

## CHAPTER 1

### INTRODUCTION



#### 1.1 Background

Human Resources for Health (HRH) is the most important component of the health care system, which deals not only with diseases and health but also the society as a whole. It is concerned with social, cultural and ecological contexts. People have the right to be served by qualified health personnel who directly provide health care to the individual, family and community which should be well served (Milintangkul, 1997).

In post Alma-Ata (1978) years, many countries produced new categories of health workers, often in large numbers, to supplement well established categories like doctors, nurses and technicians. Physicians are the health professionals who play a major role in the health care system. Prior to 1977, Thai health development plans expressed the need for more doctors and nurses. The estimated need was based on what was believed to be the ideal or desirable Human Resources for Health (HRH) to the population ratio (Chunharus, 1998). WHO produced the guidelines in 1980, to propagate proper planning methods consisting of three major components, requirement estimation, supply projection and then the matching of demand and supply (WHO, 1980). The concern over the number of doctors, especially those assigned to rural areas has always been a priority of the health sector.

In the middle of the fifth five year plan (1982-1986), the country faced an economic crisis and had to cut down on the plan for expansion of district hospital coverage. At the same time the National Conference on Medical Education agreed on not opening any new medical school in Bangkok and vicinity, which was interpreted as a signal for slowing down the production of doctors. There have always been the issues as to whether a new medical school could be justified and more training posts should be allocated for certain specialties but the medical council and most medical schools favored the conservative side; with no drastic attempts to increase the annual production. Rather they emphasized, more recruiting of students from the rural areas hoping that they would

go back and serve their rural communities. During the 1990s, due to the growth of private sectors in Thailand, the health sector was affected and there was a shift of doctors from the public sector to the private sector. The debate on the optimal number of doctors for Thailand was raised again. There was little need for any planning exercise and the decision seemed quite clear from all sides that Thailand needed to produce more doctors. They needed to build up a new medical school with concern for the economies of scale. Increasing the number of doctors by building up a new medical school under economic constraints, limited resources must be considered by the planner and policy maker.

As shown in Table 1, Wibulpolprasert et al (1997) demonstrated that public universities and colleges have the lion's share in the production of health manpower graduates. During the early 1990s, the private growth in Thailand led to the big impact on the public sector, particularly the health sector. There was a shift of doctors from the public sector to the private sector which worsened the health care provisions in the rural areas. There were two more pieces of work done on a research basis during 1995-1997. These were supported by the Health System Research Institutes. The first study attempted to estimate the requirement of doctors based on the projected services demand and service utilization patterns of both urban and rural populations using a large nation-wide survey on health services utilization. The second study employed the relationship between the figure of GDP per capita (ppp) and the population-to-physician ratio. From the studies it was found that over the next twenty-five years up to (year 2020), Thailand will require a population-to-physician ratio of between 1,400:1 – 1,600:1. This means a physician requirement of 44,064 – 50,359 (an average of 47,212). Comparison with the future supply shows that, in spite of economic crisis, there will still be moderate shortage of physicians especially during the 10 years 1995-2005. An oversupply can occur if there is low economic growth (with low requirement figures) with a low loss rate of physicians (which means higher supply) (Sirikanokwalai et al, 1998).

The studies suggest that the current rate of physician production is quite adequate for the next 25 years and any new project to increase the production rate of physicians should be considered carefully as it may lead to a surplus of physicians in Thailand in the future. However, the current and the near future shortage of the physicians may be solved

by increasing the productivity of the physicians out of non -official hours to extend their services, and use the professional nurse to take care of some basic medical services.

