



Short Communication

THE COST OF TREATMENT SERVICES IN SALMAN FARSI HOSPITAL OF BUSHEHR

Khodabakhsh Bargahi¹, Mohammad Javad Akbarian Bafghi^{2*}, Jamaladdin Alvaani³

1. Department of Healthcare Management, Fars Science and Research Branch, Islamic Azad University, Marvdasht Iran.
2. Department of Healthcare Management, Bam University of Medical Sciences, Bam, Iran.
3. Department of Psychology, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran.

*Corresponding author's Email: mjakbarian@yahoo.com

(Received: August 05, 2016; Accepted: September 27, 2016)

ABSTRACT

This study aimed to make the cost of treatment services in Salman Farsi Hospital of Bushehr. In this study, activity-based cost calculation method was used to calculate the costs. The results showed that internal intensive care unit with 88/5 million rials cost per hospitalized person was the most expensive ward and then the surgical intensive care unit with 75/2 per hospitalized person was the most expensive ward. In the case of outpatient services, as well as the dialysis ward and clinic ward had the highest costs per visit. The finding of this study will make health managers and policy makers acquainted with cost factors of a hospital.

Keywords: Salman Farsi Hospital of Bushehr, cost of services, social security, inpatient, outpatient.

INTRODUCTION

One of the biggest problems that healthcare is involved with is failure of costing. This problem exists in all levels and a simple provider of medical services in a clinic as well as a hospital is faced with it. The importance of knowing and controlling these costs in public and private institutions is evident but achieving this requires the design of a suitable and efficient system to be effective in recognizing diversity and follow-up of activities. Traditional costing systems, especially systems that are used in health care, because of the nature of it are not actually able to estimate these expectations⁽¹⁾. Since these systems calculate the cost of services based on a series of fixed tariffs and regardless of the circumstances that this system is applied there, cannot

provide useful information in order to reduce costs and increase productivity for organization managers therefore new and more scientific methods are required⁽²⁾. One of the new systems of costing that has a variety of applications in the industrial and service activities and is being developed day-to-day is reductive-stage accounting system.

In the meantime, cost issue in hospitals as one of social resources is critical with the utmost importance. In hospitals today because of issues such as technological progress, population growth and increasing public expectations expenses are increasing day by day. This pushes managers to manage costs so that in addition to the benefit to the community and providing quality care at the lowest cost possible hospitals can develop their life in the future^(3, 4).

Therefore, the current concern for many managers is use of different mechanisms of the costing and cost analysis ⁽⁵⁾.

Costing and cost analysis is a management tool that can help managers achieve data necessary to make more informed decisions in relation to funding for the actions and infrastructure. Costing as a way of attributing direct and indirect costs can help managers of department, heads and hospital administrators and policy makers to find out how much their institutions meet public needs as well as it provides information about the operational functioning based on focus of the cost ^(6, 7). By comparing this data with expected budgeted performance we can identify problem areas that need immediate attention and intervention, this data will help management modify the measures. In addition, awareness of the costs (including unit cost or total cost) is helpful in planning future budgets (as an indicator of efficiency) as well as in the preparation of the proper received table of commissions for healthcare services. No hospital can regulate rates really commensurate with the costs, unless it properly attributes its direct and indirect costs costing system to appropriate costing centers ^(8, 9). Costing is the best mechanism that can ensure management that the cost is not more than total revenues and attainable subsidies ⁽¹⁰⁾. Given the importance of costing of the health service, this study aims to investigate the cost of treatment services in Salman Farsi Hospital of Bushehr.

METHOD

This study is a cross-sectional and practical study. Environment of research is Salman Farsi Hospital of Bushehr. Samples were selected based on the information in the accounting records and financial affairs. Samples, accounting records of revenues and expenses of each ward are separated. The steps of the project and method will be briefly mentioned:

The first step: Defining activity centers: Precise definition and recognition of activity centers in the ABC system is very important; because activity centers are the cause of creating direct costs in the activity centre and the cause of absorption of indirect costs from other activity centers therefore, the selection of activity centers must be principled and correct. To choose the activity center in every hospital type of work and the aim that is defined for each section should be considered; because appropriate to the function and

purpose of each activity center, its output can be easily defined and obtain a basis for sharing its cost.

