Block 3 Some Current Issues and Applications

Unit 8 Performance assessment in health care
The Open University Team

Jenny Lewis, Course Team Chair  
(January 1991–June 1993)
Jacky Holloway, Course Team Chair  
(from 1 July 1993)
Michael Aczel, Author
John Blunden, Author
Alan Clarke, Author
Geoff Mallory, Author
Roy Needham, Author
Sue Pearce, Author
Derek Shields, Author
Tony Stapleton, Author
Peter Stratford, Author
Richard Wheatcroft, Author
Gordon Burt, Critical Reader
Sheila Cameron, Critical Reader
Chris Higgins, Critical Reader
Roland Kaye, Critical Reader
Linda Harris, Course Manager  
(January 1991–July 1993)
June Payne, Course Manager  
(from August 1993)
Christina Boxall, Course Secretary
Riz Sharma, Course Secretary

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Carol Russell, Critical Reader
Elaine Thomas, Critical Reader
Unit 8  Performance assessment in health care

Prepared for the Course Team by Jacky Holloway and Derek Shields

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Aims

This unit aims to explore some practical issues related to the assessment of performance of health care services, and their implications for managers and other stakeholders, that is:

- To set out some principles of good practice in the design and use of performance indicators (PIs).
- To illustrate the use of public service PIs by managers in service delivery, monitoring and control.
- To discuss the application of economic and marketing concepts to a service that customers would prefer not to have to use, yet for which demand is outstripping supply in many countries.
- To consider the relevance of such issues to other businesses.

Objectives

After studying this unit, you should be able to:

- discuss some of the complexities and conflicts involved in evaluating the performance of health and other caring services from a number of stakeholder perspectives
- critically assess the development and use of quantitative performance indicators in public and private sector organizations and organizations of which you have direct and indirect experience
- develop or explore the development of reliable and valid performance indicators for your own organization
- apply some concepts of economic evaluation (opportunity cost, cost-benefit analysis, cost-effectiveness analysis, cost-utility analysis) in the context of the performance of an organization with which you are familiar.
1 Introduction

This unit examines performance measurement in health care services because, like any endeavour, they need professional management. Caring also exemplifies several issues which may not be so clearly contentious in other sectors. ‘Care’ forces us to recognize that the choice and application of performance indicators is both affected by and affects moral and political considerations as well as those of effectiveness and efficiency. We have focused on health care as a sub-set of caring services in the belief that many of the issues to be addressed are shared by other services that contribute to health and well-being and play a major part in national economies. The design of performance measurement systems should reflect the roles which various stakeholder groups wish them to perform. Almost inevitably some of those roles will conflict.

The focus here is particularly on the UK National Health Service (NHS) because it encapsulates long customer-supplier chains in a turbulent and competitive environment where management cultures and organizational structures have recently undergone radical changes. Issues that illustrate the complexity and constraints facing health care managers will be drawn out from the UK policy context; they have many parallels in other countries where the funding, quality and costs of health care are under urgent review. Of particular interest will be the availability and use of performance measurement information for managers in purchaser and provider roles, which is analogous to much management activity in other service organizations.

Performance measurement in health care has a number of functions. For instance, to determine efficiency—whether individuals and groups of individuals are performing to acceptable quality standards at appropriate work rates and costs. Do the outputs from the system justify the inputs, when resources are constrained? A second function is to determine whether one form of provision is as effective as it should be, and how one provider compares with other similar providers. A third role might be to examine the appropriateness of forms of service delivery or individual treatments in terms of their wider implications to society.

Consider a health care manager who is trying to develop a performance measurement system to contribute to control, and to assist with the pursuit of organizational objectives. Appropriate measures could answer some of the following questions.

1. How well have we done overall, compared to our competitors?
2. How does this month’s income compare with last month’s, and why might they differ?
3. How long do our customers have to wait for our service?
4. How quickly do we complete each service episode, on average?
5. How quickly do our customers gain the full benefit of our service?
6. How can a mass service best meet individual needs?
7. How much is spent per unit of time on activity X?
8. Could another supplier undertake activity X at lower cost than our internal supplier?
9. How quickly do our customers return, and is repeat business desirable?
10. How many recommendations do we get per customer?
11 Why are complaints increasing? Do they indicate rising dissatisfaction, better access or increasing expectations?
12 How much do we pay in negligence suits per annum?
13 What contribution did we make to the health of the nation this year?
14 How cost-effective is this treatment compared with alternatives?