**Table 1.1 Number of graduates during 1992-1996 by source of production**

Categories	Public Universities					Private Universities/ Colleges				
	1992	1993	1994	1995	1996	1992	1993	1994	1995	1996
1. Medicine	837	816	826	825	848	0	0	0	0	0
2. Nursing	3139	3355	3134	3136	3037	295	335	322	332	356
3. Pharmacy	471	470	623	602	808	28	78	45	101	92
4. Dentistry	289	311	340	351	317	0	0	0	0	0
5. Medical technology	245	261	313	295	313	48	30	29	18	20
6. Rehabilitation	88	86	177	99	121	30	37	34	24	13
7. Public Health	22333	2245	2230	2332	2300	0	0	0	0	0

Source: Wibulpolprasert et al (1997)

### **The Collaborative Project to Increase Production of Rural Doctor (CPIRD)**

HRH in Thailand is under the responsibility of the Ministry of Public Health (MOPH) and the Ministry of University Affairs (MOUA). This innovative project has been established to produce medical doctors for rural areas. This project is currently managed by the Office of Collaborative Project to Increase Production of Rural Doctor (OCPIRD). The project was approved by the cabinet on February 10, 1995. The main objective of this project is to increase production of rural doctors practicing in the rural areas and to increase more opportunities for the people to enroll in medical schools. The students under this project are recruited from rural areas through a special selection process with a contract to serve their local communities after the completion of their education. If the students breached the contract, they would have to pay a fine of 400,000 Baht (about US\$ 10,000), and a 15% interest rate would be added for not paying a fine on the date due.

The target plan of CPIRD is to produce 3,000 physicians in a ten – year cooperative project (1990-2000). The National Budget Bureau subsidizes 300,000 Baht / year for the students under this project. At present, the number of medical students studying under the

CPIRD is 625. The 12 Medical Education Centres (MEC) of the CPRID located in the regional and provincial hospitals around country (Table 1.2).

**Table 1.2** Number of the medical students in the 12 Medical Education Centres (MECs)

Name of MEC	Location (Province)	Year established	Number of students
1. Khon Kaen	Khon Kaen	1995	67
2. Maharat– Nakorn Ratchasima	Nakorn Ratchasima	1997	72
3. Prapokkhao	Chon Buri	1997	19
4. Saraburi	Saraburi	1996	62
5. Buddhachinnaraj	Phitsanulok	1997	182
6. Sawanpracharak	Nakhon Sawan	1996	71
7. Hat Yai	Songkhla	1998	20
8. Lampang	Lampang	1997	62
9. Maharat- Nakhon Si Thammarat	Nakhon Si Thammarat	1998	16
10. Ratchaburi	Ratchaburi	1997	14
11. Uttaradit	Uttaradit	1998	14
12. Chonburi	Chonburi	1997	19
<b>Total</b>			<b>625</b>

Source: OCPIRD, Public Health Policy and Planning, MOPH

### **Khon Kaen Medical Education Centre**

Khon Kaen Medical Education Centre was established in 1995 under a Collaborative Project to Increase the Production of Rural Doctors. The Medical Education Centre in the Regional and Provincial Hospital is located next to Khon Kaen Regional Hospital, however, it's compound is separate. The recruitment of the first group of medical students came from a quota selection of the first 20 per cent of applicants with the highest score on an examination. These students are from the Northeastern region. All of them must sign a contract to practice in the rural area, where needed after their graduation, for 3 years. For the doctors who breached the contract must pay 400,000 Baht fine (about US\$ 10,000).

