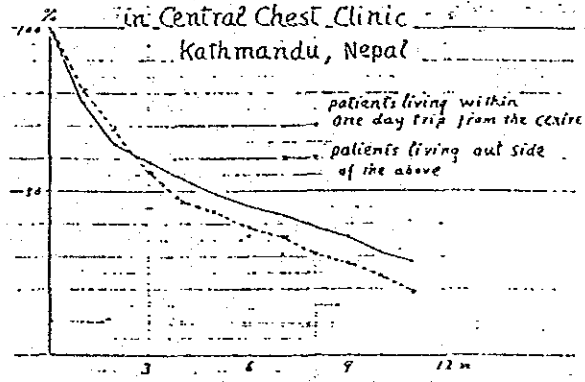
U.S. Public Health Service's Cooperative study; Eckley, G: Trans. 13th Conf. Chemther. Tbc. 1954 136-140

Fig. 9 Rate of Patients Who Continued Chemotherapy from the Start Among Initially Sputum Smear Positive Patients



Observation at Kabul Tb. Center in 1973-75

Fig 10 Rate of Smear (+) Patients* Continued Chemotherapy in Central Chest Clinic Kathmandu, Nepal



* on cohort of patient started chemotherapy from April 1973 – March 1974

S. Banba

Table 19

Choice of Regimen of Chemotherapy From Cost-Benefit Consideration

When there are 2000 new cases and Budget for drugs $ 4000

Regimen	Expense for 1 patient for 1 y.	No. of patient can be treated with $ 4000	Rate of negation of Sputum	Estimated No. of patients remain sputum positive
(1) INH+SM+PAS daily & INH+PAS daily	$ 51.85	100	98%	1900
(2) INH + PAS daily	$ 20.50	250	90 / 80 %	1800
(3) INH daily	$ 2.35	2000	70 %	600
(4) INH + Tb1 daily	$ 2.55	2000	80 %	400
(5) INH+SM 2d W	$ 14.00	357	96 %	1660

Fox, W.: Brit. Med. J. 5376, 135, 1964

* Modified by IWASAKI

Table 20

First Trial of Short Course Chemotherapy of Smear(+) Pulm. Tbc

Tuberculosis & Chest Dis. Unit, B.M.R.C. and East African M.R.C. 1972

Regimen	No. of Patients	Bacteriological Relapses		Bacteriological Relapse in month			
		No.	%	7-12	13-18	19-24	25-29
SHR	112	2	2	1	1	0	0
SHZ	112	12	11	9	3	0	0
SHT	104	23	22	20	2	1	0
SH	112	33	29	28	3	2	0
*STH/TH	102	4	4	3	0	1	0

S = SM H = INH R = RFP T = Tb.

* STH 6 ms followed by TH 1 year

Table 21 Level of success of regimens of short course chemotherapy of different durations in patients with smear(+) disease and fully drug-sensitive strains.

Duration (months)	Regimen	Bacteriological relapses (%) 95% Confidence limit
9	$6\ {}^{S}_{E}HR/HR$	0.2 – 3
6	${}^{S}_{E}HR$ $2\text{-}3\ {}^{S}_{E}HRZ/HR$ $S_2H_2R_2Z_2$ $E_2H_2R_2Z_2$	0.3 – 2.
4.5–5	SHRZ	3 – 6
4	"	9 – 16
3	"	12 – 20

Modified from Fox, W.: Bul. IUAT. 60. No. 1-2, 40–49, 1985

Table 22 Cost of Regimens.

Regimen	Duration	Relapse rate	Cost in ratio
2 HRZ/4 HR	6 ms	0.5–3	6.5
$2H_2R_2Z_2/4H_2R_2$	6 ms	0 – 4	2.4
1 HRZ/7 TH	8 ms	8	2.0
1 SH/11 S_2H_2	12 ms	10–20	2.8
1 SH/11 TH	12 ms		1.0 *
1 SH/11 EH	12 ms		3.1

* actual cost of this regimen calculated by the purchase cost of African countries is in average 5.2 $, ranging from 1–15 $.

modified from Fox. W.: Bul. IUAT 60. Nos-2, 40–49. 1985

Table 23 Efficacy of Case-finding + treatment programm.