The second step: Separation of activity centers according to operation: activity centers in every hospital mainly in terms of their operations are divided into three categories as follows:

1. The operational activity centers: the operational activity centers are wards that are directly involved in the process of providing services to patients including surgical wards or inpatient care units. These wards are "patient-centered".
2. The diagnostic activity centers: These wards offer diagnostic and ancillary services to operational wards and can be regarded as independent cost units; such as laboratory or radiology unit. These wards are called "output-oriented".
3. Public support activity centers: these activity centers provide public and support services to operational and diagnostic activities and are not directly involved in providing services to patients such as accounting or logistics units. These wards are called "service-oriented".

The third step: Determination of the output of each activity centers: In some activity centers that workload, diversity, and the goal of them may be different each activity center may be divided into a number of activities. In this case common costs that are created at the activity center may not be assigned to a cost objective, for the actual operation of cost sharing the costs of these centers should be spread between domestic activity centers; after determining the activity centers, the next step is to determine the outputs for each activity center. Determining the output of any activity center depends on the decision of two key factors: First, the purpose of costing and cost analysis should be determined. For example, if the goal is to determine the pricing of services according to outputs or necessity for comparing the performance of different hospitals with each other, it is essential that activity centers are separated in terms of output and then costs are calculated based on the outputs. Another factor that is important to define the output for each center of activity is the amount of information available in terms of output. If costing information is not provided for the outputs at lower and more detailed levels, activity centers are separated in terms of outputs at higher level and cost information is collected based on the outputs of higher levels.

Another factor that should be considered in determining and separating the outputs of each of the activity centers is the type of output. For example, if the laboratory considered as a general activity center within this unit, there are different laboratories such as laboratory of hematology, microbiology laboratory and so on. It is evident that in each of these labs several tests may be performed such as tests to determine blood sugar levels and blood concentration. For costing in these centers, since the output of each is different and each output has its own cost so the entire center of activity should be separated in terms of output and output operations should be performed in terms of outputs.

Due to the separation of activity centers in terms of operation, in operational departments outputs are mainly determined based on the "occupied bed days" or "duration of patient stay" in terms of each ward; in diagnostic departments in terms of "number", (such as the number of tests or the number of shots taken) and in public and support departments due to the nature of their tasks and performance these units do not have a specific output but also all the activities of these units are in order to provide services to the operational units and diagnostic units.

The fourth step: Analysis of activities in each of the activities centers: The purpose of the activity analysis is analysis of activities to obtain the necessary information about the type of activity, activity level and purpose of the activity. Analysis of activity is an important and basic step in ABC system. For this purpose, by designing activity analysis form, the required information is collected. Analysis of activity includes the following:

- Registration of activities
- Materials and consumables
- Consumable tools and equipment
- Determining the expertise required to perform each activity

The fifth step: determining the resources needed to carry out activities: at this stage resources and facilities needed to perform each activity is determined using information of analysis form of the activity described in the previous section.

The sixth step: determining the cost of consumed resources: After identifying the activities and collecting information on every activity, cost of consumable resources of every activity must be determined. For this purpose, information of accounting and finance departments can be used.

Seventh step: Sharing the cost from administrative activities and support centers: cost allocation of resources to consumed activities: at this stage the cost of resources used in other activity centers is shared to diagnostic and operational activity centers using proportional sharing bases.

Findings

Table one shows inpatient services cost in terms of occupied bed days, cost rate for hospitalization and the total cost. As the table shows, the cost of surgical critical care for bed days is included the most expensive services. Then the cardiac intensive care unit and internal intensive care unit were included the most expensive services. Also pediatrics and obstetrics and gynecology services were included the least expensive for day bed. If we consider the cost per hospitalization as a measure, internal intensive care unit at a cost of 88/5 million rials per person hospitalized was the most expensive ward and then the surgical intensive care with 75/2 per person hospitalized was the most expensive ward.

