

CHAPTER 1

INTRODUCTION AND RATIONALE

Tuberculosis (TB), is an infectious human disease caused by Microbacterium tuberculosis complex. This disease affects lungs, intestine, meninges, bone joints, lymph-glands, skin and as well as other tissues of the body. The problem of tuberculosis is wide spread almost throughout the world but the problem is more acute in developing countries which accounts for about three-fourth of the total global figure. Low-income group people are more vulnerable to this infection.

"TB kills, debilitates more adult ages between 15-59 years than any other diseases. It is responsible for about 2-4 percent of the total burden of the disease in the world. It is the single leading cause in developing countries accounting for 2 million deaths and 24 percent of preventable adult death in these countries. The relationship between TB and HIV is highly significant" (Word Development Report 1993). The 2 million preventable deaths account both through the vaccination and early treatment (prevention of new cases at the rate of 1 to 4 by treating one infected individual through the reduction of transmission). The tuberculosis is one of the major health problems in developing countries (Table 1.1).

Table 1.1 Global distribution of disease by countries

Morbidity and mortality	Developed countries	Developing countries
- Prevalence of Infection in age 0-4 yrs per 100,000	2-3	60-80
- Case rate/100,000	12-20	250-500
- Morbidity rate/100,000	1-2	60-100
- Per cent of TB death of total deaths	0.1	3-10

Source: Park and Park, 1992

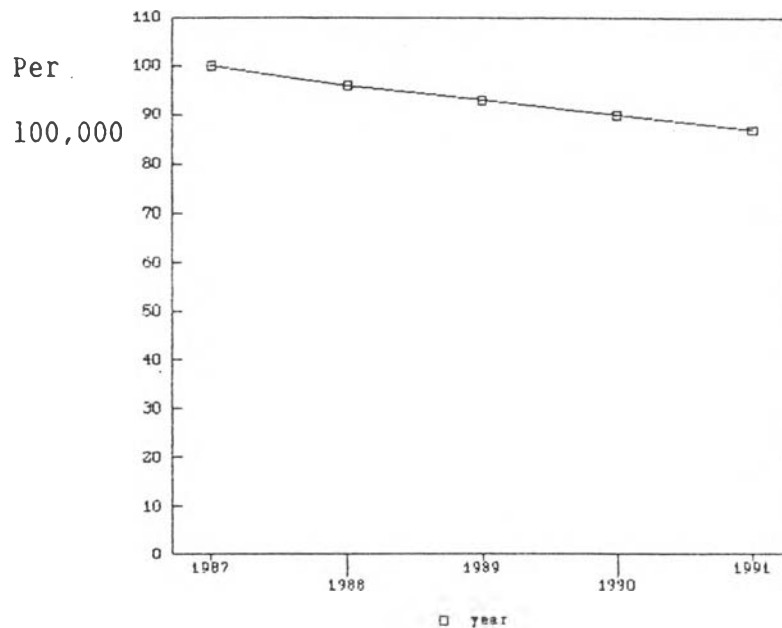
1.1 Tuberculosis situation in Thailand

Tuberculosis still remains as a major public health problem in Thailand. For more than a decade, it has been rated as top cause of death among communicable diseases and the fourth leading cause of death (Fact finding commission 1987). Since in 1991 it has been rated as fifth leading causes of death among diseases (Internal evaluation report 1994).

Payanandana and others (1994) noted that distribution of new direct smear positive (DS +ve) cases by age was 1.8%, 60.1% and 38.1% in 0-14, 15-54 and, 55 and above respectively in the year 1991. There has been noticeable downward trend of new DS+ve among the age group 15-54 years while an upward trend was observed among the age class 55 and above.

