



“A STUDY OF THE COMPARISON OF UNIT COSTS OF A TERTIARY CARE TEACHING HOSPITAL”

Healthcare

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ABSTRACT

The practice of medicine today relies on diagnostic investigations. Physicians expect, and the public demand, better and more precise diagnoses. The laboratory strives to provide information to assist physicians in the diagnosis, treatment and prevention of disease and also reduces the pressure on the hospital for beds and thus reduces unnecessary admissions made for diagnosis alone.

Cost of medical care is directly proportional to the cost of investigations performed to arrive at the diagnosis. Cost effectiveness of investigations play a significant role in diagnostic investments.

Comparison of unit costs of tests aides in selection of diagnostic equipment and investments of health care organisations, with due importance of accuracy and test turn around times.

KEYWORDS

Unit costing, cost effectiveness, direct and indirect costs

Introduction

The practice of medicine today requires more and more diagnostic investigations. Physicians expect, and the public demand, better and more precise diagnoses. The laboratory strives to provide information to assist physicians in the diagnosis, treatment and prevention of disease and also reduces the pressure on the hospital for beds and thus reduces unnecessary admissions made for diagnosis alone.

Unit costing

The American Hospital Association, in its publication “Factors to evaluate in the Establishment of Hospital charges” states that:

The rates charged for each individual service should reflect properly the operating expenses of the service rendered, plus an equitable share of the other financial needs for which the patient is responsible.¹

The uses of cost analysis include²:

- To arrive at the cost of production of every unit, job, process, department operation by close analysis of the expenditure.
- To indicate to the management any uneconomic use or waste which is thereby revealed.
- To aid in pricing or working out quotations.
- To act as a base for value analysis.
- To furnish data for decisions like "make or buy" continue use or replace and product mix

There are three main items of information needed for unit cost estimation: a clear description of service inputs; a financial valuation for each input; and a measurement of service output or activity.

Important aspect of the costs of services that is particularly difficult to identify and update is the overhead element. This includes direct overheads such as supervision and clerical support to peripatetic staff and indirect overheads such as financial and human resource services.³ Cost accounting is being recognized more and more as essential to the efficient operation of the hospital. It enables the hospital administration to determine the actual cost of operating each section, department or service. It permits a more accurate formulation of policy and also measures the performance of the various departments of the hospital. It is therefore necessary to study following aspects relating to rate setting for hospital services:

A cost is defined as the value attributed to a resource, when used. The cost of a product or process is ascertained by

1. Absorption costing

The cost of the product is determined after considering both fixed and variable costs. Fixed costs are apportioned on a suitable basis over different products. The cost accumulated by this system is also called accounting cost.

2. Marginal costing

Only the variable costs are considered in calculating the cost of the

product, while the fixed costs are charged against the revenue of the period. It is easier to cost a product as most of the costs can be directly or indirectly allocated to the product. Accounting cost in case of a product is quite close to its cost.⁴

Unit Cost: A unit cost is a simple average or the cost per unit service or outcome⁵

Reagent rental

Reagent rental contracts are arrangements between diagnostics companies and laboratories in which an analyser will be placed in a laboratory in exchange for the guaranteed purchase of reagents over a period of time.^{6,7}

Reagent rental provides extensive benefits for clinical laboratories trying to cut costs in the following ways.

1. They allow laboratories to avoid the tremendous capital outlay associated with the purchase of new instruments
2. The average contract lasts between 3 and 5 years, reagent rental arrangement allow laboratories to keep up with the latest advancements in diagnostics technology.
3. Some contracts also include service/maintenance expenses in the cost, providing additional savings for the laboratory.

Objectives

1. To determine the unit costs of haematological tests carried out by autoanalysers on reagent rental
2. To compare the unit costs of haematological tests done by autoanalysers A and B

Methodology

The unit cost of tests carried out by the autoanalysers was arrived at by considering the costs incurred as Direct and Indirect costs.

Autoanalyser A was in use up to 2008 while the Autoanalyser B was in use since 2009.

The salaries of the personnel in clinical lab have remained the same, while the consumption of electricity and consumables other than reagents has remained the same.