Even health services that are fully state-funded are seeking to apply performance measurement in these terms today. Customers may normally be called patients, and they may be reluctant to join a queue for service or to return for more, but in terms of accountable management of scarce resources the health care manager has much in common with, for instance, the manager in ICL operating an increasingly complex performance management system in an environment where efficiency is essential to survival. Markets, marketing and competition are no longer the sole preserve of private medicine.

**Activity 1**

From the above list of questions requiring performance measurement information, can you identify any that may be of equal interest to an operational service manager (such as a hospital departmental head or primary health care practice manager), a manager commissioning services for the client population from a supplier, a client group advocate, and a central government politician? How might their uses of the same information differ?

**Comment**

While an operational manager is likely to need information on all aspects of their service, they may depend on several other organizations to provide it, particularly where external comparisons are involved. A manager commissioning services for a local population will be particularly interested in comparative information between provider organizations, although they may also want to know how complex indicators (such as the cost of supplying internal services or the profile of complaints) are derived. Information about alternative forms of provision and their effectiveness, particularly in response to questions 6 and 13, will be of particular interest to a client group advocate and a politician – but each may interpret and use such information to different ends. Ultimately, useful answers to questions from outside the service unit will depend on accurate and appropriate data gathered at the service delivery level, aggregated in various ways. To assess the validity of macro-level performance indicators, it is particularly important to understand the origins of data that are to be aggregated.
In this unit we will focus particularly on the evaluation of the efficiency of health care provision, and the needs for data and information which managers and other stakeholders have when trying to make judgements based on the relationships between inputs, outputs and (where measurable) outcomes. Simply looking at ‘efficiency’ does not mean that we are neglecting other dimensions of performance – far from it. As you will see, this is a complex dimension in itself and impinges closely on effectiveness, economy, acceptability and equity. It is this proximity to potentially emotive public issues that makes efficiency assessment in itself potentially controversial. Here we will endeavour to stick to the ‘objective realities’ of rational decision-making about health care provision, while also recognizing the limits to such rationality and objectivity where human well-being is involved.
2 Identifying objectives for health care

2.1 What is health care for?

As Activity 1 implied, in developed societies there are many interested parties in health care performance, operating at different levels in and around a nested hierarchy of systems and sub-systems. Because of their diverse interests, it may be simplest to judge 'success' and 'failure' in terms of the objectives which the service under scrutiny defines for itself. Although in the NHS local and national objectives should be closely related, none the less incompatible objectives can arise between levels within a common policy framework and exacerbate technical difficulties in performance assessment. Furthermore, these policy-related objectives may be only loosely related to the objectives that customers who are not active participants in the policy process may wish to see pursued. An employer may see particular benefits in early and fast surgeries by local doctors, and priority for clinics for back pain (a major cause of lost working days) at their local hospital; parents may feel that health education should be the number one priority; chiropody may be the key to mobility for people who are otherwise housebound. Meeting all of these needs will contribute to the quality of individuals' lives, economic benefits and future health status. The cost of providing these diverse services can be assessed at the individual and aggregate level relatively easily; the benefits, however, are harder to assess. The diversity of objectives, technical problems of evaluation, and interaction of formal and informal systems account for several issues discussed in Unit 8.

Are there not, however, some fundamental objectives intrinsic in any health care service? While the core activities in the provision of other services such as banking and retailing may be open to limited debate about what service is required, the delivery of 'health' is less clear cut.

Activity 2

In order to clarify our interpretation of 'health' in the discussion of health care it will be useful to define the term. In fewer than 50 words, define 'health'.

Comment

As you may have found, it is no easy matter to develop a simple and relatively short definition of 'health' – it has many possible meanings. For instance, is health the opposite of sickness?

Is health:

- The opposite of 'death'?
- The absence of pain, impairment, suffering?
- A sense of general well-being?

I can be alive and in great pain and sickness, so health is not simply the opposite of death. On the other hand, I can have quite a severe impairment and yet be in good health. For example, I may have cerebral palsy but in all other senses be
perfectly healthy under normal circumstances. Furthermore, health care is not just medical care but the whole array of services that help people to feel, or be, more healthy, physically and mentally. In its Constitution, the World Health Organization (WHO) defines ‘health’ as ‘...a state of complete, physical, mental and social well-being and not merely the absence of disease or infirmity’ (WHO, 1948). To a policy maker this may be felt to be too ambitious, but perhaps it is appropriate to be ambitious in seeking general well-being for fellow citizens. Many people intuitively feel that ‘health care’ cannot be treated as just another service commodity.

