

# Research on Hospital Cost Management based on Activity-Based Costing

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## Abstract

**With the comprehensive advancement of the basic medical insurance system and the reform of the medical and health system, hospitals have gradually entered the market, and the influence of market rules on hospitals is becoming more and more obvious. In order to obtain the maximum benefit under limited resources, hospitals must analyze their own operating activities to fully understand the effectiveness of medical service departments and project management, and master their overall financial situation. Hospital cost management is based on the theory of activity-based costing, but there are some problems, such as paying more attention to accounting than management, failing to integrate hospital and department into a unified framework. This paper will discuss the cost management system based on activity-based costing and the construction and application of responsibility-based costing.**

## Keywords

**Activity-based Costing; Hospital Cost Management; Responsible Costing.**

## 1. Introduction

The cost management of hospitals in China has developed rapidly since the beginning of market-oriented reform in the medical and health industry in 1990s, and has played a certain role in controlling the rise of medical costs and improving the efficiency of health resource utilization. With the comprehensive advancement of the basic medical insurance system and the reform of the medical and health system, hospitals have gradually entered the market, and the influence of market rules on hospitals is becoming more and more obvious. In order to obtain the maximum benefit under limited resources, hospitals must analyze their own operating activities to fully understand the effectiveness of medical service departments and project management, and master their overall financial situation. Obviously, introducing enterprise management and emphasizing cost consciousness are the needs of conforming to the trend of reform and promoting the development of hospitals. Cost management will play an increasingly important role in hospitals.

Under the planned economic system before the reform, the means of hospital economic management are relatively weak. Only extensive budget management can arrange and control the funds used and managed by the hospital throughout the year. Although budget and final accounts management plays a role of planning adjustment and supervision and control of hospital expenditure to a certain extent, in the process of implementation, there are problems such as paying more attention to income than expenditure, adding more benefits than accounting. Under the condition of market economy, the main body of medical service is diversified, and the competition of medical market is intensified. The budget management under the budget accounting system alone can not meet the requirements of hospital

development. How to strengthen the cost management of hospitals has become an urgent problem to be solved, which is particularly severe in public hospitals.

According to the existing literature, the study of ABC introduced into the medical service industry abroad began in the 1990s. Since then, more and more medical institutions have tried to use Activity-Based Costing (ABC) for cost estimation, cost control and cost management. The activity-based costing derivation originated from the thought of E. Kohler in the late 30s and early 40s of twentieth Century. The problem Kohler faced at that time was how to correctly calculate the cost of hydropower industry. The main cost of hydroelectric power generation is the depreciation of fixed assets such as power generation facilities and indirect costs such as maintenance costs. Its raw material - water - does not need to be purchased from the market, while the manual is mainly used for monitoring and maintenance of equipment. Apparently, the traditional allocation of indirect costs by artificial hours can not reflect the cost correctly. Therefore, the "activity-based costing" method is proposed. However, this idea was not taken seriously at that time. Until the middle of 80s, the activity-based costing (ABC) was widely concerned by the western accounting circles after the systematic and in-depth theoretical and applied research on activity-based costing by two professors R. Cooper and R. Kaplan. The basic principle of activity-based costing can be summarized as "product consumption operation, operation consumption resource". Specifically, according to different cost drivers, Cost Pool is set up separately, and then the activity cost of each product is allocated separately according to the amount of activity consumed by each product. Then the total activity cost of each product is summarized separately, and the total cost and unit cost of each product are calculated.

According to the relevant system requirements of the state, the current cost of hospitals in China refers to the total cost, which includes both the commonly referred cost and the period cost. Accordingly, hospital cost accounting and cost management are also from the perspective of full cost. Hospital cost accounting is to calculate the amount, composition and level of material consumption, labor remuneration and related expenditure in the process of medical service. Hospital cost accounting is mainly used to reflect medical service consumption, determine medical price, and comprehensively evaluate the quality of hospital economic management and economic decision-making.

## 2. Four-stage Model of Cost and Performance Measurement System

According to Cooper and Kaplan(2006), cost and performance measurement system can be divided into four stages according to their completeness.: the first stage is the imperfect financial reporting system. The system still can not provide perfect financial report, from the cost point of view, the basic product cost information is not yet available. the second stage is the financial reporting drive system. It can provide perfect financial report, but not provide enough support for management decision-making. From the cost point of view, it means that it can provide basic product cost information, but not provide management accounting information related to cost. The third stage is customer-customized and management-related independent system. This system can provide perfect financial report, and also can provide management decision-making. From the cost point of view, the system can provide both basic product cost information and cost-related management accounting information. However, product cost information prepared for financial reporting and management accounting information prepared for management decision-making are provided in two separate systems. The fourth stage system is integrated cost management and financial reporting system. In this stage, the two independent systems of the third stage have been integrated into a complete system. At present, from the current situation of hospitals in China, the cost and performance measurement system of hospitals is basically in the first and second stages.

