Chapter V

Data Analysis, Interpretation and Results

5.1 Assumptions Used for Epimodel in the Study

1. Before calculating the cost of HIV/AIDS , the required variables for the Epimodel program are estimated. According to the report from DOH, the first case of HIV positive was reported in 1988. In 1989, 323 persons were reported as HIV positive and 1034 cases in 1990. Therefore in this study, 1989 is assumed to be the year widespread HIV infection began.

2. The reference year is assumed to be 1995, as the population as well as sentinel surveillance results are taken from 1995 data.

3. The progression rate of HIV infection to AIDS is assumed to be 10 years (i.e. the same as Epimodel).

4. Table 5.1 shows the calculation of estimated HIV positive cases. Estimated % of population at risk is based on some ad hoc survey results with some modifications. As there can be a little bit more than estimates especially for ANC attendants and blood donors, 150,000 is assumed to be point prevalence in this study. According to the assignment report in 1993 by Chin, the estimated HIV cases were 150,000 to 400,000 in Myanmar. SEARO in 1995 estimated 150,000 cases again. WHO/GPA technical officer for Myanmar, Goodwin estimated 373,500 HIV cases in Myanmar in August 1995.

In this estimation, there can be double counting or overlapping of cases. For example, some CSWs can be STD patients and some IDUs can also be STD patients. In this study, it is assumed that it is only minor difference and it can therefore be ignored. (Actually some solutions should be sought for this in future studies.)

5.2 Projecting HIV/AIDS Cases

The above-mentioned variables (parameters) are put into Epimodel and new HIV and AIDS cases are projected for the next 5 years i.e. up to the year 2000. The projected results are attached as Appendix 5. Different scenarios of HIV are constructed by using different progression

rates. By using 1995 as reference year, the estimated new HIV and new AIDS cases in 2000 will be 54,250 and 19,175 respectively. If the population and population growth rate, and the prevalence growth rate of HIV are included, the projected number of new HIV and new AIDS cases in 2000 will change according to prevalence growth rates and estimated years to reach constant growth, i.e. new HIV cases will be 24,069 and new AIDS cases will be 16,531 if prevalence growth rate is 3 and years to reach constant growth is 5. The population in 1994-1995 in Myanmar is 43.92 millions and population growth rate is 1.87 % (Ministry of Planning and Economic Development, 1995).

Table 5.1 : Derivation of Assumption for HIV Point Prevalence

Risk category	Population at risk *	Estimated percentage of population at risk	At risk population size	% of HIV positive **	Estimated HIV positive
IDU: Male	15-44 year (10,418,000)	1.0 %	104,180	60 %	62,508
IDU: Females	15-44 year (10,721,000)	0.05 %	5,350	60 %	3,210
CSWs	15-44 year (10,721,000)	0.5 %	53,605	15 %	8,040
STD: Males	15-59 year (12,720,000)	5.0 %	598,000	7 %	41,900
STD: Females	15-44 year (10,721,000)	1.0 %	107,210	5.0 %	5,361
ANC attendants	15-44 year (10,721,000)	Based on Crude Birth Rate (CBR) 28/1,000 population	1,232,000	1.0 %	12,320
Military recruits	15-24 year males (4,570,000)	5.0 %	228,500	1.0 %	2,285
Blood donors	Both male and female 15-44 year age group	Based on assumption 10 units or donors per 1,000 population	439,200	1.0 %	4,392
Total					140,016

Note : * Uses 1994 population estimate (Source: Ministry of Planning and Economic Development, Myanmar

** Based on sentinel surveillance results, DOH, March 1995.

The following table 5.2 shows one of the scenarios of HIV infection, constructed by Epimodel.

Table 5.2 : Projected New HIV Cases by Different Progression Rates

Year	Progression rate 6 years	Progression rate 8 years	Progression rate 10 years	Progression rate 12 years
1989	0	0	0	0
1990	236	217	214	213
1991	8,847	8,131	8,034	8,004
1992	20,914	19,221	18,992	18,921
1993	34,724	31,913	31,532	31,415
1994	47,505	43,660	43,138	42,978
1995	57,500	52,845	52,214	52,020
1996	63,956	58,779	58,077	57,861
1997	66,871	61,485	60,724	60,498
1998	66,692	61,293	60,561	60,336
1999	64,080	58,893	58,189	57,973
2000	59,742	54,906	54,250	54,049

In the above projection, it is clear that the shorter the progression rate from HIV positive without symptoms to full blown AIDS, the higher the HIV cases. This projection is without any population factors and the prevalence growth rates.

