

Cost Analysis of a Dialysis Unit at a Tertiary Care Multi Specialty Teaching Hospital

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Abstract: The supply of dialysis therapy for patients with renal failure in the developing world is still inadequate. A complex business like healthcare requires frequent information about operations in order to plan for the future, to control present activities, and to evaluate the past performance of the organization. For a health care provider, dialysis facility becomes a profitable venture only if he has the knowledge and control on the cost of all the inputs that goes into providing the facility. A costing study gives the provider the necessary information required to carry out cost cutting exercise. Strategic cost-cutting must be planned carefully, as not all cost reduction techniques yield the same benefits.

INTRODUCTION

Dialysis and transplantation have become effective in prolonging the lives of patients with renal insufficiency. Conservative medical management of the patient and dialysis are the mainstay of therapy to acute renal patient¹.

The incidence of chronic renal disease is growing fuelled largely by diseases associated with an aging population, hypertension and increasing rates of diabetes largely related to obesity¹.

About 20% of patients with chronic renal failure are totally rehabilitated by dialysis, and another 30 to 40% of non-diabetics may be expected to be rehabilitated to functional level¹.

Recording the number of kidney patients undergoing haemodialysis worldwide show that around 1.7 million patients are currently kept alive by such a therapy³.

The dialysis market has seen a robust growth in the past 5 years. What makes this market more interesting and challenging is its customer base, which is relatively small yet of high value⁴.

It is among the most lucrative markets in per capita terms. Indian market for dialysis equipment and consumables was valued at Rs.231 Crore in 2008⁴.

As the number of people with end stage renal disease grows, the market for hemodialysis equipment and services is expected to expand, generating increased revenues throughout the forecast period⁴.

Hospital costs to patients are rising to unprecedented heights, and the estimates of expenses always seem to be higher than the income generated. Users expect that hospitals should base their rates on direct patient care alone. But this approach cannot permit the hospital to survive on a long term basis⁵.

Revenues of hospitals in the voluntary sector should not only cover the traditional direct patient expenses, but must also contribute towards, providing sufficient finances to meet current obligations, covering the costs of service to indigent patients and generating funds for up gradation and expansion of existing facility⁵.

Patients undergoing treatment receive services of varied nature from different departments. The hospital has to recover the expenses of the direct departments as also of the support departments from the patients availing these services⁶.

The cost of providing a service becomes evident after cost finding studies. The departmental charges should be set at least to equal these costs⁵.

The cost analysis is a tool which is useful in setting priorities for various courses of action to meet objectives, and provide an estimate of the net

financial value associated with each course of action (e.g. manpower and labour, material and equipment, facilities)⁵.

Aim: Economic evaluation of a dialysis unit using cost analysis as a tool.

METHODOLOGY

A prospective study was carried out in the dialysis unit, for estimating the cost incurred by the hospital for providing the service. The costs were considered under direct and indirect costs incurred per procedure. Direct costs included direct labour, direct material cost, depreciation and repair & maintenance cost of the equipment. Indirect costs included indirect labour, building and electrical maintenance and electrical consumption. Overhead cost was taken as 5 % of the total cost i.e. direct plus indirect costs.

RESULT AND ANALYSIS

Direct cost per procedure	
Direct material cost	963.73
Direct labour	241.83
Depreciation and maintenance cost of equipment	59.08
Electricity cost	37.4
Water consumption cost	9.6
Linen and laundry cost	4.6
Total Direct Cost	1,316.24

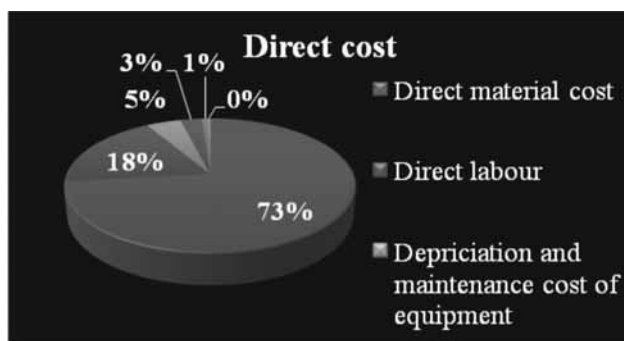
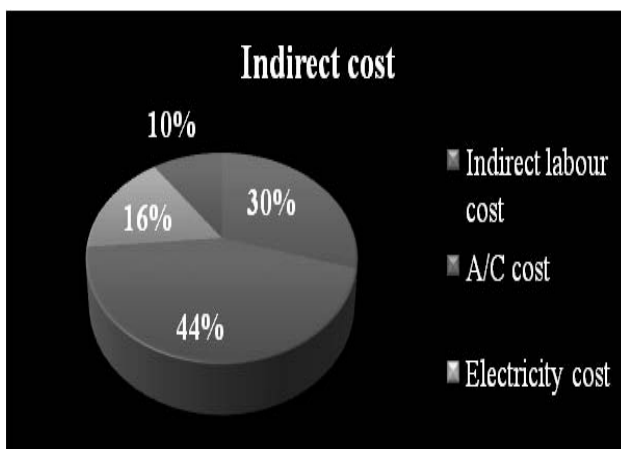


Fig 1: Direct material cost includes pharmacy and general store consumption.

From the above chart it is evident that material cost followed by labour cost formed a major part of the direct cost.

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Indirect cost per procedure	
Indirect labour cost	40.8
A/C cost	60.48
Electricity and maintenance cost	22.6
Depreciation of building	13.7
Total Indirect Cost	137.58



Air conditioning charges and labour cost formed a major part of the indirect cost.

Unit Price/Cost per procedure	
Direct cost	1,316.24
Indirect cost	137.58
Overheads	72.69
Total Unit Price	1,526.51

The actual cost incurred by the hospital to provide dialysis service is Rs.1,526.51. The direct costs account for 86 percent of the total cost, while the indirect cost account for 9 percent and overhead cost being 5 percent of the total.

Profit	
Sale price per procedure	1,613
Cost per procedure	1,526.51
Profit per procedure	86.49

In the hospital the patients are charged Rs. 1613 per procedure.

DISCUSSION

The study was carried out with the aim to calculate the cost per dialysis procedure and the result suggests that the cost incurred per procedure was Rs. 1,526.51 and Rs.86.49 was the profit obtained by the hospital per procedure. It is evident from the study that material cost, labour cost and air conditioning cost are the major inputs to the dialysis unit. The average numbers of procedures carried out in the dialysis unit per day are 52 and this includes both inpatients as well as outpatients. So the profit made by the dialysis unit per day is Rs. 4,497.48.

Hospital cost information is derived by relating the inputs of resources in monetary terms to the outputs of services provided by the hospital. Cost information is part of the basic information needed by managers and policy makers for making decisions about how to improve the performance of a hospital, where to allocate the resources within or among hospitals, or to compare the performance of different hospitals to one another. Some of the basic reasons for wanting cost information are to improve efficiency, increase effectiveness, enhance sustainability, and improve quality.

CONCLUSION

Cost information is part of the basic information needed by managers and policy makers for making decisions about how to improve the performance of a hospital and where to allocate the resources within or among hospitals. Cost data are not always available from routine data systems, due to poor information systems and lack of resources devoted to hospital management. Without quality cost data it is not possible to make accurate projections, improve technical efficiency, control expenditure and enhance accountability of managers. A scientific costing system is a very important tool for managements to fulfil these needs and hence, is imperative for the successful running of a hospital.

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