### 3. Three Levels of Hospital Cost Accounting and Management

Based on the development stage and particularity of hospital cost accounting and management, hospital cost accounting in China should be divided into three different levels according to the detailed degree of information provided and the purpose of management. Firstly, to divide the responsible units according to the characteristics of the hospital itself, and to define the corresponding scope of powers and responsibilities.

#### 3.1. The Hospital Level

The hospital cost accounting can only provide information about the resources consumption of the hospital as a whole. This level of accounting can reflect the cost of the whole hospital, can only meet the traditional budget accounting model of the hospital accounting requirements, in the management decision-making role is very limited. This method is also the simplest of the three levels and requires the least resources.

#### 3.2. The Department Level

Hospital cost accounting takes the whole hospital and all departments (departments or teams) within the hospital as the object of cost collection and accounting. This method can reflect the operation and management of the whole hospital and all departments within the hospital. It can be used for assessment, analysis, decision-making by hospital and department leaders and feedback information to employees, mobilizing the enthusiasm of staff to reduce costs and improve efficiency. This method can not reflect the unit cost of hospital medical service items, so it can not be used as a basis for formulating fee standards, but is more suitable for cost management and benefit evaluation of hospital departments.

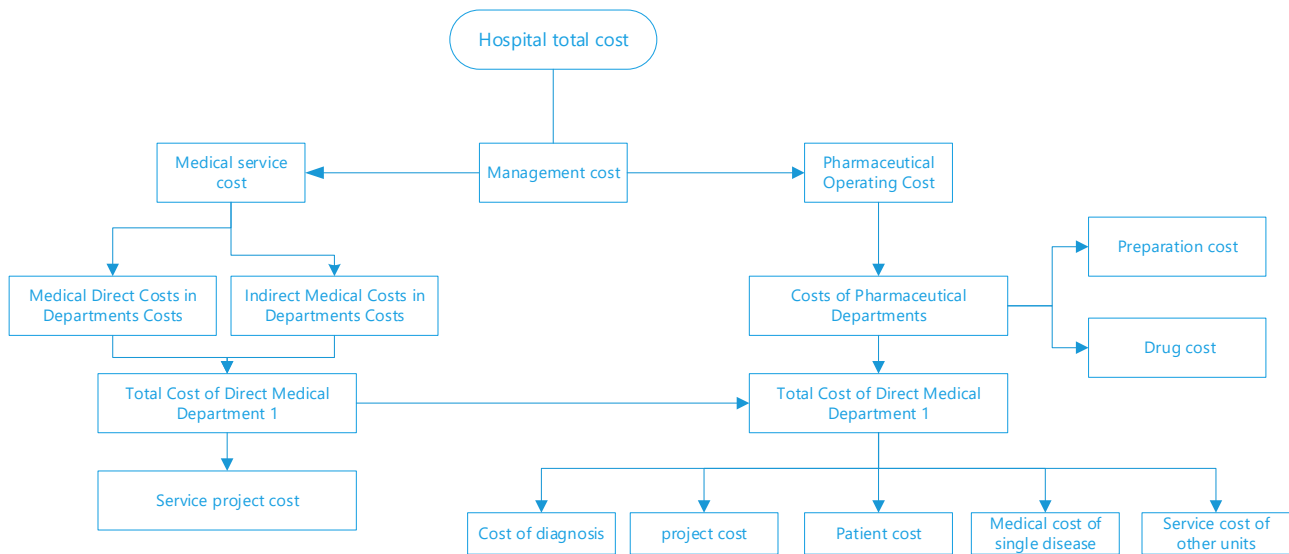
#### 3.3. The Diseases and Medical Services Level

This level includes disease-type method and project method. Disease-type method is to take disease-type as the object of cost accounting. Because there are many kinds of diseases and different medical norms, the method of disease classification has a large workload and complicated calculation. It also needs medical and nursing personnel with professional medical knowledge to participate in the calculation. The object of calculation includes the cost of projects, visits, bed days, types of diseases and the cost of drugs and preparations of drug business units. Therefore, the average cost index of disease species in China is mainly used to try out the method of payment for disease species. This level can meet the needs of hospital economic management, especially investment decision-making.

