

CHAPTER I

INTRODUCTION



1.1 Background

Nearly one-third of the world's population- 2 billion people- is infected with the tuberculosis bacillus and at risk of developing active diseases. About 8.4 million people develop active TB every year and two million die. Tuberculosis accounts for 2.5% of the global burden of disease (WHO. 2001a). Some 95% of global TB cases and 99% of deaths caused by TB occur in developing countries. There, 75% of cases are in economically most productive age group (15-54 years) and on an average 3-4 months work time are lost if an adult has TB. This results in the loss of 20-30% of annual household income and an average of 15 years of income if the patient dies from their disease (WHO. 2001a).

The South-East Asia region accounts for 38% of global burden of disease with 1.4 million new infectious cases and 700,000 deaths occurring each year in this region. Bangladesh, India, Indonesia, Myanmar and Thailand, which together contribute to 95% of this number (WHO.1999). TB is the biggest killer disease in this region. More than 1,500 people die every day, which comprises one third of the deaths in the world from TB. Moreover, the situation is likely to be further complicated with the rapid spread of HIV and an increase of multi-drug resistant stains in this region (WHO, 1998b).

DOTS stand for Directly Observe Treatment, Short-course. It is the strategy for TB control recommended by WHO in which TB patients are detected by microscopy examination of their sputum and treatment is provided under the direct observation of a trained person (WHO-EMRO). Along with the treatment, the patients are provided counseling support and follow up through out the treatment period so that the patient will complete the treatment. DOTS is a technical and management package of a TB control program.

In DOTS strategy, TB patients are diagnosed by microscopy examination of sputum. This is considered to be the most cost-effective method for case detection. If patient is negative by sputum examination, other secondary tests such as X-ray can be performed. DOTS follows passive-case finding strategy. It does not however stress active case finding and mainly address pulmonary TB, which is the serious and main type of TB. After diagnosis, treatment is provided as per treatment guideline for 6 or 8 months depending upon the regimen adopted in a country. The first 2-3 months of the treatment, which is called the intensive phase, must be under the direct observation of a trained person. In take of TB medicine in presence of the observer is the key strategy of DOTS. Along with the treatment, the patient has to be monitored by periodic sputum test after two, five months and at the end of the treatment. For every sputum test, three samples are required – the first sample on the spot, the second from early morning cough the next day, and the third, on the spot the next day.

DOTS is the most cost-effective strategy available for detecting and curing TB patients and preventing new infections (WHO, 1998b). The consequences of not using DOTS more widely are alarming. TB cases and death will certainly continue, the global epidemic will be uncontrolled, and harder to manage multi-drug resistant TB (MDR-TB). Everyone who breathes air, from Wall Street to the Great Wall of China, needs to worry about this risk. Once MDR-TB is unleashed, we may never be able to stop it. We will face a deadly infectious disease that spreads through the air, yet is virtually as incurable as AIDS or Ebola (WHO. 2000b).

After the joint review with WHO, His Majesty's Government of Nepal (HMG/N), Ministry of Health has adopted DOTS in national health policy in 1995. The first DOTS program was started in four districts. The excellent results in these four districts led to expansion of DOTS. Now, DOTS is running through the integrated general health services in 207 treatment centers and 640 sub-centers spread over the 75 districts, covering 80% population. Under DOTS strategy, Nepal has achieved the case detection rate 67%, cure rate 75% and treatment success rate 83% (MOH. 2000).

Tuberculosis is one of Nepal's major public health problems. About 45% of the population is infected with TB, out of which 60% are in the economically active age group (15-54 years). Every year 44,000 people develop active TB, of whom 20,000 have infectious pulmonary tuberculosis and spread the disease to others (MOH. 2000). Nearly 2% of people are infected every year. Over 220,000 people will develop TB during next five years. Without treatment, nearly 95,000 people would die from TB in Nepal over next five years. If DOTS expands as planned, the number of deaths in this period will be averted by 64% with a saving of nearly 60,000 lives (NTP. 1998)

Table 1.1 TB incidence rate in SEAR countries:

Country	Incidence per 100,000 population
India	115.0
Nepal	105.6
Bhutan	64.5
Maldives	64.4
Bangladesh	57.9
Sri Lanka	38.1
Myanmar	33.2
Thailand	26.3
Indonesia	19.6
Democratic People's Republic of Korea	4.9
South-East Asia Region	88.0

Source: WHO, 2000

Table 1.2 Health Outcomes of National Tuberculosis Control Program, Nepal

Indicator	1996/97	1997/98	1998/99	1999/00
Cure Rate %	56	61	68	75
Case Detection Rate %	48	50	62	67
Treatment Success rate %	56	76	79	83
Total new smear positive cases registered	10,6222	11,400	12,597	13,446

Source: MOH 1997, 1998, 1999, 2000.