The WHO constitution has an additional element which we can use to define the objective of health care: ‘To strive to provide the highest attainable standard of health which is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition.’ There are few commodities that are widely regarded as the route to a universal human right.

Defining ‘health’ should logically help us to put relevant boundaries around a ‘health care system’ and move on to assess its absolute or relative performance. Recognizing the importance of stakeholders, you might look further than a ‘medical’ definition. Too loose a definition of health and care, however, may lead us to consider anything that makes a person feel good to be part of a health care system. This of course will have a strong subjective element and reflect cultural and political differences. Are such things as going to the theatre or cinema, sports, a good cup of coffee, a walk in the countryside, or reading a good book before a blazing fire part of ‘care’? It may be more directly useful to define the particular aspect of health care for which a particular organization or individual takes responsibility; we may develop good performance standards of care in that context. Whatever your political persuasion about state provision of services, it is increasingly accepted that protecting and improving the health of citizens is not just the responsibility of health care organizations. Sociological, technical, economic and political environmental factors play a vital part as do citizens themselves. So what business are health care providers in? How far is care commodified (taking a ‘commodity’ to be ‘an exchangeable unit of economic wealth’ as defined in Collins English Dictionary)?

It is easy to see private health or residential care, and self-medication, as the exchange of money for care-related products or services. It is less obvious that by indirectly exchanging local and national taxes for public health or welfare services one is purchasing a commodity, not least because this has to be viewed as a collective ‘purchase’ – I may receive far more care than my ‘share’ of payment would purchase in a conventional financial transaction. A further and major difference between care of all sorts and most other commodities, with the possible exception of money and its surrogates, is that demand for it is thought by many to be infinite. Health care is provided in a number of ways, some of which are public, others of which are private, and some both. I am not at this stage differentiating between services which deal with acute and largely medical emergencies and conditions and those which are less immediately vital, can be elective and are non-acute. In the UK, considerations such as the urgency and severity of a patient’s condition influence, but do not override, the use of the queue as a mechanism for resource allocation. This can be compared with the tendency in many other services to meet growth in demand by increasing service availability (more outlets or longer opening times), differentiation (for instance by automating some parts of the service) or premium pricing. The development of facilities for minor surgical procedures in primary health care premises, and
the increasing uptake of private health insurance, may be seen respectively as examples of planned and emergent responses to the demand for an alternative to queues as the entry control for constrained hospital capacity. The extent to which demand is accepted as being infinite and the capacity of the main supplier inevitably constrained will obviously affect the assessment of performance of that supplier and the role for alternative suppliers and allocative mechanisms.

Health care can be considered to have four main guises:

1. promotion of health and well-being through education and provision of facilities, food and shelter
2. prevention of disease and disadvantage by education and provision of facilities
3. care of acute conditions which require rapid diagnosis and treatment
4. care of people who are chronically infirm through impairment, illness or age.

The greater part of the effort made to provide this care is in fact non-medical but interest today still seems to be centred on medical aspects which are mostly in the third group. The traditional concept of medical primacy over other aspects of health care would probably have been critically examined much earlier in history, had medicine not gained credit for things that it did not actually achieve. Among these are the transformation of health status and life expectancy by effective sewage treatment, clean water, refuse disposal and improved housing conditions over the last two centuries in the UK. Although a more accurate assessment of their relative contributions to the improvement of life expectancy has now been made (McKeown, 1979), similar infrastructure and public health developments are still struggling for resources today in developing countries, competing with the more glamorous and heroic struggles of modern medicine.

However, at the risk of perpetuating this somewhat distorted view, for the purposes of this unit we will focus largely on the design and delivery of formal health care services by institutions charged with achieving such ends. This has the advantage of bringing into view many performance assessment activities and service transactions that can be compared with those in other sectors. There are management lessons to be gained from such activities, and questions to be asked about how health services meet the needs of managers and employers. Furthermore, international surveys have found that health has a position of primacy in many peoples' ranking of 'the most important things in life' (McCann Erickson, 1989). Therefore, it is worthwhile for managers to see where they can contribute to this social goal, quite apart from the growing importance in managerial work of legislation in the areas of health, safety and environmental control.

