

CHAPTER 3

LITERATURE REVIEW



The Royal Government of Cambodia affirms its mission, for year 1999 – 2003, to improve health and well-being of all Cambodian. It aims to meet the critical needs of the people, especially health promotion, preventive and curative health care – particularly for the poor and those living in rural areas, where 85% of people live.

The mission will pay attention to the special needs for those who have suffered as a result of conflict, especially widows and orphans, the disabled, displaced and homeless persons and returning refugees. It further aims to monitor, coordinate and distribute equitably the significant external resource inputs being made in the health sector by the international community, as well as improve efficiency of its use.

The Royal Government has identified the Ministry of Health as one of the pilot ministries for public administrative reforms which, in this case, will cover the strengthening of health management and planning, health information system, human resource development and personnel management, health care financing and resource coordination.

3.1 Economic Evaluation

Jefferson, in 1996, stated that economic evaluation is based on of scarcity of resources. So it is necessary to make choice or making decisions on how to allocate resources. Economic evaluation will come into play when such decisions are made. In economics, there are two types of choice to be made; technical efficiency and allocative efficiency.

In 1998, Drummond wrote that it is imperative to note that although economic evaluation provides important information to decision-makers, it addresses only one dimension of health care programme decisions. Economic evaluation is most useful and appropriate when preceded by three other types of evaluations, each of which addresses a different question:

- 1) *Can it work?* Does the health procedure, service, or programme do more good than harm to people who fully comply with the associated recommendations or treatments? This type of evaluation is concerned with *efficacy*.

- 2) ***Does it work?*** Does the procedure, service, or programme do more good than harm to those people to whom it is offered? This form of evaluation, which considers both the efficacy of a service and its acceptance by those to whom it is offered, is the evaluation of ***effectiveness*** or usefulness.
- 3) ***Is it reaching those who need it?*** Is the procedure, service, or programme accessible to all people who could benefit from it? Evaluation of this type is concerned with ***availability***.

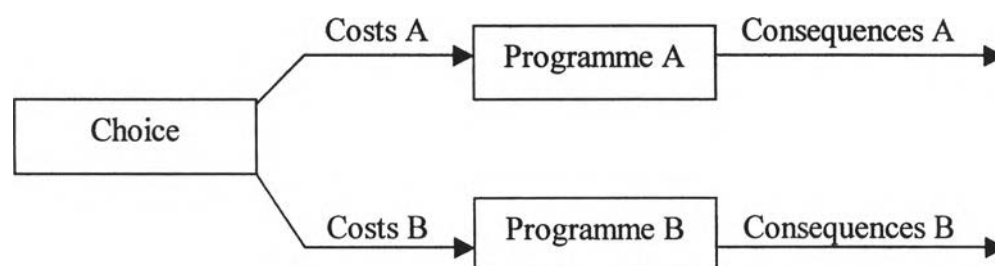
Economic analysis has two characteristics regardless of the activities (including health services):

- 1) It deals with both the inputs and outputs, sometimes called costs and consequences, of activities.
- 2) It concerns with choices. Because resources are scarce, and our consequent inability to produce all desired outputs, necessitates that choices must, and will, be made.

These two characteristics of economic analysis lead us to define economic evaluation as the comparative analysis of alternative courses of action in terms of both their costs and consequences. The basic tasks of any economic evaluation are to identify, measure, value, and compare the costs and consequences of the alternatives being considered (see Figure 3.1).

The diagram illustrates that an economic evaluation is usually formulated in terms of a choice between competing alternatives. Here we consider a choice between two alternatives, A and B. The comparator programme A, the programme of interest, does not have to be an active programme. It could be doing nothing. Even when two active programs are being compared, it may still be important to consider the baseline of doing nothing, or a low cost option. This is because the comparator (Programme B) may itself be inefficient. The general rule when assessing programme A and B is that the difference in costs is compared with the difference in consequences, in an incremental analysis.

In fact, these two characteristics of economic analysis may be employed to distinguish and label several evaluation situations commonly encountered in the health care evaluation literature (see Table 3.1).

Figure 3.1 Economic Evaluation Diagram

Note: Economic evaluation always involves a comparative analysis of alternative courses of action.

