CHAPTER 5

ANALYSIS AND EXPECTED RESULTS

In this study the costs for each methods of case finding activity and benefits in terms of cost savings for early case detection are analyzed from the provider perspective as well as the patient perspective. The expected results were calculated from three different endemic areas of the country by three different scenarios. There are three States and Divisions selected in this study: Yangon Division selected as low endemic area, Mandalay Division selected as median endemic area and Magway Division selected as high endemic area.

5.1 Scenarios

This study analyzed the costs and benefits from three different scenarios.

5.1.1 Baseline Scenario(Scenario One)

In the baseline scenario, the costs and benefits are calculated from actual numbers of newly cases which were detected in 1992. The new case detection for the three endemic areas during the year of 1992 is shown in Table 5.1.

Table 5.1: The New Case Detection in Three Endemic Areas

Division(Area)	New case detection		
	ACD	PCD	Total
Yangon(Low endemic area)	65	857	922
Mandalay(Median endemic area)	636	1031	1667
Magway(High endemic area)	1009	1720	2729

Source: Leprosy Control Program, Annual Report, Department of Health, Myanmar, 1992.

In this scenario, total costs for each method of case finding activity are calculated from the equations explained in Chapter 4. Average costs for each method of case finding activities are calculated by dividing the total cost by number of new case detected which are expressed in Table 5.1.

The total costs for each method of case finding activity and benefits in terms of cost savings for early case detection are analyzed as benefit cost ratio in three different endemic areas from provider as well as patient perspectives.

5.1.2 ACD Alone Scenario(Scenario Two)

In this scenario, it is assumed that if the program conducts case finding activity only by active case detection in the year of 1992. In that case, all the new detected cases in 1992 are detected by ACD alone.

In the baseline scenario, the average cost for ACD has already calculated. The total costs for this scenario is calculated by multiplying the average cost for ACD by all the new detected cases in three different endemic area of the country in 1992. The benefits of each scenario were calculated from the equation which had already mentioned in Chapter 4. Finally, the benefit cost ratio were calculated and expressed as three different endemic areas from provider as well as patient perspectives.

5.1.3 PCD Alone Scenario(Scenario Three)

In this scenario, also assumed that if the program conduct case finding activity only by passive case detection in the year of 1992. In that case, all the new detected cases in 1992 are detected by PCD alone.

In the baseline scenario, the average cost for PCD has already calculated. The total costs for this scenario is calculated by multiplying the average cost for PCD by all the new detected cases in three different endemic areas of the country in 1992. The benefits of each scenario were calculated from the equation which had already mentioned in Chapter 4. Finally, the benefit cost ratio are calculated as in the ACD alone scenario.

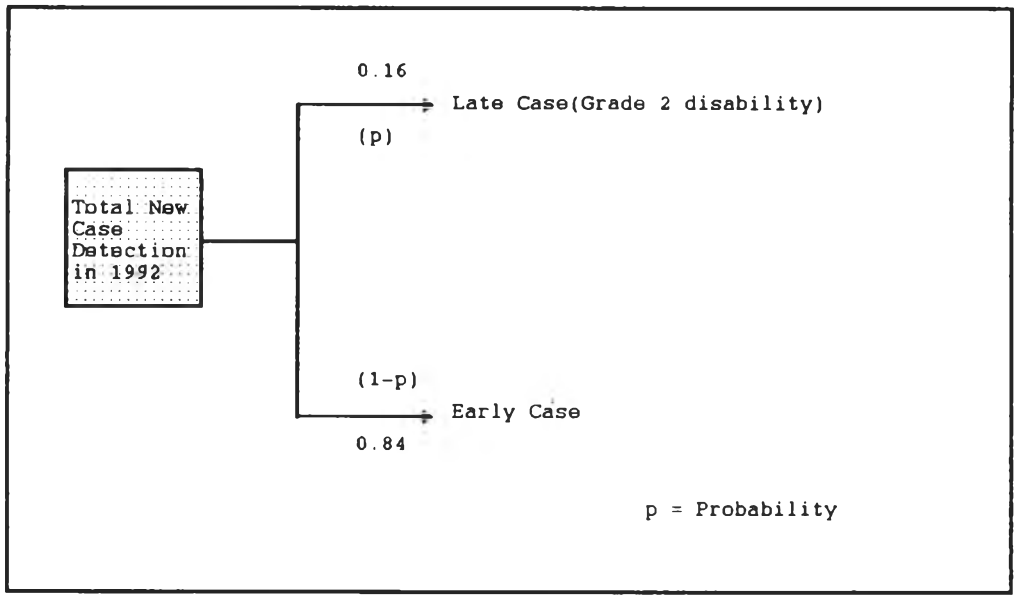
5.1.4 Estimation of Number of Early Case Detected in Each Scenario