2.2 How does the NHS measure up?

In the early 1990s several countries with a tradition of state funding for health services have been exploring the role for market-based models or a 'mixed economy' of provision, in order to meet ever-increasing costs fuelled by rising expectations, ageing populations and technological capacity in medicine. At the same time, some influential groups in the traditionally market-based USA are advocating a growing role for state medicine there. Clearly, there are many ways to meet the health needs of similar populations, but also diverse views about the best route to the objective of meeting the health care needs of developed societies. If we are focusing on some of the more tangible aspects of health
service performance such as efficiency and effectiveness (rather than the 'softer'
aspects encompassed by social acceptability and equity), perhaps there is a role
here for a rational approach like the systems intervention strategy (SIS)
introduced in Units 2 and 7.

**Activity 3**

(a) In your role as a manager, what are the three or four most important things
that a health care system needs to do for you?

(b) In your more private roles as potential patient, carer (of children or parents,
for instance), and taxpayer, what would be your highest three or four
priorities?

(c) What is the impact of any differences between these sets of objectives you
hold for such a service on the structure of that service? (You may find it helps
to draw two systems maps, and/or to arrange the objectives into two objectives
trees and compare them.) How far might the similarities and the differences
between the shape of these two 'ideal health services' affect the task of
real-world health service managers in planning services for the future? In
particular, what are the implications for a manager trying to design a perfor-
mance measurement system that will generate information that is relevant to
to all the stakeholder groups mentioned above, and to a regulatory body too
(such as government)?

**Comment**

One of the major sources of potential conflict of interest between employers and
consumers, both important customers of health services, is the priority given to
different client groups by health services. Managers and firms will naturally be
particularly concerned that treatment of acute or disabling conditions is swift and
effective; speed of access in particular is a major reason for the growth of private
medical insurance as a fringe benefit in the UK. While they are also likely to be
concerned on behalf of employees about long-term care for elderly people,
paediatric services, and community support for people with disabilities or men-
tal illness, by and large coping with the inadequacies of these services is left to
individuals to sort out.

You probably rightly thought that 'health service managers' is a very broad term
when considering their information needs. In the UK where the structure is
moving away from a nested hierarchy of purchaser/providers organized on a
regional basis with management cascading down through districts to units
(hospital or community services) to rather looser couplings of providers and
purchasers, the complexity of meeting diverse interests decreases as one gets
closer to direct patient care. This has significant implications for performance
measurement and evaluation. For a departmental manager in a hospital, objec-
tives are usually clearer, constraints more explicit, and scope for different
options or routes to objectives may be limited by professional or technical
considerations. For another manager involved in placing contracts for a range of
services from differentiated and competing providers, choice may be strongly
influenced by the presence or absence of reliable performance data and its
extrapolation to future performance. It may be harder to make detailed compari-
sions of diverse means to the same required ends.

In the UK NHS a system of performance indicators has developed since the early
1980s that ostensibly encompasses the interests and needs of all the groups
mentioned above. As we will see later, particularly in Box 3, there are drawbacks
as well as advantages in the operation of a 'unified' system. Valuable lessons can
be learned for other sectors from the NHS experience.
To return to the 'whole service' level, it is generally an important objective of the formal care sector that the health status of the population is optimized, given the constraints of budgetary and other considerations. In the UK, the Beveridge Report (1942), a key policy contribution to the establishment of the post-war welfare state, set out the bases for the National Health Service. Beveridge proposed that '... a comprehensive national health service will ensure that for every citizen there is available whatever medical treatment he [sic] requires, in whatever form he requires it, domiciliary or institutional, general, specialist or consultant, and will ensure also the provision of dental, ophthalmic and surgical appliances, nursing and midwifery and rehabilitation after accidents' (pp. 158–9). He also wanted the service to be organized by '... Departments responsible for the health of the people and for positive and preventive as well as curative measures' (ibid). Perhaps not enough emphasis has traditionally been given to these prophylactic requirements, and this is reflected in performance evaluation systems to date.

Remember, of course, that the Beveridge Report was produced at a time, shortly after the Second World War, when memories of the chronic deprivation of the majority of the populace for more than a century and a half and the will to see the back of them forever were still strong. The inability of ordinary people to pay for quite basic medical care was one of the strongest of these memories. The final recommendation, reflecting those memories, stated that '[care] ... be provided where needed without contribution conditions in any individual case' (p. 159).