Table 5.3 : Projected New HIV Cases by Different Years to Reach Constant Growth with the Same HIV Prevalence Growth Rate

Year	Prevalence growth rate 1.0 and year to reach constant growth 3 years	Prevalence growth rate 1.0 and year to reach constant growth 5 years	Prevalence growth rate 1.0 and year to reach constant growth 7 years	Prevalence growth rate 1.0 and year to reach constant growth 10 years
1989	0	0	0	0
1990	214	214	214	214
1991	8,034	8,034	8,034	8,034
1992	18,992	18,992	18,992	18,992
1993	31,532	31,532	31,532	31,532
1994	43,138	43,138	43,138	43,138
1995	52,214	52,214	52,214	52,214
1996	36,959	43,061	45,676	47,637
1997	23,870	35,244	40,104	43,743
1998	12,859	28,831	35,582	40,609
1999	15,145	23,409	31,898	38,128
2000	16,849	18,746	28,939	36,250

If the population size, population growth rate, HIV prevalence growth rate and estimated years to reach the constant prevalence growth are included in the projection, different HIV and AIDS cases can be projected according to the rates. It is clearly seen that higher HIV and AIDS cases will be projected as the rates become higher and the years to reach constant growth increase.

Tables 5.3 shows, with the same prevalence growth rate, the new HIV cases will increase at increasing rate first and increasing at decreasing rate later.

Tables 5.4 and 5.5 show different scenarios of HIV and AIDS cases constructed by the same rates of HIV prevalence growth with different years to reach constant growth.

Table 5.4 : Projected New HIV Cases by Different Years to Reach Constant Growth with HIV Prevalence Growth Rate being 2.0 Percent

Year	Prevalence growth rate 2.0,and 5 years to reach constant growth	Prevalence growth rate 2.0,and 7 years to reach constant growth	Prevalence growth rate 2.0,and 10 years to reach constant growth
1989	0	0	0
1990	214	214	214
1991	8,034	8,034	8,034
1992	18,992	18,992	18,992
1993	31,532	31,532	31,532
1994	43,138	43,138	43,138
1995	52,214	52,214	52,214
1996	43,361	45,890	47,787
1997	35,999	40,650	44,129
1998	30,143	36,548	41,299
1999	25,347	33,349	39,178
2000	21,364	30,931	37,708

Table 5.5 : Projected New AIDS Cases by Different Years to Reach Constant Growth with HIV Prevalence Growth Rate being 1.0 Percent

Year	Year to reach constant growth 3 years	Year to reach constant growth 5 years	Year to reach constant growth 7 years	Year to reach constant growth 10 years
1989	0	0	0	0
1990	0	0	0	0
1991	1	1	1	1
1992	46	46	46	46
1993	309	309	309	309
1994	1,127	1,127	1,127	1,127
1995	2,641	2,641	2,641	2,641
1996	4,948	4,948	4,948	4,948
1997	7,877	7,908	7,921	7,931
1998	10,878	11,088	11,178	11,245
1999	13,145	13,875	14,188	14,421
2000	14,829	16,318	16,978	17,471

5.3 Construction of Different Intervention Scenarios

If the interventions and activities against HIV/AIDS and other related risk factors will be the same as it is at present, it is assumed that the prevalence growth rate of HIV infection will be 3.0% and the years to reach the constant growth will be 10. After 1995, if the medium interventions and high interventions will be implemented, the estimated percentages of population at risk like IDU, CSW, STD patients and percentages of HIV positive in each risk group will be reduced accordingly. Without any empirical data, many more assumptions can be made to construct different scenarios. Different assumptions can give different numbers of HIV and AIDS. In future studies, these assumptions should be replaced by the actual data as much as possible. For this study, to be convenient to construct different intervention scenarios, some assumptions are made to put in Epimodel. Table 5.6 shows assumptions used in different intervention scenarios.

Table 5.6 : Assumptions Used in Different Intervention Scenarios

Intervention scenario	Prevalence growth rate of HIV infection	Year to reach constant growth
Baseline	3	10
Medium	2	7
High	1	5

By using these assumptions in the Epimodel, new, cumulative and current HIV positive cases and AIDS cases can be projected up to the year 2000. These projected cases are illustrated in the following tables 5.7-5.12.

Table 5.7 : New HIV Infections by Different Intervention Scenarios

Year	Baseline Intervention scenario	Medium Intervention scenario	High Intervention scenario
1995	52,214	52,214	52,214
1996	47,937	45,890	43,061
1997	44,516	40,650	35,244
1998	41,993	36,548	28,831
1999	40,238	33,349	23,409
2000	39,188	30,931	18,746

Table 5.7 shows the projected new HIV positive cases by different intervention scenarios. It is clearly seen that in the year 2000, more than 20,000 people can be prevented by high intervention and about 8,250 people can be prevented by medium intervention.

