

# The operational cost of a urology unit

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## Abstract

**Objectives** To assess the operational cost of a urology unit, individual cost for certain index operations in urology, and to develop a framework to audit finances of a unit.

**Design** A financial audit.

**Setting** Urology unit in a teaching hospital.

**Methods** Data of cost in providing urology services during one month were collected. It included three main areas: ward, operating theatre and outpatient clinic. Direct costs included staff wages, drugs, consumables, investigations and food. Indirect expenses such as administration, water, electricity and cleaning services were also calculated. For each type of operation a relative value was assigned depending on the nature of the operation. When direct expenses were not available, the hospital was divided into different cost centres and apportioning of the cost was done accordingly.

**Results** The monthly operational cost of running a 19 bed urology unit with three operating sessions a week was Rs. 1 294 259. Staff wages constituted 61.2% of the cost. The cost of performing a pyelolithotomy was Rs. 18 669. Transurethral resection of the prostate (TURP) was done at a cost of Rs. 21 271.

**Conclusion** When the basic principles and the framework are understood, clinicians can perform financial audit and cost analysis of their units.

## Introduction

Unless you are an economist health economics is likely to leave you cold. But as State sector health care providers we have a responsibility to provide services that the community needs at an acceptable level of quality and at the least possible cost. At present the success of a unit is assessed by the advanced facilities available, complexities and the number of operations performed, or its outward appearance. Ironically, the finances of the health department are allocated according to the category of the hospital or the degree of influence a consultant can exert on higher authorities of the department. The hallmark of a successful health care unit should be the ability to deliver good health care, cost effectively. Financial audit of a unit provides a more complete and meaningful picture

of its performance and identifies opportunities for improvement. It provides policy-makers reliable information on the use of funds and reduces the inequalities in allocation of resources to different units in the country [1].

## Objectives

The aim of this study was to assess the operational cost of a urology unit, the individual cost for certain index operations in urology, and to develop a framework that can be used by other units to audit their finances.

## Methods

Permission to conduct this study was obtained from the Director of the Karapitiya Teaching Hospital, Galle. The study was conducted over thirty days (from 1 June 2006 to 30 June 2006) and a review of audit data of the unit showed that the workload was similar with that of previous months. The unit was divided into three areas to study the use of resources. Those were the ward, the operating theatre and the outpatient clinic. Some data were collected prospectively and others were obtained retrospectively from the records.

Cost of the drugs and consumables were obtained from the price list issued by the medical supplies division (MSD) of the health department [2]. Staff wages were obtained from the accountant of the hospital. In the operating theatre and outpatient clinic where urology work is done on a shift basis, the staff costs were apportioned according to the amount of time spent by staff members for urology services. Workload, patient information and consumables used were collected from the registries maintained in the ward, operating theatre and the outpatient clinic. The drugs and other consumables used during operations and investigations during the study period were recorded. The cost of meals given to patients was calculated from the records of the diet clerk and relevant budgets. 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.

The surgical team comprised one surgeon and five senior house officers. The anaesthesiology services were

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provided by a consultant and one medical officer for one theatre session, two medical officers for one session and one medical officer for the afternoon theatre session, every week. The 19-bed urology unit has eleven nursing officers and eight attendants and labourers ("minor" staff). The total cost of wages for ward staff was calculated for the month. After a preliminary survey on time spent on patient care in the unit, 85% of the cost of staff was allocated for operated patients and 15% for in-patients who had not undergone operations.

Each operation was assigned a multiplication factor ('relative value') according to the intensity of medical and nursing care required. Taking into consideration the total number of operations performed, the rupee value of the multiplication factor was calculated. A similar calculation was done in relation to the cost of consumables used in the ward. This allowed us to calculate the cost of services provided in the ward for individual operations.

The costs for theatre staff was obtained by calculating the cost of one operating hour. This was obtained by dividing the sum of salaries for nursing and "minor" staff by the total number of working hours in the operating theatre during a month. According to the average time spent for each type of operation (eg. one hour for a pyelolithotomy) a value was obtained as the cost of the theatre staff (anaesthesiologists, nurses and "minor" staff) for that operation. Consumables for each operation were recorded and their prices, obtained from the MSD price list, were added to derive the cost of consumables for an operation.

With the assistance of Ceylon Electricity Board engineers the hospital was divided into different cost centres according to the approximate consumption of watt-hours of electricity. Electricity consumption by a single ward was taken as one unit and every section of the hospital was assigned a unit value according to its electricity consumption. Altogether there were 80 such units for the whole hospital, and the urology unit was assigned 0.5 units as it was a small ward with only 19 beds. A similar method of calculation was used for water consumption and waste disposal services.

Cost of administration was ascertained using the method described in a previous study [3]. The total cost of administration was apportioned to the cost centres in proportion to the staff of each unit. Laundry services were provided by a contractor. The payments were made according to the number of items laundered. The number of items used in the ward and during urology operating sessions was recorded to calculate the total cost. The monthly expenses paid for the security services were divided by the number of staff in the hospital to calculate the unit cost. This was used to calculate the cost of security in relation to urology services according to the number of staff in the three main areas studied.

