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Day surgery: a problem of economics or financial management?

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Day surgery is often cited as a means of reducing expenditure on health care or increasing surgical activity within a given budget, whilst at the same time maintaining or improving the quality of care offered to patients. The aims of this paper are to explore the validity of this claim and to look at the issues involved in putting it into practice. The main conclusions are that day surgery is much better value for money than inpatient surgery, but there is no guarantee that savings will be made in every case. The main problem is one of sound financial management of change rather than economics. It is necessary to: (i) agree clear targets with surgeons and monitor them; (ii) ensure that the potential for day surgery is being maximized by monitoring the characteristics of patients having inpatient surgical procedures which are suitable for day surgery; and (iii) give surgeons greater control over their own budgets so that they can see the benefits of improved efficiency.

Key words: Day surgery, economics, financial management

Introduction

Day surgery is often cited as a means of reducing expenditure on health care or increasing surgical activity within a given budget, whilst at the same time maintaining or improving the quality of care offered to patients. The aims of this paper are to explore the validity of this claim and to look at the issues involved in putting it into practice.

The paper is divided into four main sections which seek to address the following questions:

1. How should we measure the relative costs of day and inpatient surgery?
2. What are the results of comparisons from the literature?
3. What are the economics of bringing about a shift from inpatient to day surgery?
4. How should this change work in practice?

The relative costs of day and inpatient surgery

There are three important principles which should underlie measurement of the relative costs of day and inpatient surgery:

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Compare like with like

This means looking at similar surgical procedures rather than the work of whole specialties or hospitals which will reflect differences in case mix; and comparing similar patients, because differences in age and health status are particularly important in affecting costs. Many studies reported in the literature and those carried out by individual hospitals often do not compare costs in these ways.

Include all the relevant costs

The direct costs incurred by the hospital are the most obvious and consist of the costs of the surgery itself, nursing costs and hotel costs. These are the easiest to measure and most often included in the studies. But there are also what we might call transferred costs. These include community support costs and the associated costs incurred by individual patients, their families and employers. Many studies do not take these into account.

Look for differences in costs other than the obvious ones which relate to length of stay

For example, a day surgery operation could be carried out in a day surgery operating theatre attached to a day surgery unit, which may be cheaper to run than a theatre suite in a large hospital used for inpatients. Differences like this should be reflected in the costs, yet there have been few studies of the cost differences of providing day surgery in different settings. Another example is where the unit cost of nursing may be less in day surgery units

Table 1. Studies of the average costs of day surgery compared to inpatient surgery

Study	*Date*	*Procedures included*	*Costs included*	*Method of calculation of costs*	*Difference as % of inpatient cost*
Babson[1]	1977	Hernia, varicose veins	Hospital, home nursing	Individual patients	40–44
Prescott[2]	1978	Hernia, varicose veins	Hospital, home nursing	Individual patients	65
Evans & Robinson[3]	1980	Many paediatric	Hospital	Costs of day and inpatient facilities	70
Coe[4]	1981	Hernia	Charges to patients	Bills paid by private patients	65
Flanagan & Bascom[5]	1981	Hernia	Charges to patients	Bills paid by private patients	70
Rockwell[6]	1982	Hernia	Charges to patients	Bills paid by private patients	45
Pineault et al.[7]	1985	Hernia, tubal ligation	Hospital, home nursing, patient out-of-pocket expenses and loss of salary	Individual patients	19–26
Heath et al.[9]	1990	Laparoscopy, arthroscopy and cystoscopy	Hospital	Costs of day and inpatient facilities	49–68

because the work of nurses may be more routine and require fewer nurses per patient. This is in addition to the fact that day surgery requires less nursing time overall.

Evidence from the studies which have been carried out

There have been a number of studies which have looked at the differences in the average costs of day and inpatient surgery (Table 1). The first studies were carried out during the 1970s and concentrated on the hospital and home nursing costs. The inclusion of home nursing costs reflects the way in which the services were organized at the time. There is evidence that for many routine day surgery procedures these transferred costs are small[9] because community follow-up is not needed. But as the scope of day surgery broadens and the procedures which are appropriate become more complex, there may be a greater need for community support.