Table 5.8 : Cumulative HIV Infections by Different Intervention Scenarios

Year	Baseline Intervention scenario	Medium Intervention scenario	High Intervention scenario
1995	154,124	154,124	154,124
1996	202,061	200,014	197,185
1997	246,577	240,665	232,429
1998	228,570	277,212	261,260
1999	328,808	310,561	284,669
2000	367,997	341,492	303,414

Table 5.9 : Current HIV Infections by Different Intervention Scenarios

Year	Baseline Intervention scenario	Medium Intervention scenario	High Intervention scenario
1995	150,001	150,001	150,001
1996	192,990	190,943	188,113
1997	229,574	223,671	215,450
1998	260,310	249,033	223,193
1999	286,083	168,163	242,726
2000	307,691	282,039	245.153

Tables 5.8 and 5.9 show cumulative and current HIV positive cases by different interventions. The number of HIV positive cases in the year 2000 by high intervention is about 62,000 less than that according to the baseline intervention.

Table 5.10 : New AIDS Cases by Different Intervention Scenarios

Year	Baseline Intervention scenario	Medium Intervention scenario	High Intervention scenario
1995	2,641	2,641	2,641
1996	4,948	4,948	4,948
1997	7,932	7,922	7,908
1998	11,256	11,186	11,088
1999	14,466	14,219	13,875
2000	17,580	17,055	16,318

Table 5.11 : Cumulative AIDS Cases by Different Intervention Scenarios

Year	Baseline Intervention scenario	Medium Intervention scenario	High Intervention scenario
1995	4,123	4,123	4,123
1996	9,071	9,071	9,071
1997	17,003	16,993	16,979
1998	28,260	28,179	28,071
1999	42,725	42,398	41,942
2000	60,306	59,453	58,261

Table 5.12 : Current AIDS Cases by Different Intervention Scenarios

Year	Baseline Intervention scenario	Medium Intervention scenario	High Intervention scenario
1995	1,320	1,320	1,320
1996	2,474	2,474	2,474
1997	3,966	3,961	3,954
1998	5,628	5,593	5,544
1999	7,233	7,109	6,938
2000	8,790	8,528	8,159

Tables 5.10 to 5.12 show the scenarios of projected AIDS cases by different interventions. There is not much difference between the 3 scenarios because these AIDS cases reflect only the HIV positive cases before the interventions.

5.4 Cost of Treatment and Investigations or Medical Care Cost

The cost of treatment and laboratory investigations and other procedures given and performed for 40 AIDS cases admitted to Infectious Diseases Hospital, Yangon were calculated by using Lotus 123 spread sheet. The samples were taken by simple random sampling method. Every third AIDS patient admitted to the hospital was included in this study. The first case was also taken randomly.

To calculate the hospital care cost, capital cost also should be included. But because of the limitation of time to collect the necessary data, the calculation of capital cost based on the following assumptions. For the empirical studies, the same methodology can be applied to obtain the required information.

Table 5.13 : Summary of Assumptions in Calculation of Hospital Care Costs

Items	Assumptions	Calculated or obtained from
Labor cost	-20% spent for HIV/AIDS (IP) - 5% spent for HIV/AIDS (OP)	Tables 4.1 and 4.2 (or) prospective study
Material cost	-30%spent for HIV/AIDS (IP) -15% spent for HIV/AIDS (OP)	Tables 4.3, 4.4 and 4.5 Record review (or) prospective study
Building cost	-700,000 kyats for (IP) -500,000 kyats for (OP) -Useful life is 15 years each -Discount rate is 10% for both	Experts' opinions (or) record review
Building cost	-75% space for HIV/AIDS (IP) -50% space for HIV/AIDS (OP)	Tables 4.6 and 4.7 Record review (or) prospective study
Equipment cost	-100,000 kyats for (IP) - 20,000 kyats for (OP) -Useful life is 5 years each -Discount rate is 10% for both	Experts' opinions (or) record review
Equipment cost	-80% of time for HIV/AIDS (IP) -50% of time for HIV/AIDS (OP)	Tables 4.8 and 4.9 Record review (or) prospective study
Vehicle cost	-550,000 kyats for all patients -Useful life is 10 years -Discount rate is 10%	Experts' opinions (or) record review
Vehicle cost	-25% of time for HIV/AIDS (IP) -15% of time for HIV/AIDS (OP)	Tables 4.10 and 4.11 Record review (or) prospective study

The calculated results of hospital care costs are also attached as Appendix 6. The calculation of cost is based on 1994-95 prices. Unit of measurement is total annual cost and unit cost for each output are calculated accordingly. Total annual drug cost can be calculated as 73,867.8 kyats, while total laboratory cost is 15,101 kyats and total medical care cost (MCC) which is equivalent to the summation of total drug cost and total laboratory (including radiology cost) is 88,968.8 kyats. There are 60 admissions during 1 year resulting in an average admission per patient per year of 1.5, unit cost per admission as 1,482.81 kyats and unit cost per in-patient day as 79.08 kyats. Average duration of stay per patient per admission is found to be 18.75 days. The longest duration of stay is 112 days per admission and the shortest is 2 days. The oldest patient is found to be 52 years old and the youngest is 11 years old in this study. Average age is 32.4 years.