Timely transmission and feedback of information is the basic condition for daily cost control. Therefore, a responsibility cost information feedback system need to be established to accurately and concretely measure the indicators of responsibility cost and provide them to those responsible for decision-making in an appropriate form in time. ( The use of information management means centered on computer technology has become an inevitable trend of modern cost accounting. In carrying out the responsibility cost accounting, if the computer can be used effectively, the speed of information feedback will be greatly accelerated and the ability of business processing will be enhanced. It is of great significance for timely and accurate cost prediction, decision-making, accounting, control and assessment, and cost analysis.)

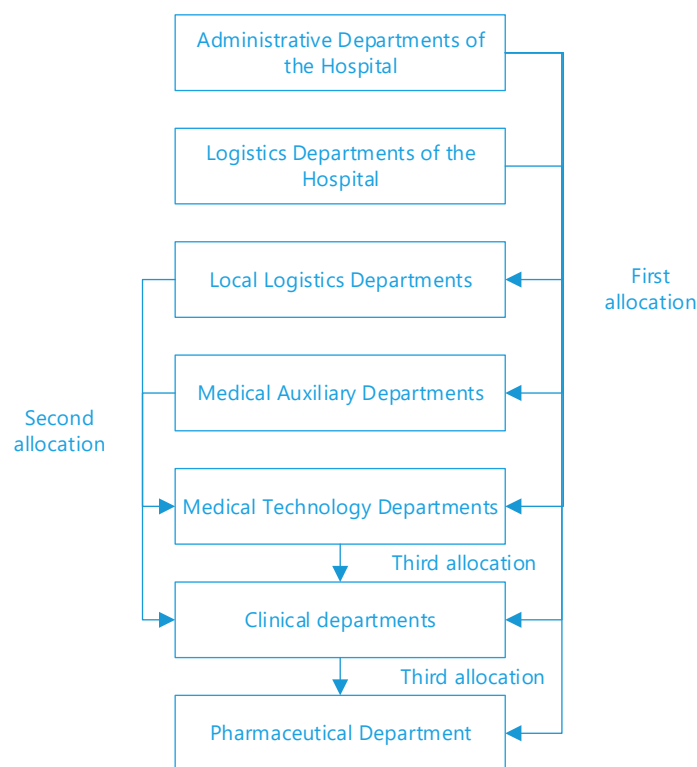
### 4. Main Activity Costs of Hospital Cost Accounting

According to the motivation of operation, the cost of administrative operation and auxiliary operation is allocated to the main operation. The total cost of each major activity can be obtained from the auxiliary activity cost allocated by each major activity plus the resource cost consumed by each major activity itself.



**Figure 1. Basic Framework of Medical Cost Accounting**

Among them, the cost allocation process of the indirect cost department is as follows:



**Figure 2. Flow chart of indirect cost division cost allocation**

## 5. Cost Control: Responsibility Cost Control and Operational Chain Optimization

In the process of cost control and budget execution, the responsibility cost center should be used to restrain and regulate economic activities and correct the deviations. On the basis of dividing hospital responsibility cost control into responsibility cost centers, hospital responsibility cost control is further subdivided into several cost responsibility units. According to the principle of power-responsibility-benefit equivalence, specific items of responsibility cost are determined. By means of hierarchical control, responsibility cost control

is transformed into conscious behavior of all departments and staff members. At the same time, hospital leaders should also do a good job among responsibility cost centers. Coordination of work, so that the daily control of each responsibility cost center keeps the same goal.

From the point of view of control system, the anti-jamming ability of open-loop control system without information feedback system is poor, while that of closed-loop control system with information feedback system is strong. That is to say, if hospitals and departments want to effectively implement the responsibility cost budget, they must get timely feedback information, because the operation of hospitals will be constantly affected by various changes in the real world.

Cost control process is divided into pre-control, in-process control and post-control. In the responsibility cost system, the cost budget has the nature of pre-control. Daily cost control (including liability cost calculation) belongs to the category of control in the event. The compilation of responsibility cost report, cost assessment and performance evaluation belong to post control. Using scientific control methods at different stages can effectively strengthen hospital cost management.

In the daily accounting of responsibility cost, the difference of responsibility cost indicates that the actual cost occurrence is less than the budget of responsibility cost, which indicates that the use of funds has been well controlled. The difference of responsibility cost in debit indicates that the actual number of cost occurrence exceeds the budget number of responsibility cost, and the corresponding responsibility should be ascertained. Cost responsibility units at all levels and relevant functional departments should also establish a sensitive and effective cost information feedback system to reflect the differences out of budget in a timely manner and play a dynamic control role.

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