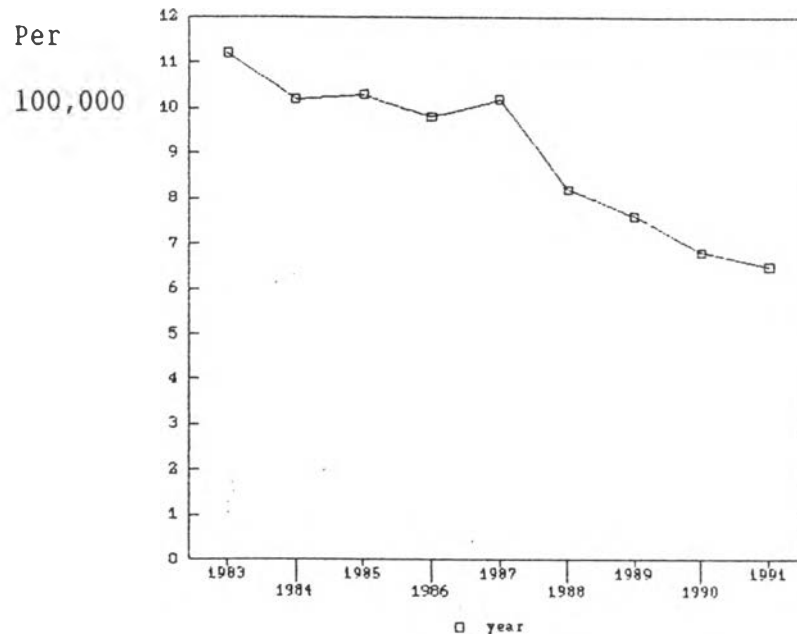
Mortality rate was reported to be 6.5 per 100,000 population in 1991. Following the implementation of the TB programme in 1949 mortality rate declined by 5.2% annually until 1991. The Estimated Annual Risk of Infection (ARI) was 1.73% in 1991 and estimated incidence of DS+ve was 87 per 100,000 population. The over all prevalence of infection was 29.47% in 1991. The annual reduction in the prevalence of TB cases, based on both radiological and bacteriological confirmations during 1962-1991 was 2.4%. But there was an upward trend in Bangkok and its vicinity with the prevalence rate based on bacteriological (Direct smear and culture), rising from 0.25% in 1977 and 0.65% in 1991. This was reported to be due to the increase of migrating population into this area. Morbidity and prevalence of infection were more pronounced in the urban areas of Bangkok than its sub urban (Report on internal evaluation of the national tuberculosis programme, Thailand 1993). Trend of incidence of DS +ve and TB mortality rates per 100,000 are shown in Figure 1.1 and 1.2.

Figure 1.1 Trend of direct smear positive per 100,000 (1987-1991)



Source: Tuberculosis Division, Department of Communicable Disease Control (CDC), 1993.

Figure 1.2 Trend of TB mortality rate per 100,000 (1983-1991)



Source: Tuberculosis Division, CDC 1993

When reported cases and deaths between regions are compared (Table 1.2), The northern region recorded the highest number of deaths. The reported cases highest in north-eastern region.

Table 1.2 Reported cases and deaths due to TB (1993)

Region	No. of cases	No of death
Central	4263	59
North	3540	64
North East	5346	60
South	1991	12

Source: Division of Epidemiology, 1994, MOPH, Thailand.

1.2 National Tuberculosis Control Programme (NTP) in Thailand

Department of Health, Ministry of Public Health established TB control in 1949 and conducted as a specialized project up to 1986. With assistance from WHO and UNICEF, the first Chest Clinic in Bangkok ("Central Chest Clinic") functioning as a demonstration and training center was raised to the divisional status working in closed relation

with the only existing chest hospital. Vaccination was given priority to control Tuberculosis. Since 1959 the programme was expanded vertically by setting up regional and later zonal TB Centers in various parts of the country. By the year 1994, there were as many as 13 TB centers. A National TB Programme was formulated during 1966-1967. Then National TB Programme has been implemented through the existing health facilities as an integrated way (Payanandana 1993). The different activities that are carried out under TB control programme are:

Case finding - only passive case detection is carried out through the local health facilities. NTP has established case finding and ambulatory services at over 98 % in the provincial level (regional and general hospitals) and district level (general and community hospitals) health services.