In fact, because of indirect taxes of one sort or another over the decades, few have escaped payment of some kind, even in the UK where most health care is still directly state-provided and some groups who do not pay income tax (such as children and retired people) may be exempt from prescription charges.

In 1979, the Royal Commission on the National Health Service (advising the government on health policy) restated goals for the Health Service that were very similar to Beveridge's own.

They were that the NHS should:

- encourage and assist individuals to remain healthy
- provide equality of entitlement to health services
- provide a broad range of services of a high standard
- provide equality of access to these services
- provide a service free at the time of use
- satisfy the reasonable expectations of its users
- remain a national service responsive to local needs.

The Royal Commission stated that 'The curative and caring services make the essential contribution to the alleviation of suffering and always will, but we regret that more emphasis has not been placed ... on the preventive role of the NHS. This must change if there are to be substantial improvements in health in the future' (Royal Commission on the NHS, 1979, p. 41). However, by 1992 the Patient's Charter (part of the movement towards public declarations of policies and objectives of public services to their customers in the UK, mentioned in Unit 3) and the Health of the Nation policy documents (Department of Health, 1992a; and Secretary of State for Health, 1992, respectively) had brought together relatively accessible:

- statements of missions for health service organizations
- targets for performance as measured by a number of indicators of service level, health status of the population and service organization (as distinct from prescribed standards)
- clarification of the rights of patients.
Such change has been slow. It is very difficult to ask how well organizations do what they are supposed to do without deciding what their objectives are. To use such objectives as the basis for measurement of performance requires that they be made measurable. Most organizations are in business to provide for customer needs or wants either in order to make money or to fulfill a social mission. Yet, in spite of its predominantly social objectives, performance indicators in the NHS, developed in the 1980s (and described in Section 3), concentrated mainly on inputs and outputs, rather than on process, quality, equity or health outcomes. Furthermore, they rarely touched directly on the core business of clinical practice.

In his Reader article, Peter Smith outlines the structure of the NHS of the early 1990s. You may like to glance quickly at the first part of Section 2 of the article if you are relatively unfamiliar with this ‘organization’. It is a constantly changing picture so, particularly if you have little or no knowledge of the NHS, here are a few more characteristics of its structure and accountability relationships (as at late 1993). They relate to England, but the health services in Scotland, Wales and Northern Ireland are organized along broadly similar lines.

- The major theme of the reorganization which began in 1989 is the structural and managerial separation of ‘purchasers’ of care from those who provide it. As a result, providers of care need not necessarily be NHS employees although the care may be paid for from public funds, ‘purchased’ by the placing of contracts which are usually negotiated annually.
- The ‘purchasers’ can be seen as the local arm of the central government Department of Health, assessing health needs and purchasing care on behalf of patients. They come in two forms – District Health Authorities (DHAs – appointed bodies which are accountable to the Secretary of State for Health, including business people, health care professionals, representatives of the voluntary sector) and ‘fundholding’ general practitioners (GPs). Through their managers and staff, DHAs ‘purchase’ secondary care for all the patients in a local area (a town, part of a city or county, for example) from directly managed providers, from NHS Trusts, from the voluntary sector or from the private sector.
- Purchasing care on the basis of predicted clinical need and desired ‘health gain’ is the challenge for the future; currently most purchasing reflects past patterns of demand as generated mainly via GPs. An elaborate purchasing process is still evolving, through which annual contracts are placed for the provision of caring services on the basis of competitive contracts which still generally result in treatment being delivered by the local hospital. Referral to such services still comes via the GP unless the practice is a ‘fundholding’ one (see below). Thus to the patient the structural changes may not be obvious but the trappings of this ‘internal market’ – customer care programmes, the Patient’s Charter targets and the like – are signs that providers are aware that they can no longer count on all local care being provided by them.
- Turning to the ‘providers’, hospital, community care (e.g. institutional or domiciliary care for elderly people, those with disabilities or needing services such as chiropody) and ambulance services are mainly provided by NHS Trusts – newly constituted bodies based mostly on pre-existing hospitals or services formerly managed by DHAs. Trusts have their own management boards including appointed representatives of business and the community which are accountable to the Secretary of State. Services which have not been given Trust status are referred to as directly managed units or DMUs.
- All GPs (and general dental practitioners) are independent contractors rather than DHA employees; their contracts are managed by Family Health Service Authorities (FHSAs). Some are both ‘providers’ and ‘purchasers’.
holding GPs represent a growing proportion of GPs and they are so named because they have direct control of a budget to purchase hospital and other secondary care (almost) wherever they see fit, through new contracting arrangements, for their patients. They also provide primary care in the traditional manner, to the patients who are registered with them. Other GPs still operate through the DHA when they need to refer their patients for hospital care, sending most patients to the hospitals with which the DHA has placed its contracts. Their main role is therefore to provide primary health care.

