CHAPTER III

LITERATURE REVIEW

This chapter reviews the prior works and literature dealing with Leprosy Control Program (LCP) for other countries and LCP for Thailand, literature dealing with economic evaluation about leprosy and other communicable diseases and cost analysis including cost benefit analysis.

3.1 Leprosy Control Program in Thailand and other countries

In Thailand, from 1965 to 2005 the trend of case detection steadily decreased. Myint & Htoon reported that the factors contributing to this decline were improved access to diagnosis and treatment with MDT, increased socioeconomic development leading to greatly improved living conditions, and high rates of coverage with Bacille Calmette-Guerin vaccine. These findings are supported by Myint & Htoon (1996) who studied the epidemiological situation of leprosy in Myanmar. They concluded that the trend continued to decline because of increased coverage of MDT

Regarding case detection activities, Sukumaran (1988) reviewed the status of leprosy control in Malaysia. He found that 20% of cases were detected by ACD, 80% of cases by PCD, and found that ACD method reduced the pool of infectious carriers and allowed early detection. Tiendrebeogo and others (1999) compared two methods of leprosy case finding in the Circle of Kita in Mali (West Africa). It was shown that the active detection rate (4.31 per 10,000) was threefold higher than the passive rate (1.5 per 10,000) and allowed them to find earlier cases of leprosy. Active case finding identified children and single-lesion disease whereas the passive method did not. Sukumaran and Tiendrebeogo's findings are supported by Schreuder and others (2002) who compared detected methods between rapid village survey (RVS) and LEC_s in districts of East Java, Indonesia. They founded that the RVS prevalence rate of 12 per 10,000 was more than twice the known prevalence rate of 5 per 10,000. The LEC_s prevalence rate was less than the rate found by RVS (or ACD). Many children and disability grade 2 of newly detected cases were found by RVS and they mentioned that there is still a serious delay in detecting new cases under the routine program.

3.2 Economic Evaluation on leprosy and other communicable diseases.

3.2.1 ACD vs. PCD

There are several studies concerned with the cost-effectiveness analysis of the active and passive leprosy case finding.

In an early study, Kaewsonthi (1993) raised but left unanswered, a number of important questions concerning the economics of leprosy control. These are relevant to this study:

1. What are the costs per case detected through out-reach services compared to those detected through passive services?
2. What would be the most cost effective method for early case detection when the incidence of leprosy is low?
3. How could costs per detected case be contained and/or minimized?
4. How can resource utilization be improved within the leprosy control system?

All these questions should be answered for efficient utilization of scarce resources within the program. Later Kaewsonthi et.al. studied the economic of early leprosy case detection in Thailand (1995) and analyzed comparison of costs of actions for one year and cost saving through disabled life time by using cost models and cost saving (benefit) models. They explained that there are three potential impacts of early case detection namely: effect of early detection on transmission, effect of early detection on the number of disabled cases, and effect of early case detection on relapse. They also identified the six possible actions which could affect earlier case detection i.e. 1. Strengthen health education, 2. RVS, 3 Contact survey, 4. School survey, 5. Improved referral practice through training of staff and paying the travel expenses of referral patients to attend specialized diagnostic service. And they found that RVS and contact survey are viable actions, economically, to detect cases early. In a similar study Aye (1996) conducted a cost-benefit analysis of case finding activities in Myanmar. The author concluded that benefits in terms of cost savings for early case detection were used to find out which method of case finding activity was better in the sense that more early cases are detected. ACD activities are more emphasized than PCD activities especially in high endemic areas. Case detection methods also compared by Kyaw, T.W. (1999), who studied the cost-effectiveness analysis of routine case detection and LECs in Myanmar. The author mentioned that LECs activities are

more cost effectiveness than Routine Case Detection activities. LECs activities are 1.7 to 2.3 times more cost effective than Routine Case Detection activities. These findings are supported by Tiendrebeogo and others (1999). They compared two methods of leprosy case finding in the Circle of Kita in Mali (West Africa), and found that cost for finding a new case was estimated at 72 US$ by mobile team detection (ACD) and 36 US$ by passive case finding (PCD). Again, it is enough to introduce abbreviations once. Although the active method looked more expensive than the passive one, it was the only effective strategy to detect leprosy patients in remote and difficult-to-access areas. For the elimination of leprosy, the two case finding strategies should be combined in most leprosy endemic countries.

In Thailand, a comparison of different cases detection methods was carried out by Manitsirikul and others (2001). They did a comparison of the cost-effectiveness of new leprosy case finding between the rapid village survey and by community leaders in Huayrat district, Buriram Province, Thailand. They found that the RVS method was more cost-effectiveness. Pinitsoontorn and others (1996) studied rapid village survey to determine the size of the leprosy problem in Khon Kaen province, Thailand. They found that the RVS method is more effective than the Total village survey (TVS) method.