Programm	India*	Japan**
Case-finding	30 %	44 %
Case-holding	35 %	90 %
chemotherapy	75 %	90 %
Cure rate	8 %	35 %

* Radhakrishna, S.: Indian J. Tub. 30. 3–8, 1983

** VIII Toc Prevalence Survey in 1973

30 % × 35 % × 75 % = 8 %

Table 24

Comparison of the Results of Susceptibility Tests to The Three Standard Drugs in Local Laboratories and in a Reference Laboratory (Marks 1965)

Drug	Resistant in Local Laboratories	Reference Laboratory					
		Resistant		Anonymous		Susceptible	
		No.	%	No.	%	No.	%
SM	82	30	37	11	13	41	50
PAS	66	18	27	20	30	28	42
INH	86	42	49	21	24	23	27

Table 25

Comparison of the Results of Drug Sensivity Examination in between Reference & Local Laboratory

on SM. INH & PAS

History of treatment		without History of Chemotherapy		with History of Chemotherapy	
Place of examination		local lab.	Reference lab.	local lab.	Reference lab.
Total		100.0 %	100.0 %	100.0 %	100.0 %
Total of resistance		19.0 %	7.3 %	69.0 %	35.3 %
Resistant to	1 drug	12.1 %	6.3 %	43.0 %	25.1 %
	2 drugs	4.7 %	0.6 %	21.8 %	8.4 %
	3 drugs	2.1 %	0.4 %	4.2 %	1.8 %
Resistant to	SM	11.4 %	3.4 %	33.0 %	10.7 %
	INH	6.7 %	2.8 %	41.2 %	26.7 %
	PAS	9.9 %	2.5 %	24.9 %	10.1 %

Ryoken. Research Committee of Treatm. of TBC. 1977

Table 26

Comparison of the Results of Drug Sensivity Examination in between Reference and Local Laboratory

Resistant to		Compl. resist: R incompl. resist: r	without history of chemotherapy		with history of chemotherapy	
			local lab.	Reference lab.	local lab.	reference labo.
RFP	10%	r	24.7 %	0.1 %	27.5	2.3
	10 -	R	13.3 %	0.4 %	16.0	19.3
	50 -	r	8.1 %	0.4 %	25.3	3.3
	50 -	R	1.6 %	0 %	8.0	18.1
EB	2.5	r	23.2 %	1.4 %	19.7	9.3
	2.5	R	12.0 %	0.1 %	19.8	7.2
	5.	r	6.4 %	0.6 %	14.9	9.5
	5.	R	3.0 %	0 %	13.0	1.4

Ryoken : 1977.

TABLE: 27

STATUS AT 12 MONTHS BASED ON 3 CULTURES AT 10, 11, AND 12 MONTHS

Status at 12 Months	All Patients						Patients with Susceptible Strains*								Patients with Resistant Strains*					
	Policy A		Policy B		Policy C		Policy A		Policy B		Policy C		All Policies		Policy A		Policy B		Policy C	
	(no.)	(%)	(no.)	(%)	(no.)	(%)	(no.)	(%)	(no.)	(%)	(no.)	(%)	(no.)	(%)	(no.)	(%)	(no.)	(%)	(no.)	(%)
Favorable																				
All cultures negative	139	74	152	79	153	82	105	84	115	80	103	82	323	82	34	65	37	77	50	81
1 culture positive	22	12	14	7	10	5	13	10	12	8	8	6	33	8	9	15	2	4	2	3
2 cultures positive	6	3	10	5	12	6	4	3	6	4	8	6	18	5	2	3	4	8	4	6
Total	167	89	176	92	175	94	122	98	133	92	119	95	374	95	45	73	43	90	56	90
Unfavorable																				
3 or more cultures positive	16	9	14	7	11	6	3	2	10	7	6	5	19	5	13	21	4	8	5	8
Death from active tuberculosis	1	1	1	1	0	0	0	0	1	1	0	0	1	0	1	2	0	0	0	0
Change of chemotherapy for bacteriologic failure	3	2	1	1	1	1	0	0	0	0	0	0	0	0	3	5	1	2	1	2
Total	20	11	16	8	12	6	3	2	11	8	6	5	20	5	17	27	5	10	6	10
Total patients	187	100	192	100	187	100	125	100	144	100	125	100	394	100	62	100	48	100	62	100

*According to the results of standard indirect susceptibility tests.

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Table 28 Analysis of Factor of Failure in Chemotherapy with SM.INH.PAS → INH.PAS

Factor of failure	Rate of primary drug resistance	Rate of failure
Irregular drug taking	0%	5%
Primary drug resistance	4%	< 1%
	10%	< 2%
	30%	5%

W.Fox: Bull.IUAT 47, 49, 1972