Figure 1.1 The Organization Chart of CPIRD

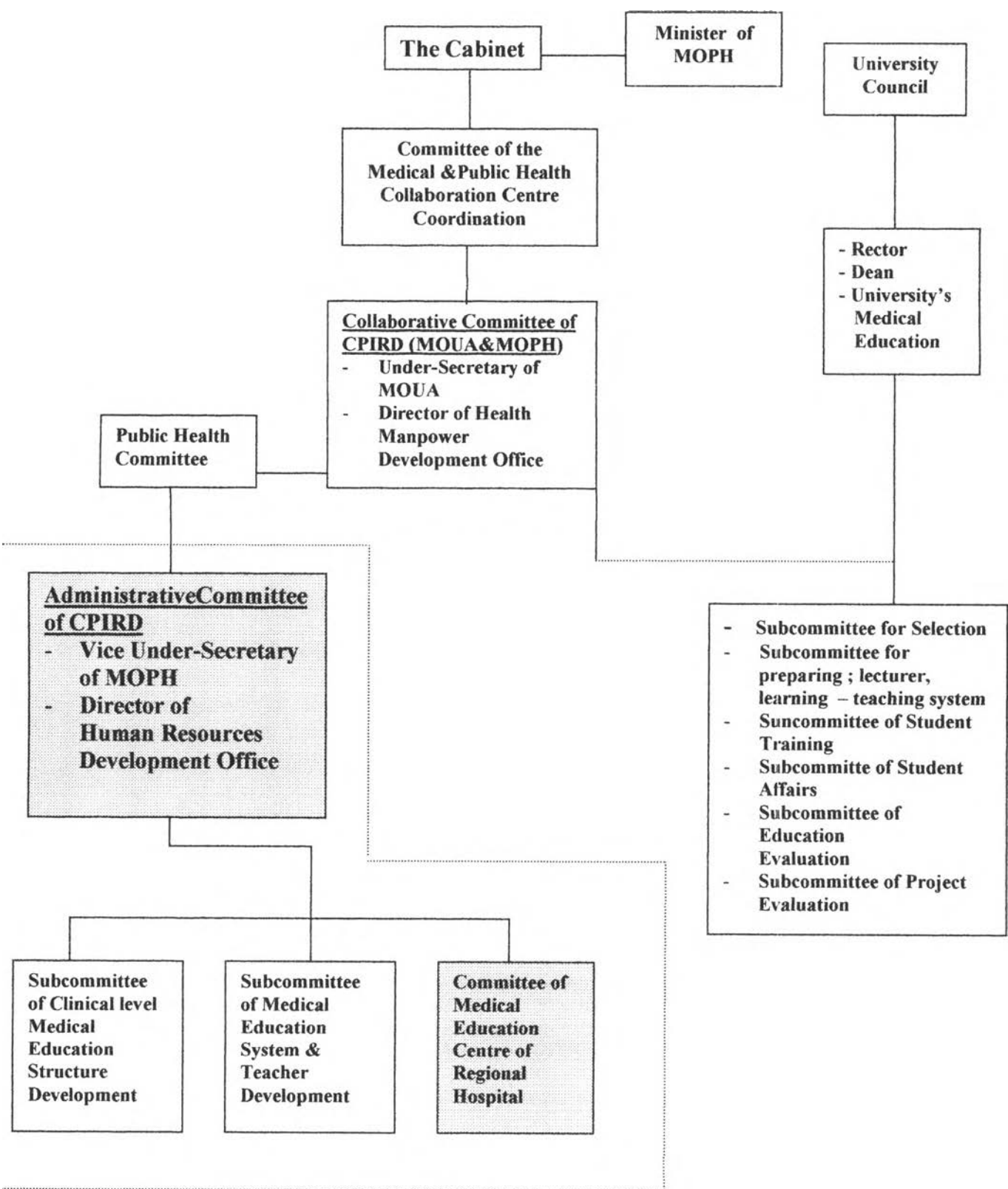