Summary of the calculation of the cost of treatment and cost of investigations (medical care cost) is shown in Table 5.14.

Table 5.14 : Summary of Medical Care Cost from the Samples (1994-95 Price)

Category or item	Results	Unit of measurement
Total patients	40	persons
Total males	35	persons
Total females	5	persons
Total admissions	60	admissions
Total in-patient days	1125	days
Average duration of stay per admission	18.75	days
Average admission per patient	1.5	days
The oldest	50	years
The youngest	11	years
The longest stay per admission	112	days
The shortest stay per admission	2	days
Maximal admissions per patient	7	times
Total drug cost	73,867.80	kyats
Total cost of (laboratory) investigations	15,101.00	kyats
Unit medical care cost (MCC)	88,969.80	kyats
Unit (MCC) cost per admission	1,482.81	kyats
Unit (MCC) cost per in-patient day	79.08	kyats

In these calculations, some of the market prices are hypothetical, but they are very close to the real market prices in Yangon in 1994-1995. Cost of drugs for tuberculosis is found to be 44.75 % of total drug cost.

Table 5.15 : Recurrent Budget Allocated for IDH in 1994-95 (kyats)

1. Salaries	907,000
2. Allowance	7,830
3. Traveling Allowance	7,080
4. General Labor	39,000
5. Tax	4,660
6. Transport	8,400
7. Stationery	12,000
8. Gasoline	20,000
9. Postage	10,000
10. Electricity	60,000
11. Newspaper	1,200
12. Uniform	12,520
13. Specific Services	150,000
14. Catering	67,100
15. Printing	1,000
16. Maintenance(Equipment)	45,360
17. Maintenance (Building)	231,260
18. Maintenance (Vehicle)	18,000
19. Others	1,000
20. Total Recurrent Budget	1,603,410

Source : IDH, Yangon, Myanmar

These recurrent budget items are categorized into labor cost and material cost. In this study, items 1, 2, 3, 4 and 12 are categorized as labor cost and the rest will be material cost. Total labor cost is 973,430 kyats in 1994-95 fiscal year and total material cost is 629,980 kyats. Unit of measurement is total annual for all patients.

Calculation of labor cost for HIV/AIDS patients

After calculating the labor cost for HIV/AIDS in-patients and out-patients according to the Tables 4.1 and 4.2, it is assumed that 20% and 5% of total labor costs of the hospital are spent for HIV/AIDS in-patients and out-patients respectively in this study.

Total labor cost of HIV/AIDS in-patients = 973,430 × 0.20
= 194,686 kyats
Total labor cost of HIV/AIDS out-patients = 973,430 × 0.05
= 48671.5 kyats

Calculation of material cost for HIV/AIDS patients

After calculating the material costs for the HIV/AIDS patients according to the tables 4.3 and 4.4, it is assumed that 30% and 15% of total material costs of the hospital (excluding drugs and investigations) are spent for HIV/AIDS in-patients and out-patients respectively in this study.

Total material cost of HIV/AIDS in-patients = 629,980 × 0.30
= 188,994 kyats
Total material cost of HIV/AIDS out-patients = 629,980 × 0.15
= 94,497 kyats

Calculation of building cost for HIV/AIDS patients

The current cost of the buildings used for HIV/AIDS in- patients and out-patients are assumed to be 700,000 and 500,000 kyats respectively. Their useful life is assumed to be 15 years each. The World Bank discount rate of 10% is used to calculate the annual cost the building.

Annual cost of in-patient ward = 700,000 ÷ Annualization factor
= 700,000 ÷ 7.606
= 92,032.6 kyats

where annualization factor for useful life 15 years and discount rate 10% is 7.606.

Annual cost of out-patient ward = 500,000 ÷ Annualization factor
= 500,000 ÷ 7.606
= 65,737.6 kyats

where annualization factor for useful life 15 years and discount rate 10% is 7.606.

Supposing 75% of the building space is used for HIV/AIDS in-patients and 50% of the respective building is used for HIV/AIDS out-patients:

Annual building cost for HIV/AIDS in-patients = 92,032.6 × 0.75
= 69,024.5 kyats
Annual building cost for HIV/AIDS out-patients = 65,737.6× 0.50
= 32,868.8 kyats

In OPD, if the room is shared with other cases the proportion of share has to be multiplied also to get the final annual building cost.