In this study benefit is in terms of cost savings for early case detection. It means that, if the program cannot detect these cases in early phase, it is assumed that all of these early cases are detected in late phase, that is deformity grade two. Therefore, these early cases are acting as disability prevented. They are not going beyond another stage and so costs of rehabilitation for those people can be saved from the program side and cost of disability for those people can be saved from their side. There is no secondary data for new case detection classified as disability grading. the operational classification for new case detection is only as PB or MB. Information on the proportion with disability grade two among new cases can be used to study how well new case detection reflects incidence. However, this information was not available at the national level because it was not collected routinely (Myint and Htoon, 1996).

Various surveys were conducted to determine the disability grade among the registered cases showed 17-25% of disabilities grade two(Report on LCP, 1995). Among the newly diagnosed patients, the percentage who are disabled is 16% in some areas of Myanmar(Myint, Htoon and Shwe, 1992 quoted in Htoon, 1992). Therefore in this study, it is assumed that the percentage of disability among new case detection is 16%. And so, the percentage of early cases detected among new cases detected is 84%. These 84% early cases were detected by ACD as well as PCD. According to this assumption we can determine the probability of early cases among the total new case detection. The probability for determining the early case detection is shown in Figure 5.1.

In general ACD can detect more early cases than PCD. Therefore the percentage of early case detection in ACD should be more than 84% while those in PCD should be less than 84%. And so, it is also assumed that ACD early case detection is 95% of total new cases detected by ACD method and the percentage of early cases among total cases detected by PCD is calculated. The detailed calculation for estimated number of early cases is shown in Appendix 3.

Figure 5.1: Probability for Determining the Early Case Detection



After getting the estimated number of early cases detected by each method of case finding activity, the next step is calculation of the number of early cases detected in three different scenarios. For the Baseline scenario, this number is obtained from summation of early cases detected by ACD and PCD. For the ACD alone scenario, the total number of cases detected in this area is multiplied into 95%. For the PCD alone scenario the total number of cases detected in this area is multiplied by the percentage of early case detection in PCD which is calculated earlier. Therefore the estimated early case detection for each scenario according to three different endemic areas by using a 16% disability rate is shown in Table 5.2.

Table 5.2 Estimated Number of Early Case Detected for Three Scenarios

Scenario	Endemic area of the country		
	Low	Median	High
Baseline(S 1)	774	1400	2292
ACD alone(S 2)	876	1584	2592
PCD alone(S 3)	765	1283	2101

Note: Estimated by secondary data from 1992 LCP new case detection

5.2 Analyzing Costs and Benefits(Provider Perspective)

5.2.1 Calculation of Costs for Each Method of Case Finding Activities

Total costs for each method of case finding activity is shown in Table 5.3. The detailed calculation of total costs for case finding activity from provider perspective is shown in appendix 4.

Table 5.3: Total Costs of Case Finding Activities for Different Endemic Areas

Endemic Area	Total Costs	
	ACD	PCD
Low	64,360.2	785,224.8
Median	125,090.0	1092,592.0
High	127,786.1	1337,340.0

The average cost for this activity is calculated by dividing the total costs for each method by number of new cases detected by each method(the number of new cases detected by each method available at Table 5.1). These average costs are shown in Table 5.4.