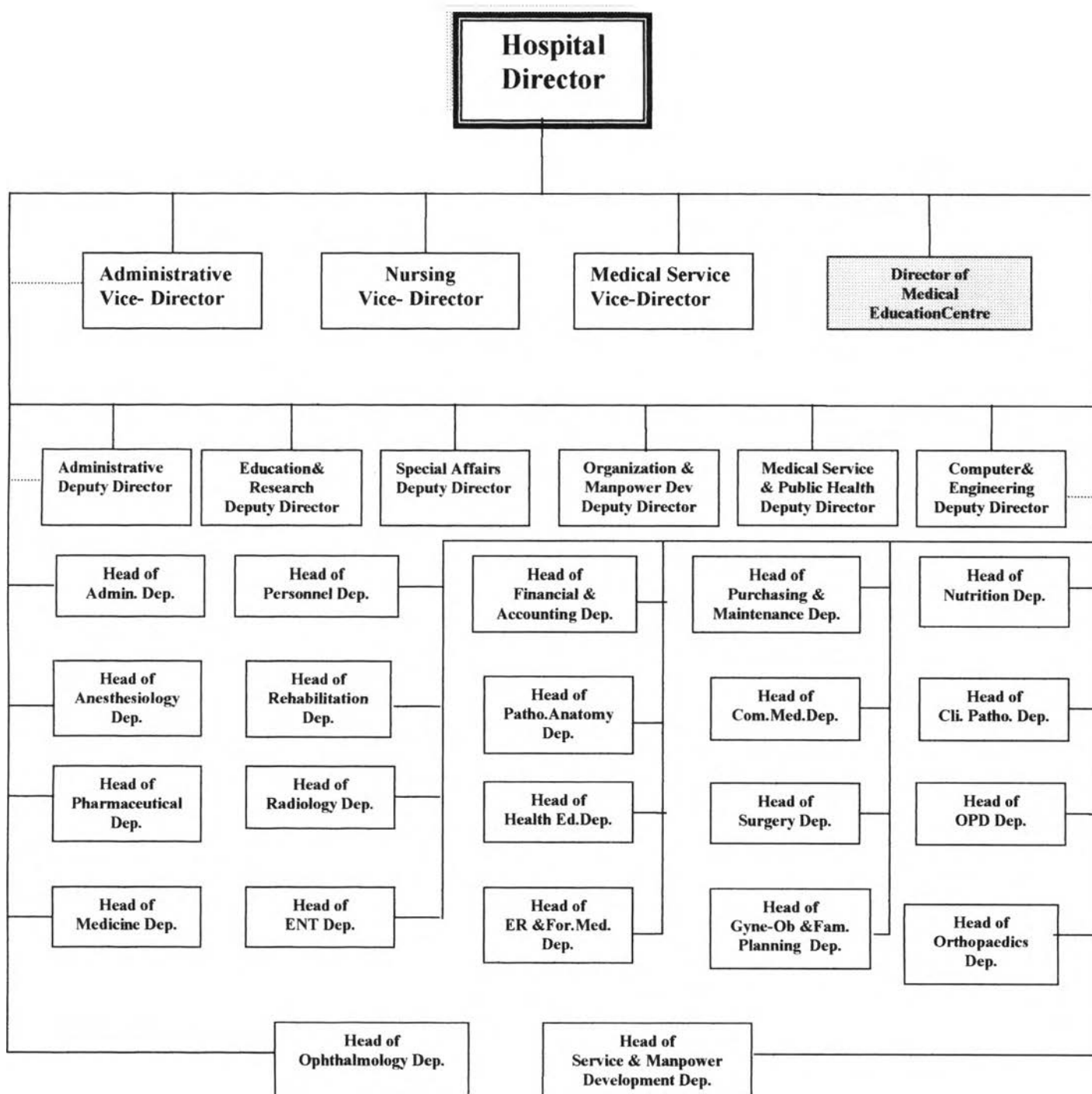
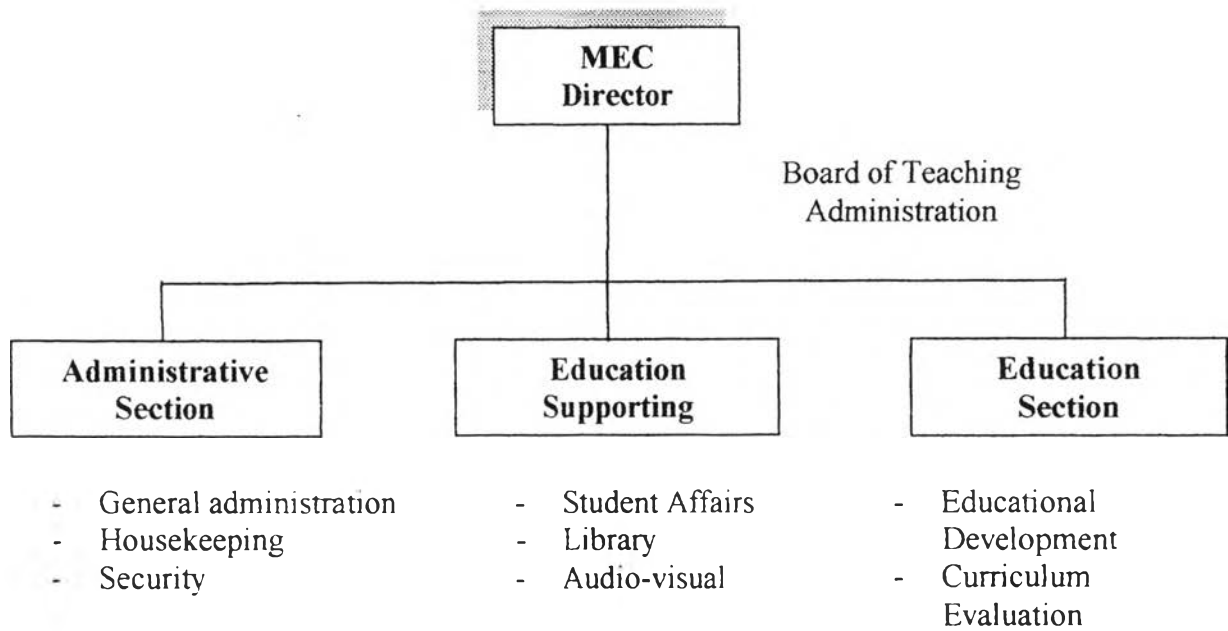