Table 3.1 Distinguishing Characteristics of Health Care Evaluation

Are both costs (inputs) and consequences (outputs) of the alternatives examined?				
		NO	YES	
Is there comparison of two or more alternative?	NO	Examines only consequences	Examines only costs	
		1: Partial Evaluation		2: Partial Evaluation
	1A: Outcome description	1B: Cost description	Cost-outcome Description	
	YES	3: Partial Evaluation		4: Full Economic Evaluation
3A: Efficacy or effectiveness evaluation		3B: Cost analysis	-Cost-Minimization Analysis -Cost-Effectiveness Analysis -Cost-Utility Analysis -Cost-Benefit Analysis	

Sources: Drummond; Brien; Stoddart; and Tarrance (1998).

In cells 1 and 2 of Table 3.1, there is no comparison of alternatives (i.e. a single service or programme is being evaluated). The large literature on cost of illness, or burden of illness falls into category 1. These studies describe the cost of disease to society, but are not full economic evaluation. In cell 2, both outcomes and costs of a single service or programme are described and thus the evaluation is termed a cost-outcome description. Cell 3 contains evaluation situation in which two or more alternatives are compared, but in which the costs and consequences of each alternative are not examined simultaneously (Drummond et al. 1998).

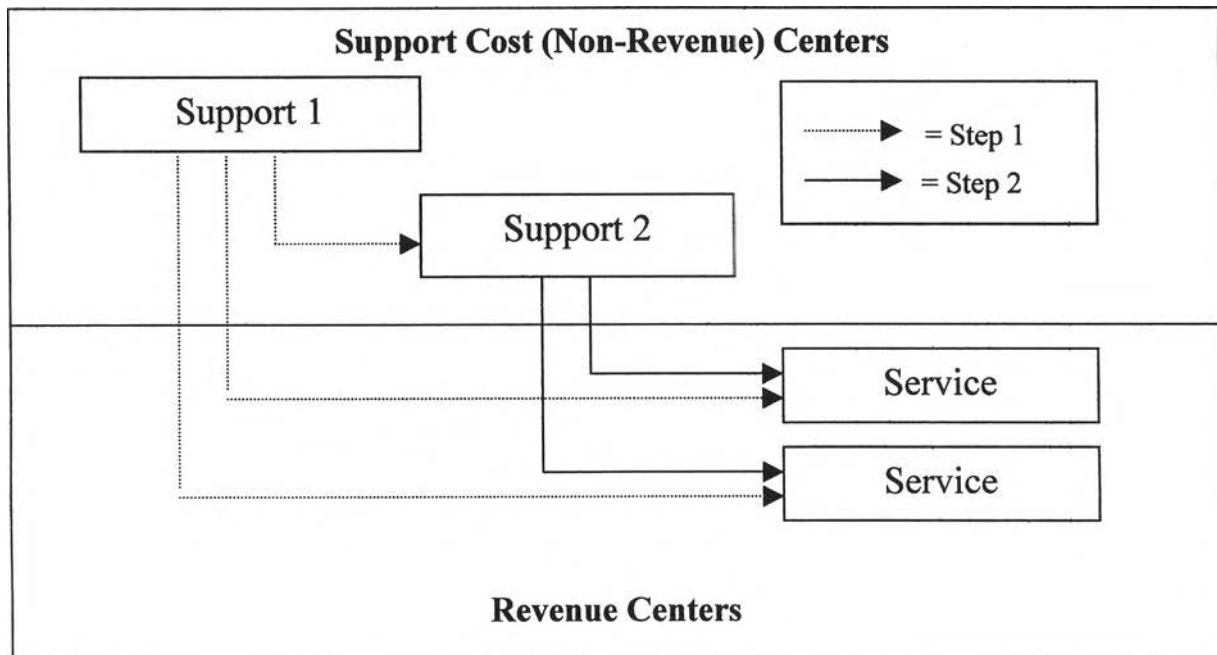
Finally, the three cells mentioned above are called partial evaluations, which do indicate that they will not allow us to answer efficiency questions. For this we need studies, employing the techniques listed in cell 4 under *full economic evaluation* (Drummond et al. 1998).

3.2 Hospital Cost Allocation

Finkler and Ward (1999) stated that cost allocation refers to taking costs from one area or cost objective and allocating them to others. There are two primary types of cost allocation that concern us. The first is the allocation of indirect costs within a department to specific individual patients. The second type of allocation is from one department or cost center to another. The goal of costs allocation is to associate costs as closely as possible with the patients who cause them to be incurred. One of the cost allocation methods is Step-Down Allocation that requires the organization to allocate all of the cost of the non-revenue cost center to all other cost centers, both revenue and non-revenue (see Figure 3.2).