From findings mentioned earlier, could be concluded that ACD are more likely effective than PCD. However, Utami and others (2007) who studied effectiveness analysis of the active and passive case finding effort of the new leprosy patients using cost effectiveness analysis method at Dungkek Public Health Center in Sumenep Regency in Indonesia, and concluded that the passive was more cost effective than the active case finding, by the calculation of CER (cost effective ratio). But, when they use the calculation with the number of DALY and years lived with a disability (YLD) parameter, they found that ACD was more cost effective than PCD.

3.2.2 Cost analysis of leprosy control

World Bank Group (2006) analyzed costs associated with leprosy control include case detection, treatment, prevention of disability, and rehabilitation. The authors calculate the incremental health service cost to arrive at the average cost of curing a patient with leprosy. Their estimates are based on the limited published cost data available, program expenditure data, and expert opinion, although costs are likely to differ substantially by country. As case detection rates decrease, the average cost of detecting one case increases. The authors estimated a cost of US$ 2 per case

detected based on a case detection rate of about 300 per 100,000. The case detection rates are now considerably lower in most countries. Many leprosy control programs now rely on voluntary case finding supported by information, education, and communication activities to raise or maintain people's awareness of the early signs and symptoms of leprosy. They estimate the cost of this approach to be about US$ 1 per case detected. Nevertheless, if active methods are still used in areas where case detection rates are low, the cost of case detection may be as high as US$ 108.

However, there is cost associated with leprosy that could not be calculated such as cost results from consequences of stigma. Consequences of stigma are discrimination that leads to loss of marriage opportunity, loss of self esteem, and loss of economic status. (Boonmongkon, 1994; W.H. van Brakel, 2006)

From reviewing the above studies, it is found that ACD by the RVS method or LECs are more cost effective than PCD method or routine case detection activities. Especially, when they calculated with the number of DALY and YLD.

3.2.3 Costs and Cost-Effectiveness Analysis

Economic evaluation is the comparative analysis of alternative course of action in terms of both their costs and consequences. Therefore the basic tasks of any economic evaluation will be to identify, measure, value and compare the costs and consequences of the alternatives being considered. The effect will be translated into days of disability avoided, years of life gained, medical complications avoided and so on. The effect resulting from a particular service or program is expressed in terms of their dollar benefits to facilitate a comparison with program cost. (Drummond et al,2005)

Creease, A. and Parker, D. (1994) stated that to estimate a health program's costs, calculation of their components is necessary. The program's costs can be classified as many ways namely: classification by inputs, classification by function/activity, classification by level and classification by source. There are three main things for choosing costs classification: it must be relevant to the particular situation, the categories must not overlap and it must cover all the possibilities. A among the different ways of classification mentioned in the earlier, classification by input is widely applicable and useful.

It involves a manageable number of categories and these categories are general enough that they can be applied to any health program. It distinguishes two important categories of resource – these that are used up in the course of a year and are usually purchased regularly (i.e., recurrent costs) and those that last longer than one year, such as buildings, vehicles and equipment (i.e., capital costs). And the authors also mentioned that, cost effective analysis will be comparing at least two alternatives – for instance, two ways to organize the program (or activity) or two different packages of inputs to conduct it.

In the past, the benefit of the health output of a project is based on the economic returns to society obtained from better health of the population involved. The identification is known as the 'human capital' approach. This approach is strongly criticized for discriminating against the elderly who no longer offer production gain. The 'value of life' approach to identify the health outcome was developed in order to rectify this problem. Expanding length of life and improving quality of life become the latest operational definition in the economic evaluation. This gives rise to two key concepts: DALY and Quality Adjusted Life Years (QALY). (Drummond et al, 2005)

Disease costing studies provide broad estimates of the total potential benefits to be derived from the prevention or cure of particular disease. Economic analysis is also required, at a more detailed level, to determine the most economical and effective means of obtaining these benefits. Evidence on the distribution of costs and benefits is therefore required if the health ministry is to bargain effectively for scarce resources within the public sector (Report on a WHO working group, 1982)

From reviewing the prior works, it is found that early case detection can prevent disability which has undesirable consequences on economy but there are only one study about economic evaluation of case finding activity of the leprosy control program in Thailand. Manitsirikul and others (2001) studied comparison of the cost-effectiveness of new leprosy case finding between RVS and by community leaders in only one province but I will study cost-effectiveness analysis of combined ACD and PCD versus PCD alone method in 11 regions in Thailand. The program should be evaluated, so as to identify which method of case finding activity has the highest effectiveness in terms of the number of leprosy cases detected when compared with cost incurred.