Figure 1.2 Administrative Structure of Khon Kaen Regional Hospital



**Figure 1.3 Organization Chart of Khon Kaen Medical Education Centre**



## 1.2 Rationale

The Medical Education Programme at Khonkaen Medical Education Centre is under the CPIRD. It is located in Khon Kaen Regional Hospital and in collaboration with faculty of Medicine at Khon Kaen University. In the past Khon Kaen Hospital has been in collaboration with the faculty of Medicine in clinical teaching for the medical students in the 4<sup>th</sup> – 6<sup>th</sup> year of training and the residency training. The MEC shares resources with the other facilities of Khon Kaen regional hospital to perform the clinical teaching of medical students. Although the financial support comes from the government subsidy of 300,000 Baht / Student/ Year, the actual cost of the students under the CPIRD has not had any current research yet.

Since Khon Kaen Regional Hospital is planning and preparing to be nongovernment hospital in the near future. The financing for the hospital to be able to long run it will be sustained while they must continue to provide both the services and the teaching at the hospital. The cost of the medical education programme is quite complex, since these costs include the classroom teaching and the clinical practicing that is incurred in the other departments which the medical students must take in clinical practice.

The study of the unit cost of the Medical Education Programme at Khon Kaen Medical Education Centre could be useful for the administrator and policy maker to utilize the result of this study. This is a tool in planning for future budgets and how to manage the MEC and develop medical curriculum as well as methods in teaching and learning efficiently.



### **1.3 Research questions**

1. How much is the cost of Medical Education Programme per student per academic year at Khon Kaen Medical Education Centre?
2. Is the cost of Medical Education Programme at Khon Kaen Medical Education Centre reasonably subsidized from the National Budget Bureau (300,000 Baht / Student / Year)?

### **1.4 Objectives**

#### **1.4.1 General objective**

To analyze the unit cost of Medical Education Programme per year at Khon Kaen Medical Education Centre.