Treatment - since 1992, the policy has been broadened to provide short course chemotherapy to all the newly detected TB patients irrespective of their positivity of smear.

Prevention - BCG vaccination programme has been decentralized and integrated with general health infrastructure. The vaccination programme has been incorporated into the Expanded Programme on Immunization (EPI). The coverage of BCG vaccination under one year has been steadily increased crossing well over the target of 90 % since 1986.

Health education and case holding - health education is given to all TB patients by social workers at TB division, TB Centers and hospitals to keep patients under treatment for an adequate period. Under the PHC approach health education is reinforced to community by health center staff and community health volunteers. Information, communication and education are the tools used to minimize the patients delay in seeking care.

Training and supervision - training courses for doctors and technicians are conducted regularly by TB Division. Hospitals and Anti-tuberculosis Association are also involved in conducting training. Supervision is done regularly by TB Division and TB Centers in cooperation with Provincial Health office and Regional Office for Communicable Disease control.

Research - a few research programmes have been conducted at regional TB centers as a collaborative venture with other health Institution and Universities.

1.2.1 Structure of National TB Control Programme in Thailand

Though the National TB Control Programme has been structured to reach the village level, case finding and treatment programmes are limited to the community hospital level. Only health education is expanded to the village level. The structure of TB control and Organization Chart of the Tuberculosis Division is presented in Table 1.3 and Figure 1.3.

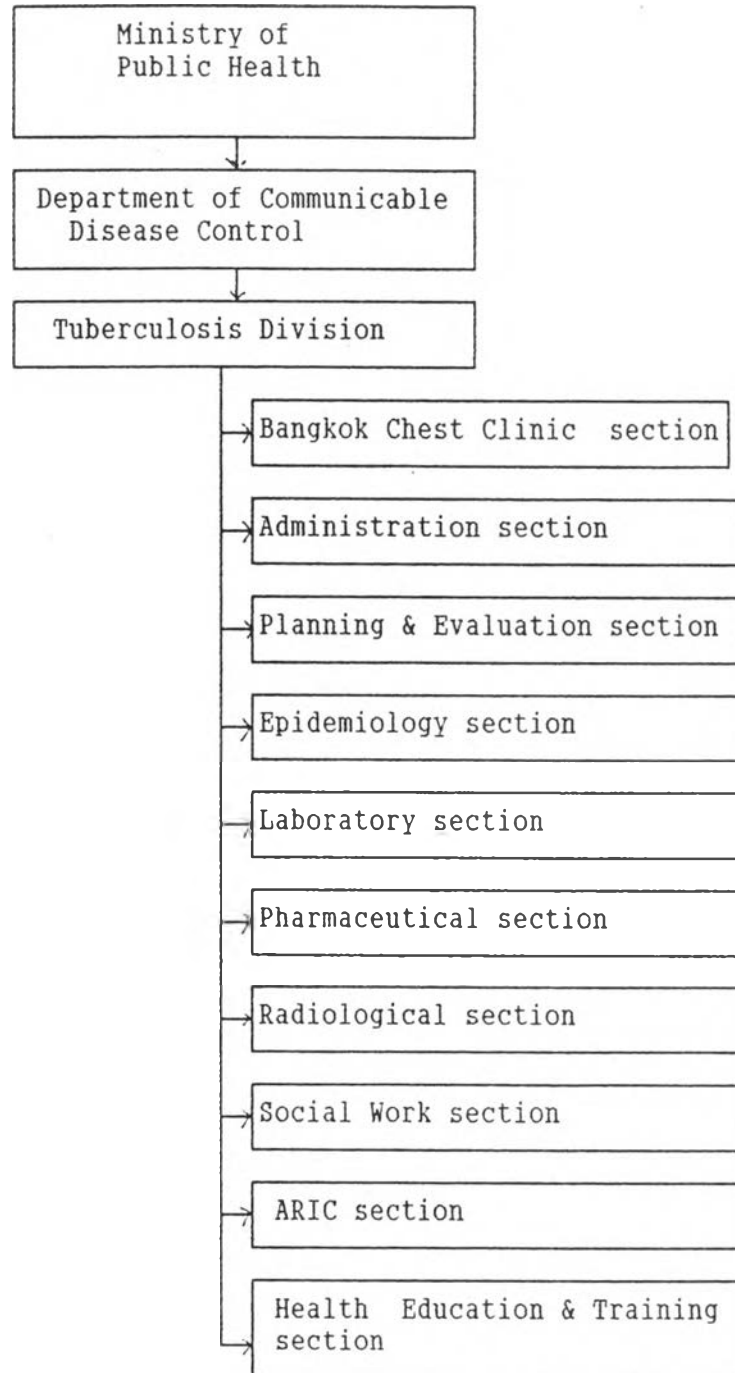
Table 1.3 The structure of TB Control Programme