The studies based simply on charges to patients are probably the least reliable as they reflect possible differences in the type of patients having each type of surgery as well as differences in the nature of the surgery. More recent studies have incorporated some of the transferred costs, like the out-of-pocket expenses of patients and the costs to employers and employees.

Despite having looked at different surgical procedures, included different categories of costs, used different methods for calculating the cost differences, all over several years when surgical practices have been changing, the overwhelming conclusion from these studies is that day surgery has much lower average costs. Even the study by Pineault et al.[7], which included community and personal costs to the patient, found day surgery to be 25% cheaper than equivalent inpatient surgery. So the case is very clear.

The economics of change from inpatient to day surgery

It would be convenient if we could say that changing from inpatient to day surgery will result in expenditure savings of 25% or more. Unfortunately, it is not that simple. Figure 1 shows two graphs, one for day cases on the left and one for inpatients on the right. Each shows the number of patients treated on the horizontal axis and the average cost of treatment on the vertical axis. The lines show that average costs fall as the numbers of patients increases because the overheads are spread more

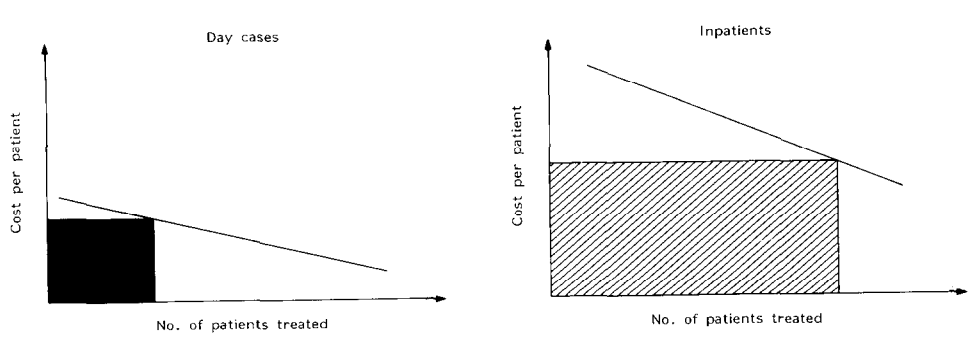

Figure 1. Expenditure on day and inpatient surgery. ■ = Day cases; ▨ = inpatients.

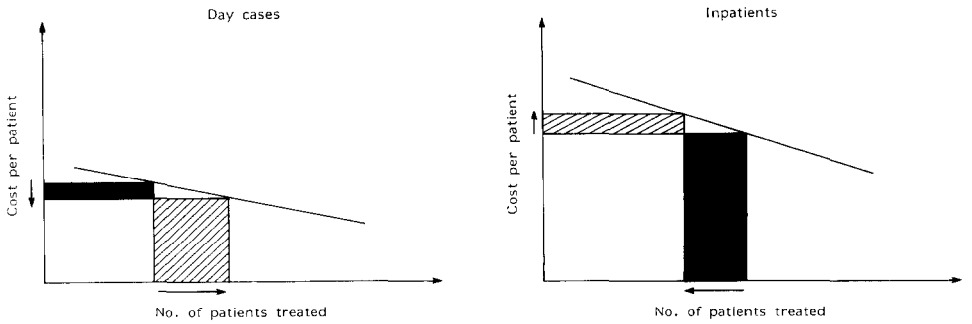

Figure 2. The costs and benefits of substituting day for inpatient surgery. ▨ = Extra cost; ■ = savings.

thinly and fewer staff per patient may be needed. The average cost of day surgery is clearly less than that of inpatient surgery assuming the vertical scales are the same. If we multiply the number of patients by the average costs in each case we get the total expenditure, shown by the shaded areas.

Now consider what happens if we try to shift inpatients to day surgery (Figure 2). The graph on the right of Figure 2 shows that the total cost of treating inpatients falls, the solid area, but the average cost of, and thus the total expenditure on, treating the remaining inpatients, rises (hatched area). The graph on the left of Figure 2 shows that it costs us more in total to treat those day surgery patients who would have otherwise had inpatient surgery (the hatched area), but the average cost falls so there are some savings (the solid area). To achieve savings overall the hatched areas must be larger than the solid areas in Figure 2. This depends on the shape and slope of the lines.