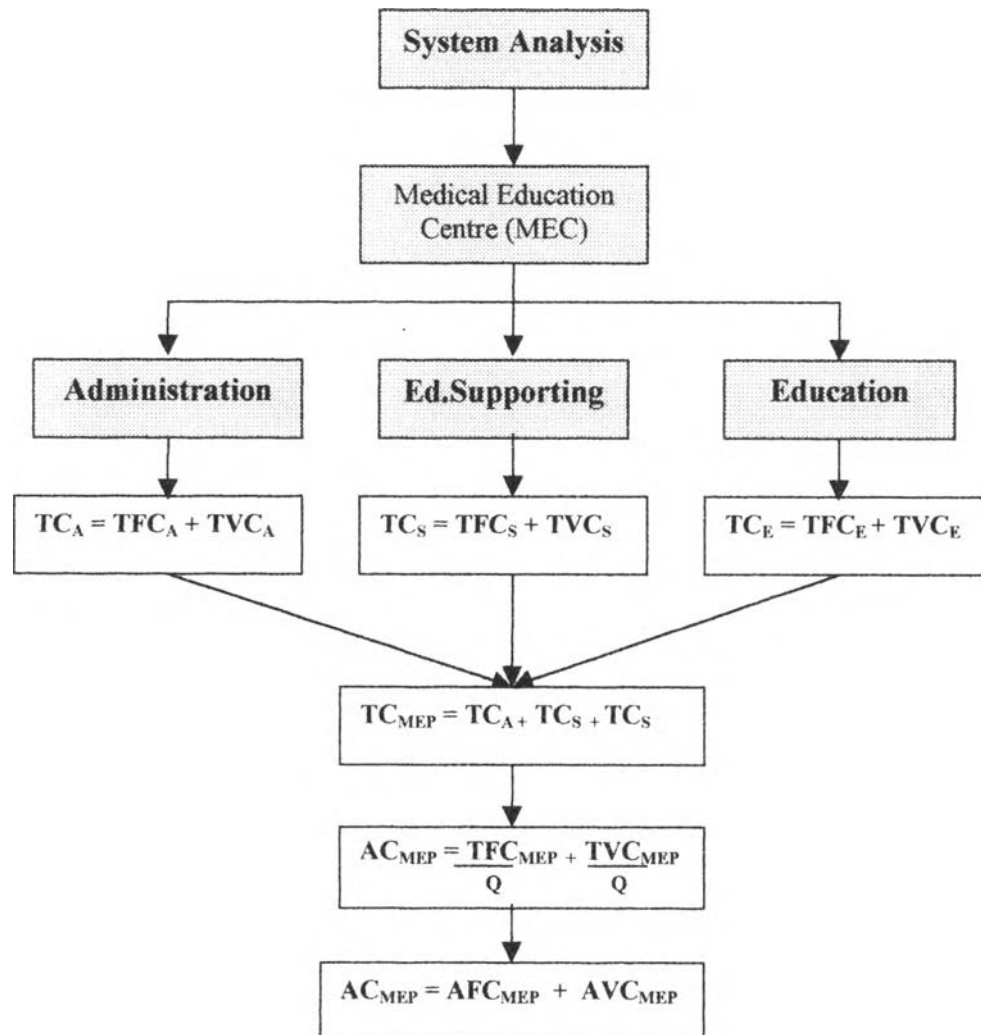
#### **1.4.2. Specific objectives**

1. To estimate the unit cost of Medical Education Programme at Khon Kaen Medical Education Centre.
2. To analyze the unit cost of the Medical Education Programme by the cost components, i.e. Fixed cost, and Variable cost.

### **1.5 Scope of study**

The unit cost analysis of the Medical Education Programme at Khon Kaen Medical Education Centre is carried out at the Medical Education Centre in Khon Kaen Regional Hospital. The cost information will be collected within the academic year 1998 (May 1998 to April 1999).