Table two shows the findings of the study on the cost of outpatient services. Cost of outpatient services for the entire cost of as well as costs for visit was calculated. In the case of outpatient services, the dialysis and clinic wards had the highest costs per visit. This is because the cost of the devices in the dialysis unit was prorated to visitors. Also for clinic high variation in costs was due to the high mean of them.

Table 3 shows the overhead costs of services. Overhead services include those services that are responsible for support of units of service providers and do not directly provide services for patients.

DISCUSSION AND CONCLUSION

The study was an attempt to use activity-based costing method to properly and really allocate the costs. Also with the implementation of it in the hospital we can analyze and evaluate its advantages and benefits of using real data in practical. The results showed that the intensive care ward imposes the highest costs on the hospital. Jacobs and colleagues in Canada found that intensive care services are the most expensive hospital services ⁽¹¹⁾. Dornig and colleagues also found that cardiovascular patients impose the highest costs to the health system ⁽¹²⁾.

Different studies in the world have demonstrated that the use of a standardized system of costing can be effective in

Table 1: The cost of hospital services in Salman Farsi Hospital of Bushehr

Total costs of ward	Cost rate for day bed	Cost rate per hospitalized person	Services
401040983595	8323806.2	27146888.5	All of hospitalization wards
11686789031	8004650	25132879.6	cardiac intensive care
9732128387	6665841.4	88473894.4	internal intensive care
14369044337	9841811.2	75230598.6	surgical critical care
16848464498	1923340.7	6438083.49	pediatrics
25180594258	3449396.5	10496287.7	Women surgery
26013492470	3563492.1	9666849.67	Men surgery
24962377877	2973481.6	10004961.1	Internal
17307011718	2061585.7	6325662.18	Obstetrics and Gynecology
12976342339	3555162.3	12138767.4	Infants

Table 2: The cost of outpatient services in Salman Farsi Hospitals of Bushehr

Cost per visit	Total cost	Services
692195.6	46911481230	Emergency
33563890	17184711910	Clinic
156675.2	15038782150	Laboratory and Pathology
59043.75	8880534900	pharmacy
633175.1	11060302962	Radiology
12645847	7777195656	Dialysis
55661.17	12756871876	Doctors-General
89044.11	14345896449	General Practitioner
467036.3	29332680178	specialist
97997.45	516642555.9	dentist

Table 3: Overhead services costs of Salman Farsi Hospital of Bushehr

Cost	Overhead services	Cost	Overhead services
4058343201	Services-contracting	5668758439	Administrative Affairs
4059944042	Vehicles	12694660966	Finance
4956915678	Security	6725030267	Reception
22023890758	Rest	13872219312	Installations
1161283300	Data processing	8772994380	Feeding
3050675792	Laundry	6012455470	Nursing Station

calculating the cost of goods and services. In this case, a study was performed in 2007 by Crowe and colleagues in the field of activity-based costing in the Pediatric Radiology ward of teaching hospital of Oulu in Finland. In this study, 7452 radiology procedures were evaluated. This study information was collected through radiology information system of hospital as well as accounting and personnel unit of the hospital. The results showed that by the implementation of activity-based costing system the overhead costs have been reduced from 57% to 16% and cost change in unit of different procedures of radiology department has changed from 42% to 85%⁽¹³⁾.

One of the major problems for the calculation of the cost of hospital services is the absence of the required information and the lack of systematic provision of information. For example, one of the most important costs that must be examined to determine the cost of services is the cost of the investment made in order to calculate the costs related to the depreciation of property and buildings; but since most of the existing facilities in hospitals has been largely funded by the government and hospitals as non-profit institutions provide medical services to patients, in public hospitals, the cost of building, purchased property and equipment and their

amortization costs are not calculated that this could lead to substantial differences in the cost of services ⁽¹⁴⁾.

2. Lack of operational budgeting and industrial cost accounting system that can facilitate cost calculations. Existing accounting system are not with the necessary efficiency to provide cost information in decision-makings, a major part of this inefficiency is related to lack of reliable data ⁽¹⁵⁾.