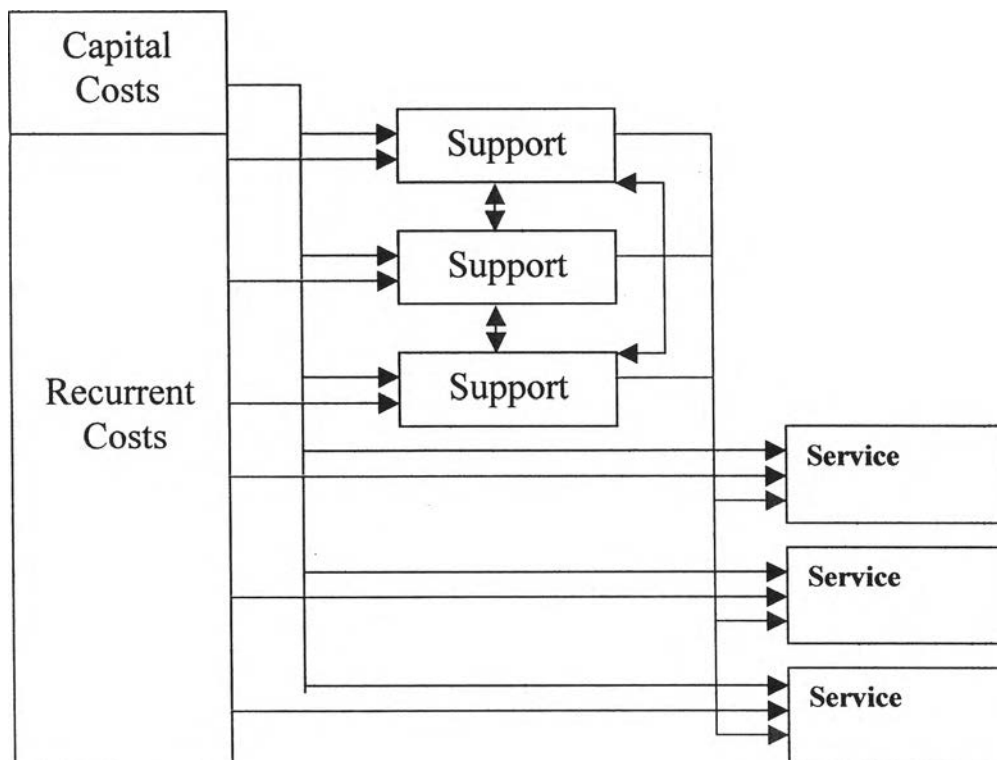
The hospital cost allocation is an analysis tool that policy makers, hospital administrators, and financial and department managers can use to improve hospital performance. It can help them in making decision about resource allocation within or among hospitals. It is particularly useful for managers wanting to increase the effectiveness and efficiency of hospital services, improve the quality of these services, or enhance their financial sustainability (Finkler and Ward 1999). Figure 3.3 shows the step down allocation method (partial adjustments for interaction of overhead departments). The overhead departments are allocated in a stepwise fashion to all of the remaining overhead departments and to the final cost centers (Drummond et al. 1998).

Figure 3.2 Allocating Costs from Non-revenue Centers to Revenue Centers



Source: Finkler and Ward (1999).

Figure 3.3 Schematic Illustration of Cost Allocations



3.3 Concept of Effectiveness

Gold et al. (1996) stated that perhaps the simplest definition is that “health services are considered to be effective to the extent that they achieve health improvements in real practice settings”. Thus, effectiveness must be distinguished from two closely related concepts:

- *Efficacy*, which denotes how well the intended objectives are realized in ideal setting in which services or treatments are developed and initially tested, and
- *Appropriateness*, which reflects a broader range of issues considered in deciding *whether an intervention should or should not be done*, including assessments of the extent to which the expected health benefit exceeds the expected negative consequences of the intervention, as well as considerations of acceptability, feasibility, and costs (Park, 1986; Leape, 1990, Leap and Brook, 1990).

There are a number of indicators or measures of effectiveness that reflect intermediate changes rather than final outcomes. Even when the final health status data are not available, these intermediate measures can usually give some indication of the results (Creese and Parker, 1994). The measure of effectiveness must respect to the objective of the intervention or program and measuring changes in health status is a difficult and expensive task. Thus it is suitable to focus on service intermediate outputs rather than final ones.

To get the effectiveness measure comparable between alternatives, it is not very helpful to use an outcome measure, which is different in quality for the alternatives, particularly if these have different implications for health impact. The data on quality will indicate whether the link between the intermediate outcomes we have chosen and the health impact is likely to be the same for each of the options. If there is a little difference in quality, then there is no problem to use the intermediate outcome. If the difference appears to be significant, we could choose an outcome measure closer to the health impact or redefine our outcome measure so that it includes some of the quality dimensions (Creese and Parker).