- There is also a regional tier of management, which acts as a buffer to the Secretary of State for Health when it comes to monitoring the performance of Trusts, GP Fundholders, and Family Health Service and District Health Authorities. The regional role has traditionally embraced strategic planning, research, medical education and management of the provision of highly specialized treatments and services. Their role and their geographic boundaries are likely to change considerably in the 1990s. However, with the devolution of considerable authority from DHAs to Trusts and GP Fundholders, and the changing roles of DHAs, as long as England also has a health policy which requires strong central control over the state health service there is likely to be a need for some form of filter between operational services and government.

- And finally some statistics – in the year to 31 March 1992, spending on the NHS in England amounted to almost £27 billion, less than 5% of which came from direct charges to patients (e.g. for prescriptions and sight tests). Historically up to three-quarters of NHS expenditure has been on salaries and wages. In 1991 the health service employed over 800,000 whole-time equivalent (WTE) staff, including almost 400,000 WTE nurses, around 50,000 hospital and community medical staff, and a similar number of general medical and dental practitioners working as independent contractors to the NHS. For the 48.2 million English citizens recorded in the 1991 census, over 8.5 million finished consultant episodes (time spent by a hospital patient continuously under the care of one consultant) had been recorded in the previous year.

As you can see, we are talking about a pretty big business here! You will already have gathered that there is ample scope for diverse and competing stakeholder interests even before patients and the wider community are taken into account.

What is of particular interest here is the extent to which the 1990s' reorientation of a massive state service provider like the UK National Health Service, still a de facto monopoly supplier for many market segments, is drawing together the language of markets and customer relations, rights of citizens, and explicit targets and published comparisons of provider performance. Each of these trends (which are not unique to the NHS or the UK) have significant implications for stakeholders: patients, taxpayers, politicians; clinical professionals and support staff, managers; suppliers to the NHS, employers. They especially share needs for information about services. This is the focus of Unit 8.

### 2.3 Assessing the attainment of health care objectives

In Unit 3 we suggested that organizational objectives have evolved towards greater social responsibility made operational through the introduction of Total Quality Management (TQM). Trends towards increased environmental care are now augmenting TQM as the driver of reforms (illustrated in a small way by the
inclusion of environmental and social impact assessment in the Malcolm Baldrige and European Quality Award frameworks mentioned in Unit 7). However, a debate is ongoing in Europe and the USA regarding the wisdom and cost of general welfare provisions. In spite of the rapid promotion of 'customer service' and process evaluation, and a revival in efforts to assess the impact and outcome of health care, the systematic assessment of provider efficiency remains the dominant use for performance-related data. The various users' charters in the UK are topical examples of the use of this type of performance indicator (PI), in some cases barely disguising a provider's trade-off of the cost of getting the service right first time versus the cost to compensate consumers for service failures. Let us consider what the Patient's Charter (Box 1) promises in terms of the performance of the NHS.

**Box 1 The Patient's Charter**

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From your own experience of using health services, do you feel that information about performance against the standards in Box 1 would tell you what you needed to know if you could choose a hospital to meet the needs of all generations in a family?

What sorts of problems may be posed in the assessment of performance against these standards, for the service providers and for potential service users?

Comment

Although these standards have something to offer users from pre-natal to infirm elderly people, given the long-standing objectives of the NHS you might reasonably expect that they were bare minima that should have become normal practice many years ago! That many providers may still find it hard to attain these standards suggests that technical prowess in the provision of medical care, and volume of patients treated, have taken precedence over access, fairness, timeliness and responsiveness to users' wishes. Whether they encapsulate enough about individual hospitals to enable a potential user to choose between them, given the opportunity, is another matter. You may have felt that information about the 'success rate' of clinical teams or individuals, about unwanted out-
comes such as infections, and about the quality of the food, are equally important. While data are often collected about these aspects of hospital care, they are rarely made public.