Calculation of equipment cost for HIV/AIDS patients

The current costs of the equipment used for all in- patients and out-patients are assumed to be 100,000 and 20,000 kyats respectively. Their useful life is assumed to be 5 years each. The World Bank discount rate of 10% is used to calculate the annual cost of the building.

Annual cost of equipment for in-patients =100,000 ÷ Annualization factor
=100,000 ÷ 3.791
=26,378.3 kyats

where annualization factor for useful life 5 years and discount rate 10% is 3.791.

Annual cost of equipment for out-patients = 20,000÷ Annualization factor
= 20,000 ÷ 3.791
= 5,275.7 kyats

where annualization factor for useful life 5 years and discount rate 10% is 3.791.

Supposing 80% of the time of the equipment is used for HIV/AIDS in-patients and 50% of the respective equipment is used for HIV/AIDS out-patients:

Annual equipment cost for HIV/AIDS in-patients = 26,328.3× 0.80
= 21,062.7 kyats
Annual equipment cost for HIV/AIDS out-patients = 5,275.7× 0.50
= 2,637.9kyats

Calculation of vehicle cost for HIV/AIDS patients

The current cost of the vehicle used for all in- patients and out-patients is assumed to be 550,000 kyats . Their useful life is assumed to be 10 years. The World Bank discount rate of 10% is used to calculate the annual cost the building.

Annual cost of vehicle for all patients = 550,000 ÷ Annualization factor
= 550,000 ÷ 6.145
= 89,503.7 kyats

where anualization factor for useful life 10 years and discount rate 10% is 6.145.

Supposing 25% of the time of the vehicle is used for HIV/AIDS in-patients and 15% of the respective vehicle is used for HIV/AIDS out-patients:

Annual vehicle cost for HIV/AIDS in-patients = 89,503.7 × 0.25
= 22,375.9 kyats
Annual vehicle cost for HIV/AIDS out-patients= 89,503.7 × 0.15
= 13,425.5kyats

Calculation of total capital cost and routine service cost for HIV/AIDS patients

Total Capital Cost (for HIV/AIDS -IP) (Depreciated) = Building cost (Depreciated) + Equipment cost (Depreciated) + Vehicle cost (Depreciated)
= 69,024.5 + 21,062.7 + 22,375.9
= 112,463.1 kyats

Routine Service Cost (for HIV/AIDS -IP) = labor cost + material cost + capital cost (depreciated)
= 194,686 + 188,994 + 112,463.1
= 496,143.1 kyats

Total Capital Cost (for HIV/AIDS -OP) (Depreciated) = Building cost (Depreciated) + Equipment cost (Depreciated) + Vehicle cost (Depreciated)
= 32,868.8 + 2,637.9 + 13,425.5
= 48,932.2 kyats

Routine Service Cost = labor cost + material cost + capital cost
(for HIV/AIDS -OP) (depreciated)
= 48,671.5 + 94,497 + 48,932.2
= 192,100.7 kyats

Total number of HIV/AIDS out-patient visits is 1,320 and admissions is 119 in 1994-95. Total in-patient days being 2,218, give average in-patient day as 18.64 days. (These are the hypothetical data). Unit cost of RSC for out-patients and in-patients are calculated and the results are given below.

RSC per OPD visit = 192,100.7 ÷ 1320
= 145.53 kyats
RSC per admission = 496,143 ÷ 119
= 4,169.27 kyats
RSC per in-patient day = 496,143 ÷ 2,218
= 223.69 kyats

Full cost is determined by the summation of RSC and MCC.

Full Cost (FC) = RSC + MCC
per admission per admission per admission
= 4,169.27 + 1,482.81
= 5,652.08 kyats

FC/IPD days = RSC/IPD days + MCC/IPD days
= 223.69 + 32.92
= 256.61 kyats

In this study, total MCC for OPD is assumed to be 30 % of that of IPD, i.e. MCC (OPD) = MCC (IPD) × 0.30
= 88,969.8 × 0.30
= 26,690.94 kyats
And then, MCC per OPD visit will be as follow:
MCC per OPD visit = 26,690.94 ÷ 1320
= 20.22 kyats

Full cost is determined by the summation of RSC and MCC.

Full Cost (FC) = RSC + MCC
(OPD) visit (OPD) visit (OPD) visit
= 145.53 + 20.22
= 165.75 kyats

From the above calculations, it is found that full costs for both in- and out-patients are quite high. This is because of RSC (RSC = LC + MC + CC): in the case of in-patient, RSC is about 3 times higher than MCC; and in OPD, RSC is 7 times higher. As RSC is fixed cost, the unit cost will be reduced when the number of patients, the number of visits, the number of admissions and the duration of stay in the hospital increase. In the calculation of MC, cost of drugs and the cost of investigations are not included.