Because the quality of treatment is important, we should consider using effectiveness measures that specify a certain quality of output, such as “patients treated effectively”. We should also check whether the patients are comparable, include seriousness or case mix, they are similar?

Thus, it is critical that the analysis consider all events that *change the health of the patient* or that *generate costs*. Since CEA is a comparative analysis, similar care must be taken to describe the events and health consequences deriving from the alternative to which the intervention or project (i.e. New Deal) is being compared. Because CEA summarizes what happens on average, we are not so much here interested in the chain of events that occurs in the unique of life of one patient, and the intermediate outcome of the New Deal would be used as for drawing inference about the health states (final outcomes).

Kamol-Ratanakul (2002) expressed that the term “*effectiveness*” refers to whether medical care *does work*. So, effectiveness is the second result of any intervention after *Efficacy* defines whether or not a specific type of medical care *can work*. When outcome or benefits cannot be measured in money term, like health effect, it is the case of effectiveness analysis. Effectiveness measures are stated in terms of health outcomes, include:

- Intermediate outcome such as services volume or service utilization rate, and
- Long-term outcome such as year of life gained, days of morbidity saved, or percentage reduction in mortality rates or disease incidence, etc.

The choice of effectiveness measure should relate to a final health output such as life-years gained, or relate to an intermediate output such as cases found or patients appropriately treated. So, the intermediate output themselves have some value because correct diagnosis of cases and the consequent confirmation of true negatives can provide reassurance both to the patient and to the doctor, and therefore may have a value in their own right quite apart from the health effects resulting from subsequent treatment (Drummond et al, 1998).

Drummond (1998) said that the intervention with the lower cost-effectiveness ratio is preferred, that is, the alternative that takes fewer resources to achieve the same or greater health benefits. *Effectiveness is a measure of the extent to which objectives are achieved* (Creese and Parker). Creese also stated that quality of treatment is very important that should be included into effectiveness measures to indicate the link between the intermediate outcome chosen and the health impact. So, choose an outcome measure closer to the health impact is very important or redefine the outcome measure so that it includes some of the quality dimensions. Furthermore, the intervention with the greatest effectiveness is the best although it might also be more expensive and less efficient (Creese and Parker).

One way to estimate the effectiveness is to measure the change in an indicator over the period we are interested in. This is valid only if we have reason to believe that the change is a result of the resource inputs to our program. To measure change in an indicator of effectiveness we need to know its value before and after the measurement period (Creese and Parker). So, measure of effectiveness has to be quantitative. It could be in figure or in proportion. To define effectiveness as proportion, we take outputs (or consequences) used as numerator and target population (or target of the program) used as denominator and multiply by 100 as follows:

$$\text{Effectiveness} = \frac{\text{Output}}{\text{Target population}} \times 100$$

3.4 Cost-Effectiveness Analysis (CEA)

Drummond et al. (1998) defined that CEA is one form of full economic evaluation where both the costs and consequences of health programs or treatments are examined. In order to carry out CEA, an organization must set one unambiguous objective of the intervention and therefore a clear dimension along which effectiveness can be assessed.

One role of CEA is to provide guidance in determination of the appropriateness of an intervention given what is known about its effectiveness and cost. The result of CEA that we obtain is the cost per unit of outcome or the unit of outcome per dollar spent. For example, a CEA may tell us the number of dollars spent per life saved from a treatment program.

Gold et al. (1996), CEA requires a numerical estimate of the magnitude of the effects of an intervention on health outcome. The denominator of a cost-effectiveness ratio (CE ratio) is the difference in effectiveness between an intervention and the alternative to which it is being compared (the net effect), just as the numerator is the difference in cost between the two (the net cost).

Over (1991) stated that CEA is a technique for identifying the most effective use of limited resources. CEA can be a powerful tool for choosing between different techniques for achieving the same narrowly defined goal. Under this approach, effectiveness measures are stated in terms of health outcomes, such as years of life gained, days of morbidity saved, or percentage reduction in mortality rates or disease incidence. The costs are related to these consequences or outcomes.

CEA summarizes all program costs into one number, all program benefits (the effectiveness) into a second number, and it prescribes rules for making decisions based on the relation between the two. The method is particularly useful in the analysis of prevention health programs, because it provides a mechanism for comparing efforts addressed to different diseases and population. The intervention with the lower cost-effectiveness ratio is preferred, that is, the alternative that takes fewer resources to achieve the same or greater health benefits.