You can see that the nine Patient's Charter Standards touch on only some of the Rights in the Patient's Charter. They reflect a mixture of recent government policy priorities, accepted good management practice and issues of concern to health pressure groups. To set realistic standards and measure performance in a valid way for all ten of the Rights would be a very complex undertaking. Those involved in data collection, analysis and publication might rightly argue that this would be an unreasonable diversion of funds away from the core business of patient care. They might also argue that we know little about the use of such comparative information by customers, and that, until there is evidence of strong demand for more, the existing nine Standards are good enough.

In my view, five of the Patient's Charter Standards (1, 2, 3, 8 and 9) can most easily be assessed by their mere presence. This may be the most feasible proxy for effective operation but may tell a user or manager little about the quality of their service relative to 'best practice' or alternative (competing) suppliers. It also tells us little about the value to patients of, for instance, policies on privacy. Performance against these highly qualitative standards is perhaps best assessed through carefully designed patient surveys and interviews. Such forms of assessment are becoming increasingly widespread in Europe, the USA and Australia, for example, and their effectiveness is the subject of research which often feeds directly into patient care practice. Higher patient satisfaction at the provider level cannot, however, tell us how far the service as a whole is contributing to the improvement of the health status of the population.

The four standards most readily expressed as quantitative targets (4, 5, 6 and 7) are essentially input-output ratios, and are among the 'data items' to be included in a set of league tables of English hospital and ambulance service performance to be published for the first time in 1994, for the information of both the general public and the health service. By the time you read this, such data may be publicly available although the form of presentation is not yet clear at the time of writing. If someone is making a decision on your behalf about where to place a contract for general surgery services to be provided for people in your town (a district health authority purchasing manager in England, for instance), and you need a minor operation, would you prefer them to choose the hospital where on average only 10% of outpatients have to waste over 30 minutes waiting for their appointment, or the hospital where you could be the one person in a hundred who has their operation cancelled twice and has to wait over a month for a third chance? Or would you like to wait a little longer to get on to the books of the hospital that, having accepted you, does not keep you waiting at all, even if it involves more travelling? Such league tables will not tell you if it is you who will be the unlucky one, only what the chances are on average (information which is of limited value without knowing the standard deviation or the shape of the distribution of waiting times). Having experienced routine waits in outpatients of an hour or more over the years, and the inconvenience of taking two days off work for a cancelled operation, I think I would opt for the first hospital, as it is less disruptive to plan to spend a few hours reading in the outpatients' waiting room from time to time!

My preferences here reflect my valuation of opportunity cost (my time, primarily, and costs incurred through travel), which is discussed in Section 4.2. They also reflect my perception of risk (chance of a significantly inconvenient event occur-
ring at short notice, against the chance of an event occurring where even the worst case scenario—say a wait of two hours—can be accommodated given the opportunity to plan for it. The manager placing a contract to purchase services has less direct and detailed trade-offs to make, but they have to make decisions on behalf of lots of unknown people who may have different preferences. They also have to take price into account, as from a constrained total budget they are purchasing other services where life and death rather than mere inconvenience and lost income may be at stake.

In this section, we have been considering health service performance against the objectives held for it at the individual, institutional, local area and national policy levels. However, as with other aspects of performance evaluation, international developments are also influential. For instance, linking health care needs to costs is becoming more explicit in many countries through the development of standard ‘Diagnosis Related Groups’ (DRGs—now called Healthcare Resource Groups in the UK, and Case Mix Groups in Canada) which can be used in planning and contract-placing, particularly for surgery. It involves the classification of procedures into a manageable set of categories (based on the International Classification of Diseases) and the identification of their standardized costs. The incorporation of this approach into contracting for health care by purchasers (District Health Authorities) is being encouraged by top NHS management, and the costs of episodes of care classified by DRGs at hospital level are being built into the Health Service Indicator (HSI) package. (Both DRGs and HSIs are discussed in more detail below.) Analysing costs of care using DRGs has obvious practical advantages in purchasing when it is fully developed, but may be unpopular at provider level for 'political' reasons as much as technical ones because publicizing benchmark costs readily identifies some providers as inefficient. A classification system that is simple enough for routine and accurate use inevitably masks many data about the characteristics of the patients treated. The development of patient groupings for the purposes of assessing the need for care, and outcomes of treatment, is in its infancy.