The spread of Multi-Drug Resistant TB (MDR-TB) threatens the successful implementation of TB control program. The relationship between HIV and TB is well known, and increasing numbers of HIV related with TB cases can be expected as the prevalence of HIV is

increasing in Nepal. The rapid spread of HIV and emerge of multi-drug resistant strains of Tuberculosis pose additional threats and economic burden to the nation. Information office, WHO has issued a press release on 19 July, 2001 that people suffering from the deadly strains of multi-drug resistant tuberculosis now have access to high quality “second line” drugs at sharply reduced price. Some countries will be able to save as much as 94% of their current spending on the drugs needed to treat MDR-TB (WHO. 2001c).

Public-Private Mix: PPM Model

The government would typically provide resources such as drugs, laboratory needs, logistics, training and possibly funds. In return DOTS agency would be responsible for meeting TB control targets in the specified population. In effect with public funding and private provision, specific process and outcome indicator have to be agreed and monitored carefully.

In Nepal, a pilot project for services linkage, to introduce DOTS using both public and private services was initiated in Lalitpur sub-metropolitan city in May 1998. The main aim of this pilot project was to identify strategies for getting the private sector involved with National Tuberculosis Program and DOTS (NTP 2001). This sub-metropolitan city is one of the three cities of Kathmandu valley. There are 1 semi-government hospital, 1 private hospital, 4 private nursing homes, 55 pharmacies and many NGOs. About 120 private practitioners (PPs) are providing health care services to the people of that area. Among them, 91% are providing treatment for TB patients. Delivery of services is being provided by 5 DOTS treatment centers: one semi-government, 3 NGOs and one private nursing home.

In Kathmandu Metropolitan City, NTP has introduced DOTS service in private (not-for-profit) sector in 1997 and the involvement of private medical practitioners for DOTS with government (PPM) has also begun in one nursing home and one polyclinic since 2000. It has about 701,962 population, with population density 175.7 per hectare (KMC. 2001). There are 11 public DOTS centers and 9 PPM-DOTS centers in this city. Four PPM-DOTS centers among nine have been introduced since the beginning of the F/Y 2001/2002.

Table 1.3 Number of PPM DOTS Centers in Kathmandu and Lalitpur Districts

Kathmandu District				Lalitpur District			
In Metropolitan city		Outside Metropolitan City		In Sub-Metropolitan City		Out Sub-Metropolitan City	
Public	PPM	Public	PPM	Public	PPM	Public	PPM
11	9	16	0	0	5	5	0

Source: Personal communication(E-mail: ntpdiretor@mail.com.np)

1.2 Rationale:

In Nepal, about 40-50% active TB patients are being treated by private practitioners (NTP Long-term Plan). A substantial number of TB cases (high risk group for MDR-TB) are managed by private practitioners and nobody knows whether they were completely treated or not. TB management practices of private practitioners may deviate greatly from the best practice methods and have poor maintenance of treatment records and monitoring of treatment outcomes. If this bulk of active TB patients could not be managed properly, the number of MDR-TB patients would increase posing economic burden to the nation that Nepal cannot bear it. Not only neighboring countries but also whole world may suffer from its negative externalities. Therefore wider implementation of most cost-effective DOTS strategy for the treatment of tuberculosis is inevitable.

Nepal has been practicing public-private mix DOTS strategy since 1997. If PPM-DOTS centers can be run cost-effectively, the wider implementation would be possible. Cost-effectiveness analysis would try to provide cost per effectiveness of PPM-DOTS centers of two different management systems.

A study of Cost analysis of different types of TB patients at Tuberculosis center conducted in Thailand (Kamolratanakul et al, unpublished article) shows that the total provider cost of smear positive cases of each TB center was 9001 Baht (Routine service cost = 6488 Baht, Drug cost = 2485 Baht and Material cost = 28 Baht). This shows that routine service cost is much more higher (72%) than drug and other material cost. This may raise the question of

the sustainability of PPM DOTS Center. This study attempted to reveal the magnitude of variation of cost per effectiveness among four DOTS centers run by two different management systems, which could help policy makers manage public-private mix DOTS centers.

1.3 Research Question

Is public-private Mix DOTS treatment center or public DOTS treatment center running more cost-effective?

1.4 Research Objectives:

- 3.1 To estimate total provider cost for the treatment of tuberculosis patients in public and public-private mix DOTS centers.
- 3.2 To assess the effectiveness (treatment outcomes) of Public and PPM-DOTS centers for the treatment of tuberculosis patients.
- 3.3 To analyze the cost-effectiveness ratio of Public and PPM-DOTS centers for the treatment of tuberculosis patients.

1.5 Benefit of the Study:

It was expected that this study would be able to suggest recommendations for PPM-DOTS treatment center's or Public DOTS treatment Center's wider implementation in urban area of Nepal.

1.6 Scope of the Study:

This study was carried out in Kathmandu metropolitan city taking only four (Two Public and Two PPM) DOTS treatment centers and collected secondary data of first eight month of FY 2000/2001.