Level	Responsible Institution	Service point
- Central level	TB division, CDC	- Central Chest Hospital (1) - Bangkok Chest Clinic (1)
- Regional level	Regional office for communicable disease	- Zonal TB Center control(13)
- Provincial level	Provincial health office (75)	- Regional hospital (17) - General Hospital (58) with TB clinics
- District (Dist.) level	District health office (810)	- General Hospital (14) - Community Hospital (665) with TB Clinic
- Sub dist. level	District health office	- First Class Health Center (-) with TB Clinic
- Community level		- Health Post - Health volunteer (awareness)

Other medical facilities with TB case detection and treatment are:

- University hospitals
- Military hospital
- Thai Red Cross society
- BMA hospital and health centers (Bangkok)
- Ministry of interior, medical and health Centers:

Figure 1.3 Organizational Chart of Tuberculosis Division



Note: Bangkok Chest Clinic is located at the building of Tuberculosis Division and treated as a section.

The Tuberculosis Division is a major division under the Department of Communicable Disease Control and responsible for planning, budgeting and implementation of National Tuberculosis Programme at national level. The Bangkok Chest Clinic which is located

in the same building of Tuberculosis Division is treated as a section of TB Division. Patients attendance is low due to the decentralization of the diagnosis and treatment services to the community hospital level. On average 20 new patients reported daily at this study point.

1.2.2 The targets and reports of TB control programme

The annual reports of the TB Division showed that mortality rate was lower than target, but coverage and cure rate targets were not met. The cure rate, the coverage and infection rates are important to reduce morbidity. The details on different activities of the TB control are given in Table 1.3.

Table 1.4 Targets and reports of TB control

Activities \ Years	1989	1990	1991	1992	1993	1994
a. Bacteriological confirmed prevalence per 100,000, target	3	2.2	2.2	2.19	2.9	NA
- report from TB Prevalence	NA	2.4	NA	NA	NA	NA
b. TB mortality rate per 100,000, target	9	9	9	8	7	7
- report	7.6	6.8	6.5	6.3	NA	NA
c. Coverage of case finding for DS +ve target	NA	NA	NA	NA	70	NA
- report	56	59	56	58	55	NA
d. Cure rate for bacillary target	NA	NA	NA	NA	85	NA
- report	NA	67	NA	64	NA	NA

Source: Tuberculosis Division, CDC, 1994

1.3 Rationale

One of the objectives of TB Control Programme is to reduce the infection rate. Pool of infection is an indicator of load of infection carriers. The performance of the provider and consumer are both important in the efforts to reduce the pool of infection and enhance case prevention. Provider's performance can be measured in terms of time between taking a sputum specimen and providing full course of treatment for the positive cases. Patient's performance can be divided

into two categories; prior to the formal care and during the formal care. Patients performance prior to the formal care can be defined as the time gap between perceived symptom(s) and presenting themselves for diagnosis and treatment at the TB Clinic or TB Centre. Thus patient's performance is of critical importance in limiting transmission.