Table 5.16 : **Hospital Care Cost for HIV/AIDS In-patients in IDH, (1994-95)**

Cost items	Cost (kyats)
Total drug cost for in-patients	73,867.80
Total laboratory cost for in-patients	15,101.00
Total MCC for in-patients	88,969.80
Total labor cost for in-patients	194,686.00
Total material cost for in-patients	188,994.00
Total building cost for in-patients	69,024.50
Total equipment cost for in-patients	21,062.70
Total vehicle cost for in-patients	22,375.90
Total capital cost for in-patients	112,463.10
MCC per admission	1,482.81
MCC per in-patient day	79.08
RSC for in-patients	496,143.10
RSC per admission	4,169.27
RSC per in-patient day	223.69
Full cost per admission	5,652.08
Full cost per in-patient day	256.62
Full cost for all HIV/AIDS in-patients	585,112.90

From this calculation of hospital care cost, it is found that total MCC is only 15.2% of the full cost for all HIV/AIDS in-patients while total LC, MC and CC are 33.3%, 32.5% and 19.2% respectively. If the number of HIV/AIDS in-patients increases, the % of MCC will increase and The % of other costs will decrease as these costs are fixed costs.

Table 5.17 : **Hospital Care Cost for HIV/AIDS Out-patients , (1994-95)**

Cost items	Cost (kyats)
Total drug cost for out-patients	22,158.54
Total laboratory cost for out-patients	4,530.30
Total MCC for out-patients	26,690.94
Total MCC per out-patient visit	20.22
Total labor cost for out-patients	48,671.50
Total material cost for out-patients	94,497.00
Total building cost for out-patients	32,868.80
Total equipment cost for out-patients	2,637.90
Total vehicle cost for out-patients	13,425.50
Total capital cost for out-patients	48,932.20
RSC for out-patients	192,100.70
RSC per OPD visit	145.53
Full cost per out-patient visit	165.75
Full cost for all HIV/AIDS out-patients	218,791.64

From the calculation of hospital care cost for out-patients, total MCC is only 12.2% and total MC plays a major role as it is 43.2% of full cost for all HIV/AIDS out-patients.

Calculation of Cost for Prevention of HIV/AIDS

This calculation is based on the assumption that HIV point prevalence is 150,000 in 1995. (Labor cost and capital cost for prevention of HIV/AIDS are assumed to be already included in hospital cost calculation.) All the data used in this calculation are hypothetical but all these data are set after discussion with the responsible personnel from CHEB, DOH.

1. For the pre-screening counseling, 3 guide books are necessary to be distributed to each of the 320 townships all over the country, and the extra 40 books are for the central level.

2. For the screening, it is assumed that all the 150,000 HIV positive cases can be detected by screening. The unit cost for the ELISA test is assumed to be round about US $ 1.00 to 1.50 which is about 150 kyats in the market. The cost of Western Blot test is assumed to be 2,000 kyats, although it can be much more than this cost. The higher the costs of the screening tests, the higher the total cost of prevention it will be.

3. For this post-screening counseling, it is assumed that each HIV positive person will come 2 or 3 times in a year to the counselors, and one pamphlet will be distributed each time to the patient. Pamphlets about how to care the HIV/AIDS patients at home will be distributed to each family.

Table 5.18 : Calculation of Cost for Prevention of HIV/AIDS (kyats)

No.	Activities/ Interventions	Cost items	Amount used	Unit cost	Total cost
1.	Pre-screening counseling	-Guide books for counselors	1,000	50	50,000
2.	Screening	- ELISA test	150,000	150	22,500,000
		- ELISA test	142,500	150	21,375,000
		- Western Blot	7,500	2,000	15,000,000
3.	Post-screening counseling	- Pamphlets for HIV positive persons	300,000	5	1,500,000
		- Pamphlets for family	150,000	5	750,000
4.	Condom distribution	- Condoms	150,000	20	3,000,000
		- Condom utilization instruction leaflet	150,000	2	300,000
5.	Medical care	- Hand books for health personnel	20,000	50	1,000,000
6.	Message development	- Development of message for 5 kinds of material	5	10,000	50,000
		- Pre-testing	5	5,000	25,000
7.	Training	- Training of trainers	500	300	150,000

4. For condom distribution, a single condom together with condom utilization instruction leaflet will be distributed to each of the patients. Free condom distribution program is another separate program and it is not included in this study.

5. For the medical care, handbooks about the information of HIV/AIDS including universal precaution, instructions for health education and diagnosis and treatment of symptomatic HIV and AIDS. Handbooks will be distributed to all the public doctors and nurses.