A comparison measure that can be used when outcome measurements are not available or are considered unreliable would be a cost-efficiency or least-cost indicator. This approach calculates the costs to deliver a unit of health care. Under the assumption that the health care units delivered under alternative methods of intervention would result in the same health improvement outcome, the one with the lower delivery cost per health care unit is preferred (Overholt and Saunders, 1996).

Kamol-Ratanakul (2002) defined that four types of CEA could be examined:

1. Cost per Outcome
2. Outcome per Cost
3. Marginal Cost per Marginal Outcome
4. Incremental Cost per Incremental Outcome

Jack (1999) revealed that given the choice of output measure, the main tool of CEA is the cost-effectiveness ratio (C/E ratio). Project analyses often report average C/E ratios (that is, total cost divided by total output), but it is also possible, and more useful, to calculate marginal or incremental C/E ratios, $\Delta C/\Delta E$. These two measures correspond directly with the concepts of average and marginal costs of production in standard production theory.

In the diagram below, the horizontal axis represents the difference in effect between the intervention of interest (A) and the relevant alternative (O), and the vertical axis represents the difference in cost.

If point A is in quadrants II or IV, the choice between the programs is clear. In quadrant II, the intervention of interest is both more effective and less costly than the alternative, so, it dominates the alternative. In quadrant IV, the opposite is true. If point A is in quadrants I and III, the choice depends on the maximum cost-effectiveness ratio (C/E) one is willing to accept.

The line OA represents the cost-effectiveness ratio (Drummond, 1998). In practice, the impact of most interventions falls in quadrant I. Also, that is the Sotnikum case, they add to cost and increase effectiveness, certainly when we compare to the past (conventional system) or before the New Deal started (see Figure 3.4).

3.5 Patients' Satisfaction

Patient satisfaction constitutes a crucial aspect of quality of care (Fitzpatrick, 1991). Donabedian (1988) indicated that patient satisfaction is a key outcome of care. The earliest studies of patient satisfaction date from the mid-1950s (Souelem 1955; Klopfer, Hillson, and Wylie 1956). The depth and richest of this stream of literature provides physicians and their administrators with adequate knowledge of the measurement of quality of care.

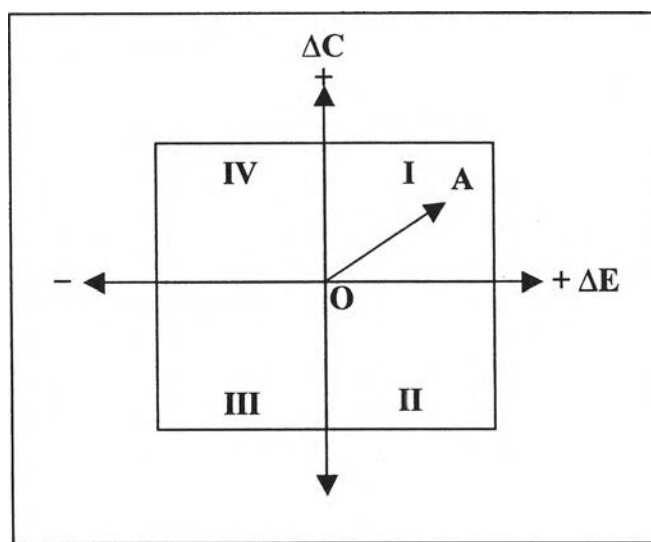
Two key elements that affect patient and provider of health care: technical skills and interpersonal abilities. The provider's technical performance depends on the knowledge and judgment necessary to make effective diagnoses and prescribe appropriate treatments. Interpersonal abilities, however, may be as important to treatment success. In Cambodia context, one more important factor that influent provider's commitment is financial benefit/incentive to maintain the basic need of living (Donabedian, 1988).

Patient satisfaction survey can be rich source of information for generating CQI, but only if it is examined carefully and used within a consistent framework. It is essential to evaluate reliability of the method, particularly considering the fact that attitudinal studies using questionnaires are the most common method for measuring the quality of care (QoC) in

hospital, and because of the lack of standardized instruments for measuring the experience of and satisfaction with hospital care (Abramowitz, 1987).

Patient satisfaction is an important indicator of the quality of medical care and a major determinant in the choice of a care provider in the future. Accurate and reliable survey information provides the data basis for CQI in the delivery of services. By meeting the needs of the patient, the institution in turn will ultimately ensure its competitive position.

Figure 3.4 The Cost-Effectiveness Diagram



Sources: Drummond; Brien; Stoddart; and Torrance (1998).