

## A FURTHER NOTE ON COSTING

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In an earlier communication on the costing of an anaesthetic service,<sup>1</sup> the average cost of administering an anaesthetic at Groote Schuur Hospital during 1955 was reported, and the

figure was broken down into items, which included salaries, drugs, anaesthetic gases, and equipment, in order to show what contribution each item made to the overall cost. The present

report notes the costs of the same service in 1960 and draws attention to several interesting developments in the theory and practice of costing and financing hospital and medical services.

#### Anaesthetic Costs in 1960

The recording of costs has been continued at Groote Schuur Hospital and in 1960 there was a substantial increase on the figures for 1955. These figures are set out in Table I, with the figures from 1955 for comparison. Several points should be borne in mind in scrutinizing the figures. The most important is the fact that the number and nature of the medical staff

TABLE I. COMPARISON OF ANAESTHETIC COSTS AT GROOTE SCHUUR HOSPITAL IN 1955 AND 1960

	1955	1960	Per cent increase or decrease
Costs:	£	£	
Salaries .. .. .	19,170	29,634	+ 55
Gases .. .. .	8,344	10,103	+ 21
Drugs .. .. .	2,038	3,099	+ 52
Equipment .. .. .	1,284	2,255	+ 75
Total .. .. .	30,836	45,091	+ 46
Number of anaesthetics ..	16,151	16,422	+ 1.6
Staff:			
Consultants			
Full-time .. .. .	3	8	+ 166
Part-time .. .. .	5	9	+ 80
Trainees .. .. .	12	8	- 33
Unit cost per anaesthetic ..	£1.18.2 (R3.82)	£2.15.0 (R5.50)	+ 46

of the department altered appreciably. This is reflected in the table and it will be noted that, in addition to an increase in the total number of staff, there was a quite substantial increase in the number of consultant (specialist) anaesthetists and a *pari passu* decrease in the number of registrars.

Two factors contribute to this alteration in policy, one being the decline in the number of people offering themselves for specialist training, and the other being the alteration in the pattern of surgical care, especially the development of cardiac and vascular surgery, which has demanded a much higher calibre of anaesthetic service. This alteration in pattern has a further effect upon the unit cost of an anaesthetic, because these operations are time-consuming, so that in 1960 there was only a small increase in the number of operations performed as compared with the number for 1955, despite the increase in the number and ability of the anaesthetists. In the intervening years there has also been a further upward adjustment of salary scales, while the cost of drugs, gases, and equipment has increased, in addition to an increase in the quantities used.

Although the unit cost of an anaesthetic rose from the figure of £1.18.2 (R3.82) in 1955 to £2.15.0 (R5.50) in 1960, the internal ratio between itemized costs remained approximately the same. This is to be expected in the light of the work of Seale, which is discussed later.

#### Other Investigations

Only one similar investigation has been brought to our notice since 1955. In 1960 Shackleton<sup>2</sup> estimated the total expenditure and the unit cost per patient in one of the general hospitals in the Southampton group of hospitals. He found the total expenditure to be £22,945 (R45,890) and the unit cost £3.13.9 (R7.38). In one of the cottage hospitals of the group the unit cost was £5.17.2 (R11.72), while the unit cost for the group as a whole was £2.13.8 (R5.37). It will be seen that our costs compare very favourably with those in Great Britain.

While there are no other comparable figures available, Seale<sup>3-5</sup> has published a series of papers analysing the theories underlying the cost of providing medical and health services

of various kinds. The International Labour Organization has also published a Report on the Cost of Medical Care.<sup>6</sup>

It is apparent from these studies that the expenditure on medical care, irrespective of whether it is wholly or partially within the framework of a national health service, or is completely or almost completely on a fee-for-service basis, varies between 3% and 5% of the gross national income. The proportion will vary within these limits, tending to be greater during years of depression and smaller during years of prosperity. A principal reason for this is the slow rate of change in expenditure on salaries and wages which constitute the major drain on available funds. For example, it takes a minimum of 6 years to train a doctor to the point where he can undertake productive work in a medical service, so that if it is necessary to double the number of doctors in such a service this cannot possibly be achieved in less than 6 years. Since facilities for training the increased number must also be provided, it will probably be at least 8-10 years before any concrete result of the decision to increase the number of doctors will be evident.

#### Fixed and Variable Costs

Since the expenditure on wages and salaries does not vary appreciably from year to year, it falls within the category of fixed costs. This category also includes depreciation on capital assets, such as hospital buildings, and the cost of providing heat and light. Whether a hospital be full or half empty; whether the medical and nursing staff be overworked by an epidemic or wasting time because there is too little illness to keep them occupied; these expenditures continue at almost the same level and amount to 70-80% of the total spent on providing health service or medical service. The balance is spent on such things as drugs, gases, equipment and food and, since the use of these items will depend directly upon the number of people using the service, the costs will vary, sometimes from day to day. Almost half of these variable costs is devoted to drugs, but this constitutes only 10% of the total cost of the service, so that the total cost cannot be reduced by more than 10% even if all drugs were outlawed.

It is interesting to note from the report of the International Labour Office that, contrary to general belief, while expenditure on medical care is in general rising, it is rising more slowly and to a lesser degree than is the average national income. Hence, the proportion of the national income expended on medical care is static or may even be dropping.

Arising from the observation that drugs account for about 10% of the cost of a medical service, it should be noted that in providing an anaesthetic service this item occupies a much greater proportion of the total cost of the service (29% in 1960). Thus, economy in the use of anaesthetic agents can materially alter the cost of the service. In fact, when, in 1959, the use of halothane was introduced into the service at Groote Schuur Hospital, it was found that this caused an increase of 30% in the overall cost of each anaesthetic in which this agent was used, making the expenditure on drugs and gases a half of the total expenditure on the anaesthetic itself.

Today the cost accountant is the most important person in industry and commerce. He is the architect of a sound economy, and the medical profession would do well to learn to understand his way of thinking and the language he uses. It is only by so doing that we shall be able to avoid a nationalized health service, or that we shall be able to ensure that we enter such a service on an equitable basis.

#### SUMMARY

The overall and unit costs of providing an anaesthetic service in 1960 are compared with those for 1955.

Recent developments in the theory of costing medical care are noted and discussed.

#### REFERENCES

1. Jones, C. S. (1957): *S. Afr. Med. J.*, **31**, 906.
2. Shackleton, P. (1960): *Anaesthesia*, **15**, 229.
3. Seale, J. R. (1959): *Lancet*, **2**, 555.
4. *Idem* (1960): *Ibid.*, **1**, 1399.
5. *Idem* (1960): *Ibid.*, **2**, 696.
6. *The Cost of Medical Care* (1958): Geneva, Switzerland: International Labour Office.