6. For development of 5 kinds of message, and pre-testing are included in the calculation of cost.

7. For the training of trainers, the perdium for each trainer is assumed to be 300 kyats.

Total cost of prevention of spread of HIV infection from HIV positive persons is estimated as 65,700,000 kyats for 1995. Out of this 65.7 million kyats, 58.875 million or 89.61% will be from screening. If pre-screening and screening portions are excluded, cost of prevention will be 6,775,000 kyats. Unit cost then will be 45 kyats in 1995.

For all the calculations, capital cost and recurrent cost (labor cost and material cost) has to be calculated as in the previously mentioned models, and the resulting costs have to be added up.

In this study, to project the cost in the Epimodel, the following assumptions are made.

1. The estimated HIV point prevalence is 150,000 cases.
2. The reference year is 1995.
3. The progression rate from HIV to AIDS is 10 years.
4. The widespread of HIV infection began in 1989.
5. HIV infection will not stop transmission after the reference year.
6. The population in 1995 is 43,920,000.
7. The population growth rate is 1.87.
8. All projected HIV positive cases (100%) can be detected by screening tests.
9. All projected HIV positive cases (100%) will come for counseling.
10. Unit cost for prevention per new HIV patient (with screening) is 438 kyats and units per user is 1 time.
11. Unit cost for prevention per new HIV patient (without screening) is 45 kyats and units per user is 1 time.
12. All Projected AIDS patients (100%) will come to the hospitals and get treatment.
13. AIDS in Epimodel means both symptomatic HIV and full blown AIDS cases.
14. Unit cost per admission of AIDS in-patients is 5652 kyats and units per user is 1.5 times.
15. Unit cost per AIDS out-patients is 165 kyats and units per user is 8 times.
16. The price of the drugs and the reagents remains constant in other words there is no inflation during the next 5 years.
17. There is no major change in RSC during the next 5 years.

18. LC and CC for prevention is already included in RSC for medical care.

With all the above-mentioned variables and assumptions, the total costs or economic burdens of HIV/AIDS for different intervention scenarios are calculated by Epimodel. The results are described as follows (Table 5.19).

Table 5.19 : Total Provider Cost or Economic Burden of HIV/AIDS for Baseline Intervention Scenario (1,000 kyats)

Cost items	1996	1997	1998	1999	2000
Prevention including screening	20,997	19,498	18,393	17,625	17,165
Prevention without screening	2,158	2,004	1,890	1,811	1,764
Hospital care for HIV/AIDS in-patients	41,952	67,248	95,430	122,640	149,047
Hospital care for HIV/AIDS out-patients	6,532	10,471	14,858	19,095	23,207
Total cost including screening	69,481	97,217	128,681	159,360	189,419
Total cost without screening	50,642	79,723	112,178	143,546	174,018

Cost for HIV/AIDS in-patients plays a major role in the total cost of HIV/AIDS in Myanmar. In 1996, cost for in-patient is 60.38 % and 82.84 % of total cost with and without screening respectively in the baseline intervention scenario. But it increases to 78.69 % and 85.65 % in the year 2000 because at that time there will be more full blown AIDS cases as the progression time of the disease averages 10 years. According to the above projections, the total cost will be 174 to 189 million kyats in the year 2000. It is about 8.5 % of the total health expenditure for 1994-95. This cost does not include the cost for prevention of HIV to the general public which is also very high. WHO estimated that total cost for preventive strategy-specific resource requirements was US $ 20.8 millions in 1990 in Myanmar. (WHO, 1994).

Similarly calculations can also be performed for other intervention scenarios and the results can be compared with each other.

Table 5.20 : Total Provider Cost or Economic Burden of HIV/AIDS for Medium Intervention Scenario (1,000 kyats)

Cost items	1996	1997	1998	1999	2000
Prevention including screening	20,100	17,805	16,008	14,607	13,548
Prevention without screening	2,065	1,830	1,645	1,501	1,392
Hospital care for HIV/AIDS in-patients	41,952	67,161	94,832	120,549	144,594
Hospital care for HIV/AIDS out-patients	6,532	10,457	14,745	18,769	22,513
Total cost including screening	68,584	95,423	125,585	153,925	180,655
Total cost without screening	50,549	79,448	111,222	140,819	168,499

Table 5.21 : Total Provider Cost or Economic Burden of HIV/AIDS for High Intervention Scenario (1,000 kyats)

Cost items	1996	1997	1998	1999	2000
Prevention including screening	18,861	15,437	12,628	10,253	8,211
Prevention without screening	1,938	1,586	1,298	1,054	844
Hospital care for HIV/AIDS in-patients	41,952	67,041	94,004	117,636	138,347
Hospital care for HIV/AIDS out-patients	6,532	10,438	14,636	18,316	21,541
Total cost including screening	67,345	92,916	121,268	146,205	168,099
Total cost without screening	50,422	79,065	109,938	137,006	160,732