In order to measure the net effect in practice we do not need to estimate the lines or calculate the shaded areas. That would be very complex and unnecessary. For example, there is not much point estimating the costs of the operating theatre or of the patient travelling to the hospital if these are the same for both inpatient and day surgery. Instead, we can focus on the changes which are likely to take place and cost these. This is far less complex than estimating the individual average costs and is what is meant by marginal or incremental costing. This approach was used in the study carried out by the Audit Commission[9]. It was assumed that the bulk of the savings in hospital costs would be in nursing and hotel costs. This gave us an estimated saving of £110 per patient having day surgery rather than inpatient surgery at 1990 prices. A conservative estimate of the likely numbers of patients involved suggested savings of about £10m nationally. But the potential could be twice that or more. This may not sound much in the context of a budget for the National Health Service of over £20 000m per year, but the resources released could have been used to treat an additional 98 000 day surgery patients, 10% of the waiting list at the time. The Commission estimated that in fact there was a potential for reducing waiting lists by a third from expanding day surgery financed from efficiency improvements.

The marginal costing approach makes it clear that greater efficiency as a result of day surgery will only be achieved if the inpatient services are reduced (i.e. there are real cash savings) or more patients are treated for the same total expenditure. Much depends on tight financial controls.

The importance of sound financial management

Even if the economics of a change to day surgery have been properly measured and look favourable, that change cannot happen overnight. It requires careful management. The key issue is the provision of financial incentives for change. In the USA there is a system for reimbursement of hospital costs which is used by Medicare and many of the private insurance companies. They stipulate that for certain surgical procedures and categories of patient, reimbursement will be based on the day surgery cost whether the surgery is performed as an inpatient or a day case. The financial incentive associated with this approach is a very clear thrust towards day surgery. But to make it work within the hospitals, to ensure that clinical practices follow a pattern in line with the available funds, requires equally sound financial control on the part of hospital managers. There are three important steps which can be taken to achieve this:

1. Agree clear guidelines with surgeons on the number and percentage of patients to be treated as day cases for each separate procedure over a given time period and monitor these.
2. Ensure that the potential for day surgery is being maximized by monitoring the characteristics of patients who are still having day surgery procedures carried out as inpatients. The majority of patients will be suitable for day surgery, but a few may have mitigating health problems which necessitate inpatient surgery. It is important to ensure that these are the patients who are still being treated as inpatients, not those who could have had day surgery.
3. Give staff greater control over their individual budgets so that they have some say in what happens to the benefits of improved efficiency. This does not mean that all the financial benefits should be ploughed back into surgical services, but some of them should. This is an important incentive which is often overlooked. It gives staff the opportunity to see

the benefits directly and may feed into further expansion of day surgery.

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References

1 Babson JH. Disease costing. Manchester: University of Manchester Press, 1973
2 Prescott RJ, Cuthbertson C, Fenwick N, Garraway WM, Ruckley CV. Economic aspects of day care after operations for hernia and varicose veins. *J Epidemiol Comm Health* 1978; **32**: 222–5
3 Evans RG, Robinson, GC. Surgical day care: measurement of the economic pay-off. *Can Med J* 1980; **123**: 873–80
4 Coe RC. Changing methods: best way to cut costs. Letter to the editor. *Am Med News* 1981; **24**: 5
5 Flanagan L, Bascom JU. Herniorrhaphies performed upon out-patients under local anaesthesia. *Surg Gynaecol Obstet* 1981; **153**: 557–60
6 Rockwell E. Out-patient repair of inguinal hernia. *Am J Surg* 1982; **143**: 559–60
7 Pineault R. et al. Randomised clinical trial of one-day surgery: patient satisfaction, clinical outcomes and costs. *Med Care* 1985; **23**: 171–82
8 Heath P, Ogg T, Hall C, Brownlie G. The cost of day surgery. *Health Trends* 1991; **22**: 109–11
9 Audit Commission. A short cut to better services: day surgery in England and Wales. London: HMSO, 1991