Table 5.4: Average Costs of Case Finding Activities for Different Endemic Areas

Endemic Area	Average Costs	
	ACD	PCD
Low	990.16	916.25
Median	196.68	1059.74
High	126.65	777.52

The total costs for three different scenarios are calculated by the average costs of each method of case finding activity in three different endemic areas multiplied by the total number of new cases detected in different endemic areas which value is available in Table 5.1. The total costs for three different scenarios are shown in Table 5.5.

Table 5.5: Total Costs for Three Different Scenarios

Scenario	Costs for Case Finding Activities		
	Low	Median	High
Baseline(S 1)	849,585	1663,240	1465,126
ACD alone(S 2)	912,927	327,899	345,491
PCD alone(S 3)	844,736	1765,353	2121,797

5.2.2 Calculation of Expected Benefits for Each Method of Case Finding Activities

The benefits from the program side are calculated from the unit cost for rehabilitation multiplied by the number of early cases in three different scenarios(Table 5.2). The calculation of unit costs for rehabilitation is explained in appendix 5. The benefits for the three different scenarios are shown in Table 5.6.

Table 5.6: Benefit for Three Different Scenarios

Scenario	Benefits for Case Finding Activities		
	Low	Median	High
Baseline(S 1)	1071,293	1937,740	3172,357
ACD alone(S 2)	1212,472	2192,414	3587,587
PCD alone(S 3)	1058,837	1775,800	2907,994

From the above cost and benefit figures, the benefit/cost ratios are calculated and these are expressed in Table 5.7.

Table 5.7: Benefit/Cost Ratio for Three Different Scenarios

Scenario	Benefit/Cost Ratio		
	Low	Median	High
Baseline(S 1)	1.26	1.67	2.17
ACD alone(S 2)	1.33	6.69	10.38
PCD alone(S 3)	1.25	1.01	1.37

5.3 Analyzing Costs and Benefits(Patient Perspective)

The costs and benefits for each method of case finding activity from the patient point of view is calculated by equations explained in Chapter 4.

5.3.1 Calculation of Costs for Each Method of Case Finding Activities

The total costs for each method of case finding activity are shown in Table 5.8. The detailed calculation of total cost for case finding activity from patient side is shown in Appendix 6.

Table 5.8: Total Costs of Case Finding Activity for Different Endemic Areas

Endemic Area	Total Costs	
	ACD	PCD
Low	14,950	531,300
Median	120,800	536,000
High	141,300	670,800

The average costs for this activity was calculated by dividing the total costs for each method by number of new cases detected by each method. These average costs were shown in Table 5.9.

Table 5.9: Average Costs of Case Finding Activities for Different Endemic Areas

Endemic Area	Average Costs	
	ACD	PCD
Low	230.00	619.95
Median	189.90	519.88
High	140.03	390.00

The total costs for three different scenarios are calculated by multiplying the average costs into the number of new cases detected in three different endemic areas(Table 5.1). The total costs for three different scenarios are shown in Table 5.10.

Table 5.10: Total Costs for Three Different Scenarios

Scenario	Costs for Case Finding Activities		
	Low	Median	High
Baseline(S 1)	546,250	656,800	812,100
ACD alone(S 2)	212,060	316,563	382,141
PCD alone(S 3)	571,640	866,840	1064,310

5.3.2 Calculation of Expected Benefits for Each Method of Case Finding Activities

The benefits for three different scenarios were calculated as mention in Chapter 4. The detailed calculation is explained in appendix 7. These figures are shown in Table 5.11.

Table 5.11: Benefits for ACD and PCD in Three Different Endemic Areas

Endemic Area	Benefit	
	ACD	PCD
Yangon(Low endemic area)	568,245	6525,657
Mandalay(Median endemic area)	4790,852	6313,771
Magwe(High endemic area)	10886,682	15132,375

The benefits for three different scenarios were calculated and detailed calculation is explained in appendix 7. The figures are shown in Table 5.12.