Indirect costs

15 hours in a month (6%), 30 hours in a month (15%) and 15 hours in a month (6%) of the technician incharge, data entry and house keeping personnel's time are apportioned respectively to the autoanalyser.

One third of phlebotomists' salary is apportioned to the autoanalyser.

Direct costs include expenses incurred on

1. Reagents used
2. Salaries of technicians working on the autoanalyser and data entry

personnel,

- Electricity consumption by the autoanalyser, and
- Consumables including vacutainers tubes.

The equipment maintenance costs are not included as the autoanalysers are on reagent rental and the expenses on the maintenance are borne by the companies.

Indirect costs include

- Apportioned salaries of Technician Incharge, administrative and house keeping staff.
- Electricity and air conditioning
- Consumables and
- Depreciation on building space

Unit Cost

The total expenses incurred on the equipments during the year / Number of tests carried out during the year.

Direct labour costs

- Salaries of technicians manning the autoanalyser round the clock in 3 shifts.
- Salary of data entry personnel.

Insert Table 1

Indirect labour costs

Apportioned salaries of technician in charge, phlebotomists, clerical and house keeping staff.

Insert Table 2

Comparison of Costs

Insert Table 3

Discussion and conclusion

The unit cost depends upon the extent of the capacity which is utilized.⁸ The unit cost of a service decreases with the increase in the volume.

The number of tests carried out influences the unit cost, while the total costs incurred in 2009 is Rs 78,54,797 (Rs 6273946 in 2008) the unit cost has no significant variation as the number of tests carried out in 2009 were higher 136800 as against 109500 in 2008.

The unit costs of haematological test are 57.2873 by Autoanalyser A and 57.4120 by Autoanalyser B.

Though there is no significant difference in the unit costs, the intangible advantages of Autoanalyser A over Autoanalyser B are

- 20 cell parameter with cell distribution width, including nucleated RBC and reticulocyte count.
- Facility of automated slide maker and stainer
- 60 % more efficient than Autoanalyser A as it processes 20% more samples per run and processing time is 25% faster.

Table 1 Direct Labour Costs

Direct Labour Costs			
	Rs per month	Rs per annum	Rupees per annum
3 Technicians	36000	432000	432000
Data entry staff	6000	72000	72000
Total			504000

Table 2 Indirect Labour Costs

Indirect Labour Costs			
	Rs Per month	%apportioned to autoanalyser	Rs per annum
Technician Incharge	14000	6.5	10920
3 Phlebotomists	12000	33	72000
Clerical staff	6000	15	10800
House keeping staff	5000	6.5	3900
Total			97620

Table 3 Comparison of costs

Cost Head	Autoanalyser A	Autoanalyser B
Reagents	3662544	4804154
Technician Salary (3)	432000	432000

Data entry staff salary (1)	72000	72000
Electricity	7665	7665
Consumables	1752000	2188800
Indirect salaries	97620	97620
Electricity- A/C and Lighting	241338	241338
Consumables	7776	10368
Depreciation on building space	1003	852
Total in Rupees	6273946	7854797
Number of tests done	109500	136800
Unit cost in Rs	57.2963105	57.41810673

References

- Cost finding for hospitals, American Hospital Association, II, 1957
- Syed Amin Tabish, Ajaz Mustafa, Rangrez RA, Hospital Accounting Based Cost Studies: Indian Experience, JAHA V o 1 . 13, No. 1 (2001-01 - 2001-06)
- Anne Netten, Updating unit costs of health and social care, unit costs of health and social care 2002, 7-15
- Lt Col PK Gupta, Col NK Parmar, Costing a Hospital Service product: Marginal vs. Absorption costing MJAFI 2001; 57: 230-233.
- Goldar K, Agarwal AK. Unit costing of important cost centres in a general hospital in Delhi. Health and Population-Perspectives and Issues 1995; 18(3): 120-125.
- L. Meier, Strategies for Cost Savings: Reagent Rental Contracts; Frost & Sullivan March 2004.
- M. Terry, Reagent Rental Agreements: How to Evaluate Your Usage and Improve Your Agreements, Washington G-2 Reports 2009.
- Cost of Services in a Sub-district level Hospital in Northern India, K. Anand, C.S. Pandav, S.K. Kapoor, JAHA; Vol. 14, No. 2 (2002-07 - 2002-12)