Our aim was to calculate the operational cost of a urology unit. Therefore capital expenses, such as expenditure for buildings, furniture and reusable operating theatre instruments were not included. A few recurrent expenditures, such as maintenance, transport and mortuary costs were also not included in the calculation.

## Results

The ward cost for 201 patients which included 131 patients who underwent surgery during the month was Rs. 943 584 (table 1). Most patients had their food either brought from home or bought from the canteen. Hence the cost for diet was low. The cost of urology operating sessions (eight mornings and four afternoons) was Rs. 268 438 (table 2). The out-patients clinic (154 new patients and 279 follow up visits) incurred a cost of Rs. 82 237 (table 3). Only a limited number of drugs were available at the outdoor dispensary and most of them were very cheap. Therefore the cost of drugs was minimal. Most of the expenses were due to investigations, such as IVU and abdominal ultrasonography.

The total cost of the urology unit for the month was Rs. 1 294 259. The major portion (61.2%) of the expenses were spent as staff salaries (Rs. 791 834). The above data were used to derive the cost of certain index operations in urology (table 4).

Table 1. Expenses in the ward

Staff wages	Rs. 630 920.00
Diet	Rs. 4 492.00
Drugs	Rs. 74 225.00
Other consumables	Rs. 16 200.00
Investigations	Rs. 114 775.00
Administration	Rs. 3 110.00
Electricity and telephone services	Rs. 44 262.00
Water	Rs. 32 000.00
Laundry	Rs. 10 200.00
Waste disposal and cleaning services	Rs. 9 500.00
Security services	Rs. 3 900.00
<b>Total</b>	<b>Rs. 943 584 .00</b>

Table 2. Expenses in the operating theatre

Wages – surgical team	Rs. 54 400.00
Wages – nurses	Rs. 44 991.00
Wages – "minor" staff	Rs. 19 994.00
Wages – medical officers in anaesthesiology	Rs. 8 000.00
Wages – consultant anaesthesiologist	Rs. 5 714.00
Drugs and consumables	Rs. 71 254.00
Administration	Rs. 466.00
Electricity and telephone services	Rs. 18 500.00
Water	Rs. 7 461.00
Laundry	Rs. 35 200.00
Waste disposal and cleaning services	Rs. 2 198.00
Security services	Rs. 260.00
<b>Total</b>	<b>Rs.268 438.00</b>

Table 3. Expenses in the outpatient clinic

Wages – medical staff	Rs. 27 200.00
Wages – "minor" staff	Rs. 615.00
Drugs	Rs. 1 000.00
Investigations	Rs. 53 000.00
Others	Rs. 422.00
<b>Total</b>	<b>Rs.82 237.00</b>

Table 4. Cost of six index operations

<i>Operation</i>	<i>Cost</i>
Pyelolithotomy	Rs. 18 669.00
TURP	Rs. 21 271.00
Cystoscopy	Rs. 3 569.00
Optical urethrotomy	Rs. 5 200.00
Vesicolithotomy	Rs. 9 286.00
Prostatic biopsy	Rs. 2 106.00

## Discussion

Health care needs will always outstrip the resources available [4]. It is essential for doctors to understand the process of cost-benefit analysis to optimise the use of available limited resources [5]. Finance managers and administrators are often criticised for considering cost alone and neglecting quality of patient care, while clinicians assess quality with audit but cannot relate it to cost. From this study we have shown that it is possible for clinicians to conduct financial audit. Most of the preliminary data necessary for a financial audit are already available in the different departments of a hospital. Cost of investigations is difficult to assess directly. If no direct data can be obtained, interviews with staff and experts may provide an approximate idea of utilisation patterns and cost [1]. When the basic principles and the framework are understood, financial assessment and cost analysis become a relatively simple procedure. The suggested framework in this study can be further developed to improve its quality and simplicity. Then clinicians can combine cost and outcome, the two essential elements required to assess efficiency.

Our study has shown the approximate cost of expenses of individual operations in a urology unit. This will enable comparison of the efficiency of new technology with existing techniques and allow the selection of more cost-effective techniques in a rational manner. At present

new technology is introduced mainly by personal persuasion which could be biased and even corrupt.

Using the results of this study patients who receive medical services free of charge in government hospitals can be made aware of the amount of money spent on them. At present new units in the government hospitals are established without increasing budgetary allocations for the institute. The data we gathered give an approximate estimate of the expenses of a dedicated urology unit. This may help institutions that plan to start a new urology unit to request extra allocations and plan future budgets of the institute.

Most studies on cost analysis in medical services have been done on selected items [6]. Taking individual elements of the cost out of context can be misleading [7]. Savings made from few items though commendable, would represent only a fraction of the cost of such a department. Alternatively, if an expensive operation can be performed quickly, greater savings could be made. Therefore, when performing studies on cost effectiveness, it is important to perform a comprehensive analysis before deriving conclusions.

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 operate. This provides clinicians with valuable and hitherto elusive information that is specific for the unit. Using such data

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cost saving measures can be directed at changing practice and increasing efficiency. A rational and transparent way of resource allocation can be developed based on the findings of financial audit. Before accepting new technology as the norm, cost analysis of such procedures in the local setting using the suggested framework should be encouraged.

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