Table 5.12: Benefits for Three Different Scenarios

Scenario	Benefits for Case Finding Activities		
	Low	Median	High
Baseline(S 1)	7093,903	11104,624	26019,057
ACD alone(S 2)	8028,758	12564,089	29424,693
PCD alone(S 3)	7011,416	10176,595	23544,295

From the above cost and benefit figures, benefit/cost ratios were calculated and these were expressed in Table 5.13.

Table 5.13: Benefit/Cost Ratios for Three Different Scenarios

Scenario	Benefit/Cost Ratio		
	Low	Median	High
Baseline(S 1)	12.99	16.91	32.04
ACD alone(S 2)	34.86	39.69	76.99
PCD alone(S 3)	12.27	11.74	22.12

4.4 Sensitivity Analysis

In this study sensitivity analysis is based on the percentage of early cases detected by ACD and PCD. The best combination is ACD can detect 99% early cases and the worst combination is ACD can detect 90% early cases. If ACD can detect those percentage of early cases, the percentage of PCD that can detect early cases is calculated in Appendix 8.

Following that the estimated number of early cases in three scenarios are expressed in Tables 5.14 and 5.15.

ACD 99% and PCD --% Combination

Table 5.14: Estimated Number of Early Cases Detected for Three Scenarios(Best Combination)

Scenario	Endemic Areas of the Country		
	Low	Median	High
Baseline(S 1)	774	1,400	2,292
ACD alone(S 2)	913	1,650	2,702
PCD alone(S 3)	763	1,245	2,051

Note: Estimated by secondary data from 1992 LCP new case detection

ACD 90% and PCD --% Combination

Table 5.15: Estimated Number of Early Cases Detected for Three Scenarios(Worst Combination)

Scenario	Endemic Areas of the Country		
	Low	Median	High
Baseline(S 1)	774	1,400	2,292
ACD alone(S 2)	830	1,500	2,456
PCD alone(S 3)	769	1,339	2,196

Note: Estimated by secondary data from 1992 LCP new case detection

Then, the total costs for each combination are the same as the cost for program side explained in Table 5.5. These figures are shown again in Table 5.16.

Table 5.16: Total Costs for Three Different Scenarios

Scenario	Costs for Case Finding Activities		
	Low	Median	High
Baseline(S 1)	849,585	1663,240	1465,126
ACD alone(S 2)	912,927	327,899	345,491
PCD alone(S 3)	844,736	1765,353	2121,797

The benefit if each combination is calculated by multiplying the unit cost for repairing footdrop by the number of early cases detected in each scenario. These values are expressed in Tables 18 and 19.

ACD 99% and PCD --% Combination

Table 5.17: Total Benefits for Three Different Scenarios (Best Combination)

Scenario	Benefits for Case Finding Activities		
	Low	Median	High
Baseline(S 1)	1071,216	1937,600	3172,128
ACD alone(S 2)	1125,192	2283,600	3739,568
PCD alone(S 3)	1055,992	1723,080	2838,584

ACD 90% and PCD --% Combination

Table 5.18: Total Benefits for Three Different Scenarios (Worst Combination)

Scenario	Benefits for Case Finding Activities		
	Low	Median	High
Baseline(S 1)	1071,216	1937,600	3172,128
ACD alone(S 2)	1148,720	2076,000	3399,104
PCD alone(S 3)	1064,296	1853,176	3039,264

After that the benefit/cost ratios from the program side are calculated and expressed in Table 5.20 and 5.21.

ACD 99% and PCD --% Combination

Table 5.19: Benefit/Cost Ratios for Three Different Scenarios (Best Combination)

Scenario	Benefit/Cost Ratios		
	Low	Median	High
Baseline(S 1)	1.26	1.16	2.16
ACD alone(S 2)	1.23	6.96	10.82
PCD alone(S 3)	1.25	0.98	1.34

ACD 90% and PCD --% Combination

Table 5.20: Benefit/Cost Ratios for Three Different Scenarios (Worst Combination)

Scenario	Benefit Cost Ratios		
	Low	Median	High
Baseline(S 1)	1.26	1.16	2.16
ACD alone(S 2)	1.25	6.33	9.84
PCD alone(S 3)	1.26	1.04	1.43