3. One of the other major problems is lack of communication between different departments in providing information to calculate the cost of hospital services. Since the cost information is collected from different departments of hospital and information system is designed and applied in integrated way, therefore, any inconsistency and lack of communication between the various departments of hospital in the preparation of the primary information or incomplete information leads to failure and difficulty in cost calculation ⁽¹⁶⁾.

4. Since the hospital revenue accounting systems have been established based on fixed tariffs, so many officials and those involved in the healthcare system consider application of financial information and cost in making decisions without benefit. Therefore, these managers do not consider financial information and cost of services important ⁽¹⁵⁾.

REFERENCES

1. Rajabi A, Dabiri A. Applying activity based costing (ABC) Method to calculate cost price in hospital and remedy services. Iranian journal of public health. 2012;41(4):100
2. Samadi AH, Homaie Rad E. Determinants of Healthcare Expenditure in Economic Cooperation Organization (ECO) Countries: Evidence from Panel Cointegration Tests. Available at SSRN 2286987. 2013.
3. Javanbakht M, Baradaran HR, Mashayekhi A, Haghdoost AA, Khamseh ME, Kharazmi E, et al. Cost-of-illness analysis of type 2 diabetes mellitus in Iran. PloS one. 2011;6(10):e2686
4. Tabibi J, Nasiripour AA, Kazemzadeh RB, Farhangi AA, Ebrahimi P. Effective factors on hospital information system acceptance: A confirmatory study in Iranian hospitals. Middle East J Sci Res. 2011;9:95-101
5. Kazemi Karyani A, Homaie Rad E, Pourreza A, Shaahmadi F. Democracy, political freedom and health expenditures: evidence from Eastern Mediterranean countries. International Journal of Human Rights in Healthcare. 2015;8(3):187-94.
6. Hajjaliazali H, Moss J, Mahmood M. Efficiency measurement for hospitals owned by the Iranian social security organisation. Journal of Medical Systems. 2007;31(3):166-72.
7. Askarian M, Kabir G, Aminbaig M, Memish ZA, Jafari P. Knowledge, attitudes, and practices of food service staff regarding food hygiene in Shiraz, Iran. Infection Control & Hospital Epidemiology. 2004;25(01):16-20.
8. Bayati M, Sarikhani Y, Rad EH, Heydari ST, Lankarani KB. An Analytical Study on Healthcare Inflation Rate and Its Most Important Components in Iran. Shiraz E-Medical Journal. 2014;15(4).
9. Rad EH, Vahedi S, Teimourizad A, Esmailzadeh F, Hadian M, Pour AT. Comparison of the effects of public and private health expenditures on the health status: a panel data analysis in Eastern Mediterranean Countries. International journal of health policy and management. 2013;1(2):163.
10. Rajabi A. The role of activity based costing (ABC) system in governmental hospital services in Iran. Iranian Red Crescent Medical Journal. 2008;2008(2):89-94.
11. Jacobs P, Noseworthy TW. National estimates of intensive care utilization and costs: Canada and the United States. Critical care medicine. 1990;18(11):1282-6.
12. Doering LV, Esmailian F, Laks H. Perioperative predictors of ICU and hospital costs in coronary artery bypass graft surgery. CHEST Journal. 2000;118(3):736-43.
13. Crow WT, Willis DR. Estimating cost of care for patients with acute low back pain: a retrospective review of patient records. The Journal of the American Osteopathic Association. 2009;109(4):229-33.
14. Arefnezhad M, Yazdi Feyzabadi V, Homaie Rad E, Sepehri Z, Pourmand S, Rava M. Does Using Complementary Health Insurance Affect Hospital Length of Stay? Evidence from Acute Coronary Syndrome Patients. Hospital Practice. 2016;44(1):28-32.
15. Arab M, Tabatabaei SG, Rashidian A, Forushani AR, Zarei E. The Effect of Service Quality on Patient loyalty: a Study of Pri-vate Hospitals in Tehran, Iran. Iranian journal of public health. 2012;41(9):71-7.
16. Jafari M, Rashidian A, Abolhasani F, Mohammad K, Yazdani S, Parkerton P, et al. Space or no space for managing public hospitals; a qualitative study of hospital autonomy in Iran. The International journal of health planning and management. 2011;26(3):e121-e37.