Tables 5.19 to 5.21 show total provider cost or economic burden of HIV/AIDS in different intervention scenarios. In all intervention scenarios, hospital care costs for both IP and OP play major roles and they are increasing year after year since the number of AIDS cases, which reflect the number of HIV positive cases in the last 10 years, increases. This shows that the planners should prepare for the health needs of these AIDS cases. Hospital care cost for HIV/AIDS in-patients as a proportion of the total cost (including screening cost) is 60.4% in 1996, it increases every year and becomes 78.7% in the year 2000. For HIV/AIDS out-patients, it is 9.4% in 1996 and becomes 12.2% in the year 2000. Total hospital care cost in the year 2000 will be 90.9%. If screening is not included this figure % will increase up to 99%. This is very important projection since not all the total HIV/AIDS cases need to be treated at hospitals; home care and community based health care should be considered and promoted as the burden for taking care of these patients is very big for the public sector.

Table 5.22 : Total Provider Cost or Economic Burden of Hospital Care for HIV/AIDS In-patients (1,000 kyats)

Scenarios	1996	1997	1998	1999	2000
Baseline Intervention scenario	41,952	67,248	95,430	122,640	149,047
Medium Intervention scenario	41,952	67,161	94,832	120,549	144,594
High Intervention scenario	41,952	67,041	94,004	117,636	138,347

Table 5.23 : Total Provider Cost or Economic Burden of Hospital Care for HIV/AIDS Out-patients (1,000 kyats)

Scenarios	1996	1997	1998	1999	2000
Baseline Intervention scenario	6,532	10,471	14,858	19,095	23,207
Medium Intervention scenario	6,532	10,457	14,745	18,769	22,513
High Intervention scenario	6,532	10,438	14,636	18,316	21,541

Tables 5.22 and 5.23 show total hospital care costs for HIV/AIDS in and out-patients by different scenarios for the next 5 years. From these results, these costs decrease if more interventions are implemented. But the cost of the interventions should also be considered in order to study cost effectiveness of these interventions.

Table 5.24 : Grand Total Provider Cost or Economic Burden (with Screening) of HIV/AIDS (1,000 kyats)

Scenarios	1996	1997	1998	1999	2000
Baseline Intervention scenario	69,481	97,217	128,681	159,360	189,419
Medium Intervention scenario	68,581	95,423	125,585	153,925	180,665
High Intervention scenario	67,345	92,916	121,268	146,205	168,009

Table 5.25 : Grand Total Provider Cost or Economic Burden (without screening) of HIV/AIDS (1,000 kyats)

Scenarios	1996	1997	1998	1999	2000
Baseline Intervention scenario	50,642	79,723	112,178	143,546	174,018
Medium Intervention scenario	50,549	79,448	111,222	140,819	168,499
High Intervention scenario	50,422	79,065	109,938	137,006	160,732

Tables 5.24 and 5.25 show the grand total provider costs or economic burden of HIV/AIDS, with and without screening, by different intervention scenarios. Given the assumptions, the total provider costs for HIV/AIDS with and without screening are 644.2 million kyats and 560 million kyats respectively for the next 5 years in baseline interventions. The decrease in these costs should be studied in line with the cost of interventions.

Each and every result from these calculations has its own meaning and also has policy implications. All of these depend on the

interpreters or those who use it. For example, if the total provider cost for prevention is very high, it is not difficult to find out which cost item is the highest out of the total. In this study, cost for screening is the highest. By analyzing these results, the planners can consider how to adjust the budget to achieve the objectives.

In this study, the components of cost are assumed to be the same in each intervention activity in each scenario in each year, without change in the next 5 years.

In this chapter, based on the data collected from IDH, unit costs for the treatment and investigative procedures for AIDS patients are calculated. Projection of HIV point prevalence is based on the methods used by WHO technical officer for GPA/Myanmar with some modifications and different assumptions. The data used for the estimation of HIV positive cases in each risk group based on the reports from the sentinel surveillance system in 19 townships. Since there are 320 townships all over the country, whether these reports are sufficient or not for the estimation of HIV cases has to be re-considered. Estimated % of population at risk is based on some ad hoc studies conducted for each group and also with some modifications and assumptions.

Projection of the total cost or economic burden of the government for the treatment and prevention of HIV/AIDS is also based on many assumptions. Changes in only one assumption can change the results. It means that, making assumptions is very important if actual data cannot be obtained. The results of analyses are sensitive to changes in the values of the variables. The quality of the results depends and reflects the quality of the variables obtained and the justifications of the assumptions made.