Patients delay is the greatest problem in case finding and treatment (Ponjpnich 1993). Patients who delay seeking diagnosis and treatment may do so because of costs which may be incurred in consuming health care and due to limited knowledge about tuberculosis.

In the initial stage, many patients do not seek formal care. The majority of the patients report late to the hospital or TB center when they were already in severe condition (Tesane 1991). Those infected may serve as hidden reservoirs of infection. As TB primarily affects adults in their most productive years, the economic costs of the disease are substantial (Spinacci 1991). Therefore TB remains to be a major contributor for economic loss.

At present, TB services are not integrated into the health centers' activities. As a result, patients have to come to the community hospital, general hospital or TB centers for diagnosis and treatment. Determination of costs to the patients during the formal care and prior to the formal care is an important information because it identifies the areas where costs can be minimized. Firstly costs prior to the formal care is part of total costs to the community. The best utilization of the available resources can be achieved if total costs to the community is minimized (Kaewsonthi and Harding 1989). Secondly if costs incurred by patients are determinant of behavior. Then efforts should be made to determine and reduce the costs. Therefore determination of costs to the patients prior to the formal care is essential. If patients' performance is known to be constricted by expected costs and patients incur significant costs in informal care, then in the interest of the community at large, there may be economic justification for an adjustment of the control strategy.

TB diagnosis and treatment programme is mainly concentrating passive case detection and treatment. Therefore the behavior of patients in seeking diagnosis and treatment at a particular service point is dependent on many factors; severity of illness, response of patients to the given symptoms, patients' knowledge about tuberculosis, convenience of service, time, distance, costs of travel to the service point, head of the family and service providers' performance. TB problem is associated with many socio-economic factors. Such factors, apart from medical etiologies can be considered as risk factors of illness due to this infection (Jittinandana 1988).

From the patients point of view, if patient's performance is poor in terms of time delay in seeking formal care, there are chance for approaching informal care or they care themselves. Expenditure is incurred through consumption of treatments at health centers, drugs store and other traditional healers costs can also be incurred through time cost disturbance to the whole family.

From the public health point of view, if patients delay in seeking formal care, the chances for spreading the infection to other persons is more likely. The consequences of this are ultimately borne by the society.

1.4 Research questions

- What is the performance of pulmonary TB patients prior to the formal care in TB center?
- What is the economic costs incurred by pulmonary TB patients prior to the formal care ?
- Is there any relationship between patient performance and economic costs prior to the formal care ?

1.5 Objectives

General

To determine the performance and the economic costs of pulmonary TB patients in relation to their performance prior to the formal care.

Specific

1. To assess the performance of pulmonary TB patients prior to the formal care in TB center.
2. To determine the economic costs incurred by pulmonary TB patients prior to the formal care.
3. To analyze the relationship between performance of pulmonary TB patients and economic costs prior to the formal care.

1.6 Scope of the study

This study covers performance and economic cost of pulmonary TB patients because non pulmonary TB patients' symptom(s) are different and severity of illness are different thus health seeking behavior and costs will be different. This study is of the patients perspective and it only covers the time prior to the formal care because study had already done on costs to the patients during formal care. This study includes only those patients who come to the Bangkok Chest Clinic within 10 weeks of their symptom(s) because patient's response to the question depends on the ability to accurately recall information. The validity of answer deteriorates with the increase in the period over which attempts are made to collect the information (Stocks 1949). The under-reporting is observed to be only three percent

if the maximum reporting period was 10 weeks (Cannell 1970). Bangkok Chest Clinic is selected for the study as this area has been reported to show an increase in TB prevalence over several years. It is also felt feasible in terms of time and resources. The costing covers both utilized care and seeking care.

In costing, only tangible costs are included. Intangible cost like pain, nausea etc. are not included.

1.7 Hypothesis

Costs incurred by patients are related to the performance prior to seeking formal care.