

# Chapter LIII

## Measurement of Cost and Economic Efficiency in Healthcare

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### **ABSTRACT**

*The developments in new sectors, as in medical physics and biomedical technology, contributed a lot to the progress and especially to the medical practice. However, these developments created a complicated and costly environment in which health services have to take place. This chapter reports on the sensitive sector of finances of health and particularly the ways of cost assessment. Furthermore, it presents the significance of efficiency and effectiveness of technology that is used in the area of health.*

### **INTRODUCTION**

During the last 30 years, the financial situation of the health industry has known swift growth. However, the limited resources that are being disposed internationally for the sector of health point out the need of some concern for the cost of provided services. This was the main reason that turned the interest of economists of health from very early to the investigation of factors

that influence the growth of expenses for hospital care.

In the economic bibliography, there is a wealth of theoretical and econometric approaches that aim to analyze the cost of hospital care. Naturally, the factors that determine the operation of hospital systems differ from country to country, as well as the structure and the organization of the private sector of care. Constants, functions, means, and the marginal cost

exist as the objects of study, and it is supported that not only the objectives but also the more general system of the market and operation of the hospital unit is taken into consideration and is analyzed. One of the sectors that affects considerably the increase or the reduction of cost in the care of health is biomedical technology (biomedical engineering), which constitutes a very important tool for hospital organizations. Biomedical technology is developed continuously, encouraging the creation of new sectors of medical specialization, influencing decisively hospital structures, and simultaneously puzzling its right use with particular accent in the economic dimension.

## **COST ESTIMATION**

The operation of each hospital unit aims at the offering of services of hospital care. Medical, nursing, administrative, and auxiliary personnel as well as certain diagnostic and therapeutic means are used for the offering of these services. The personnel and the means, depending on the way and degree of utilization, have a certain cost. This cost is constant or variable.

- **Constant Cost:** Remains immutable and includes various aspects such as rents and the cost of buildings and instruments. It is independent, therefore, of the number of patients or beds in the hospital. A constant cost is considered a datum and is presented diagrammatically as a horizontal line.
- **Variable Cost:** Influenced by the level of the operation of a hospital and increases proportionally with the number of patients in the hospital, with the duration of their hospitalization, and with the more general use of pharmaceutical products and diagnostic examinations. Sanitary material,

medicines, and diagnostic examinations constitute variable costs.

- **Total Cost:** The total cost of a hospital unit, which can be the total monthly or annually, is composed of these two main components. This relation in simple form is expressed as:

$$\text{Total Cost} = \text{Constant Cost} + \text{Variable Cost.}$$

Many times in economic analysis, because the total costs do not provide enough information, we seek the determination of average or marginal costs.

- **Average Cost:** With the term this we mean his reason total cost to the number of patients. The average (or medium) cost shows the cost per unit, and in a hospital it can be expressed by a lot of indicators, such as (a) the cost per patient, (b) the cost per day of hospitalization, (c) the cost bed, and (d) the cost per doctor. The significance of the medium cost is important for the exercise of rational economic policy because it provides useful information on the change of costs concerning the productive activity of the hospital.
- **Marginal Cost:** With this term, we mean the change that befalls the costs of the hospital from a small change in patient number. The marginal cost constitutes a useful significance in the economic analysis because it shows how much an increase in the number of patients will affect the medium cost.

## **EVALUATION OF BIOMEDICAL TECHNOLOGY**

As we reported previously, one of the more important sectors that present particular interest in analysis and more generally in the inves-

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