

BRIEF REPORT

An audit of cost on maintaining a critical care unit

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ABSTRACT

Background: Critical care is one of the most expensive services provided by a hospital. The aim of this audit was to analyze the different expenditures in a critical care unit and to calculate the average cost for a bed to be maintained a day.

Method: Data on cost in providing critical care during one month were calculated. It included cost of drugs, consumables, medical gases, investigations, staff wages, electricity, water, telephone and indirect expenses as administration, cleaning services, laundry and security. Most costs were direct, but some had to be estimated. Estimations were mainly investigations, oxygen and indirect expenses.

Results: The cost of maintaining the 7 bed critical care unit was Rs 51 49 998.20/month. Medical gases and staff wages were the highest costs. The cost of maintaining a bed/day was Rs 24 523.80.

Conclusion: With clinical audit and financial data a patient costing system can be developed easily which will immensely help the health administrators.

Key words: Cost analysis, Audit, Financial management, Critical care unit.

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INTRODUCTION

Healthcare needs always out steps the available resources¹. In Sri Lanka the healthcare provided by the government is totally free for the patient. Although the health budget is increased almost every year, the rising cost of the drugs, equipment and disposables puts a heavy burden on the allocated funds. It is important for the patient to realise the situation, as sometimes an ugly situation may be created by complaining patients or their attendants over non-availability of some of the items or services. We undertook this audit to highlight the magnitude of the cost in providing critical care in a unit in whole as well as on cost per bed basis.

Teaching Hospital Karapitiya in Galle, Sri Lanka is one of the main tertiary care hospitals in the country. It hosts a main critical care unit in addition to dedicated cardiac, cardiothoracic, pediatric, neonatal and oncology critical care units. All the general medical and surgical patients requiring critical care are admitted to the main critical care unit where the audit was conducted.

OBJECTIVE

The main aim of this study was to analyze the expenditures incurred in different heads in a critical care unit and to calculate the average operational cost of a single bed per day.

METHODOLOGY

Permission to conduct this audit was obtained from the director Teaching Hospital Karapitiya. The audit was conducted for one month from 1st to 30th August 2009. Review of admission data showed that the type of patients were more or less similar in the preceding months.

An audit form was attached to each bed head ticket in the unit. The medical officers recorded all the drugs and the consumables used and the investigations done on a particular patient during the stay in the unit. The sum of all the drugs and consumables used and the investigations done on all the patients was taken as the unit's monthly consumption. Consumables such as gauze swabs and towels, antiseptic solution, plaster, gloves, syringes, cannulae, sutures, blood gas solution etc were difficult to be quantified for an individual patient. The quantity of them was calculated from the monthly purchase order book in the unit. These quantities were then priced using the price list provided by the Ministry of Health on drugs and consumables.

The cost of investigations was calculated using information given by a retired laboratory technician who runs a private laboratory. Measures were taken to exclude the margin of profit from the calculation. Cost for the investigations that were not done by the said technician were obtained from a private hospital. A correction percentage was deducted from this cost. This percentage was calculated by the difference in the cost of investigations done both by the technician and the private hospital.

The total cost of wages for the unit staff was obtained from the director of the hospital. This included half of one consultant anaesthetist's monthly wage as one consultant is responsible for two critical care units at a given time and the cumulative wages of the medical officers, nursing officers and the minor staff in the unit.

The cost of electricity was calculated with the assistance of the Ceylon Electricity Board engineers. A team from the electricity board calculated the total watts used by taking into consideration all the equipment used in the unit using electricity and the duration of operation each day.

The medical gases used in the unit were oxygen and compressed air. Air was supplied by a separate manifold for the unit. Oxygen was supplied by the liquid oxygen storage facility. The cost for the total number of air cylinders used by the unit for the month was obtained from

Ceylon Oxygen Ltd. The liquid oxygen storage facility supplied the main critical care unit, cardiology and paediatric wards, neurosurgical high dependency unit and the operating theatres. Ceylon Oxygen Ltd provided the total cost for the month. A percentage of this cost was taken for the critical care unit. The number of ventilatory hours in the critical care unit, number of operating hours in the theatres and the oxygen usage in the cardiology and paediatric wards were taken into consideration in the calculation.

The total cost of hospital administration, water, telephone, laundry, waste disposal and cleaning services and security was obtained from the hospital director. This was divided by the total number of units in the hospital to obtain a unit cost.

Any single ward, critical care unit, high dependency unit, emergency treatment unit, operating room, blood bank, out patient department or the radiology department was considered a single unit.

RESULTS

The total cost to manage 36 patients admitted during this month was Rs. 5,149,998.20 (Table 1). The average cost of maintaining a bed/day was Rs. 24,523.80. Staff wages which accounted for 33.35% was the highest single cost. Drugs were the 2nd and medical gases 3rd in this rank.

Table 1: Calculated ICU expenditure

Cost head	Cost (SL Rs.)
Drugs	16,57,622.90
Investigations	65,638.00
Medical gases	11,62,448.80
Wages	17,17,599.00
Electricity	1,50,000.00
Water	20,429.00
Telephone	2,684.90
Cleaning services	19,660.22
Security	6,670.06
Laundry	6,814.18
Administration	38,270.33
Total	51,49,998.20
Cost / day	1,71,666.60
Cost / bed / day	24,523.80

DISCUSSION

Finance managers and administrators often consider cost alone and disregard the quality of patient care, while clinicians often give priority to the quality but fail to relate it to cost². This audit would give some insight to the intensivist about the costs involved in maintaining a critical care unit in a teaching hospital. It is essential for the doctors to understand the process of cost-benefit analysis to optimize the use of limited available resources³.

If no direct data can be obtained, interviews with staff and experts may provide an approximate idea of utilization patterns and cost⁴.

When the basic principles and the frame work are understood, financial assessment and cost analysis become a relatively simple procedure². Most studies on cost analysis in medical services have been done on selected items⁵. By combining clinical audit with core financial data a patient costing system can be developed based on a simple framework which is easy to understand and operate². A rational transparent way of resource allocation can be developed based on the findings of the financial audits².

CONCLUSION

A heavy cost is incurred upon patients in critical care unit. The results of this audit may help the administrators and officials who plan to establish new critical care units in assessing the extra budgetary allocation necessary to maintain such a unit.

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