**Figure 1.4 Conceptual Framework of Unit Cost of Medical Education Programme**



$TC_A$  = Total Cost of Administration

$TC_S$  = Total Cost of Education Supporting

$TC_E$  = Total Cost of Education

TFC = Total Fixed Cost

TVC = Total Variable Cost

$TC_{MEP}$  = Total Cost of Medical Education Programme

$AFC_{MEP}$  = Average Fixed Cost of Medical Education Programme

$AVC_{MEP}$  = Average Variable Cost of Medical Education Programme

$AC_{MEP}$  = Average Cost ( Unit Cost) of Medical Education Programme

## 1.6 Conceptual Framework

The conceptual framework of the unit cost estimation of Medical Education Programme is presented in Figure 1.4. After system analysis of Medical Education Centre (MEC) was done it was classified into 3 sections, i.e. Administration section, Education supporting section and Education section. The cost component of each section comprises of fixed cost (capital depreciation cost, salaries, wages, and long-term training cost), and variable cost (material cost, maintenance, and utilities). The Administration section and Education supporting section do not perform teaching directly to the students. They are responsible to support the Education section, so these sections will transfer the cost to Education section. The costs, transferred from Administration section and Education supporting section, will depend on the proportion of utilization in each activity. The total cost (TC) of each section is the sum of fixed cost (FC) and variable cost (VC). Average total cost (ATC) is the total cost of Medical Education Programme ( $TC_{MEP}$ ) divided by the total number of the students.

## 1.7 Terms and Optional Definitions

### Key words:

Unit cost, Medical Education Programme, Khon Kaen Medical Education Centre, OCPIRD, CPIRD

### Terms and Optional Definitions

1. Average Fixed Cost (AFC) – The total fixed cost divided by the number of units produced.
2. Average Variable Cost (AVC) – Total variable cost divided by the number of units produced.
3. Average Total Cost (ATC) – The total cost divided by the number of units produced; also, the average fixed cost plus the average variable cost.
4. Capital cost – The cost of the building , long – term training of the personnel, and equipment which has a life expectation of one year or more, the cost of inputs in providing a service for more than one year.

5. Clinical level – The undergraduate medical curriculum in Thailand takes 6 years. The study programme is divided into 2 levels; the first three years emphasize the basic sciences called pre-clinical level and the second 3 years emphasize clinical practice called clinical level.
6. Clinical Practice cost –The cost incurred on the clinical practice of medical students in the departments of the hospital.
7. Fixed Cost – Costs that remain constant as output varies.
8. Labor cost – Expenditure for personnel and fringe benefits.
9. Material cost – Expenditure for supplies, office facilities, and any teaching material.
10. Medical Education Centre – The Centre established under the CPIRD project, MOPH responsible to perform clinical teaching level for the medical student (the 4<sup>th</sup> – 6<sup>th</sup> year) by adopted the curriculum of faculty of medicine.
11. Medical Education Programme – The clinical level teaching of the medical students in the 4<sup>th</sup> – 6<sup>th</sup> year of Khon Kaen Medical Education Centre.
12. Unit Cost – Cost per student which can be calculated by dividing the total cost of Medical Education Programme by number of medical students in the Medical Education Programme in the academic year 1998.
13. Variable Cost – Costs of production that vary as output changes, such as the cost of material and labor.

### **1.8 Possible Benefits**

1. The result of unit cost analysis in the of Medical Education Programme is expected to be useful and important to health administrator and policy maker as a tool for budget planning.
2. It provides a cost basis for administrators in order to better monitor and utilize the resources, helps the MOPH to be able to utilize the unit cost data in formulating plans and propose more solid subsidy for the MEC real unit cost incurred.
3. This unit cost analysis could be useful for other medical education institutes to use as an example, to develop an appropriate study most suitable for their own needs.

## **1.9 Limitations of the study**

In this study, the data was collected from the database of the hospital and from the financial department and maintenance department. The Medical Education Centre is a new centre. It shares the resources with the hospital personnel, and teaching staff. Some of the personnel and staff of MEC work both for the hospital and the MEC. To calculate labor cost, the researcher used a survey sheet of FTE (Full Time Equivalent) for the teaching staff (instructors) to survey the proportion of their work hour. At present, the MEC and the hospital do not have separate meters for water and electricity so to measure the unit cost it must be estimated by one person. To make this study more accurate, the study of unit cost of the Medical Education Programme must take the clinical practice departments in the hospital, and faculty of medicine into account. This study was done only in the MEC due to some limitation of the data available and the Management Information System (MIS). This limitation could be improved and developed for the further study.