An additional complication in the provision of an appropriate and effective mix of services is the need for good quality data about the population to be served—number, age distribution, known and predicted health care needs, and so on. In the UK major sources of such data are the General Household Survey (undertaken every five years) and the decennial Census. Health service users have benefited by involvement in the design of recent censuses as well as through more sophisticated and rapid data analysis using, for instance, computer-based Geographic Information Systems (GISs). When considering health care planning and evaluation, it is rarely enough to restrict the investigation to the provider organizations themselves; wider system and environmental factors are almost always implicated.

To return to my referral to a hospital for minor surgery, my hospital may have decided to trade off poor performance in the waiting room (caused by longer consultations, perhaps) against low risk of cancellation of operations (often due to complications with other patients on the theatre list which can be foreseen if a more thorough consultation precedes surgery). Of course, one could argue that a proper assessment of the processes taking place in the outpatients department would provide data enabling long consultations to be planned for, too. That is one of the objectives of league tables of comparable providers. If one hospital can get it all right first time, why can't another? We will return to this issue in Section 3.
The Patient’s Charter Rights and Standards, and the planned league tables, are examples of the tendency for complex organizations to favour simple measures of current status against a target, a proxy for something far more complex. Goals which can reasonably be expected to be achieved, objectives which are relatively specific and widely endorsed, may make the choice of tools for measurement and evaluation comparatively simple. However, as we have seen, there are likely to be different interests and viewpoints that require different results from measurement. Whereas measurement is ideally used to try to show the objective ‘truth’ of situations and to contribute to optimal decisions, there are technical, political, economic and social reasons why this ideal is rarely achieved. It is often far harder to design performance measurement systems to help us judge whether we are moving in a direction we really wish to take. Furthermore, earlier in this course, and in B881 Strategic Management, you were reminded that ‘official’ organizational objectives may rarely be those that all participants strive for – rationally negotiated or articulated.
3 Choosing measures and targets – multiple interests

3.1 Introduction

We have already noted that health services have many stakeholders. The nature of their interests and involvement with performance assessment will vary to a certain extent with the structure and accountability relationships of the service concerned. But even in privately owned and funded health care systems it is possible to identify some common key types of concern. In Unit 7 it was suggested that different stakeholders have interests in particular dimensions of performance, within the broad field of 'quality'. In the rest of this unit we are going to explore, in particular:

- the part played by performance indicators (PIs) in management control of the use of health service resources by professionals
- how 'efficiency' of health services (primarily input:output ratios) is judged by various stakeholders, and the role for economic concepts in health care performance evaluation
- how new performance evaluation techniques are being developed to address the tensions between goals of cost control, health gain (effectiveness) and equity.

3.2 Principles of performance indicator design

Most organizations generate performance-related data and use it in a more or less systematic way to check that control over processes is adequate, and to inform decisions about change. In private sector organizations these data are perhaps most commonly made accessible to people outside the firm in the form of annual company reports and accounting information. Financial performance is used as proxy information for investors about how well managed the firm is (particularly in terms of efficiency) and where it fits in its competitive environment over a period of time.

There has been less of a tradition of such reporting in the public sector, partly because financial control is overseen in detail by bodies such as the National Audit Office (which scrutinizes the use of central government tax revenues on behalf of parliament) and the Audit Commission (monitoring local government and NHS performance) in the UK. (Such bodies have their equivalents in most other countries.) Furthermore, choices about the use by managers of public funds have always been constrained by treasury regulation in the UK. Although it would be reasonable for taxpayers to check on the financial performance of services funded from their incomes, unlike shareholders they cannot sell their shares if they feel the organization is badly managed, and their financial relationship with organizations such as hospitals is rather indirect. Furthermore, the part of the 'market' served by many public organizations is not necessarily coveted by another competing one – far from it, many bodies have a statutory obligation to undertake duties that they would never do in a free market. So performance-related information in the past tended to be presented to parliament or govern-
ing bodies in a form that meant relatively little to the general public or, indeed, to many internal customers and managers.

The Citizen’s Charter and its spin-offs such as the Patient’s Charter, described and discussed in Section 2, are comparatively new vehicles for bringing performance-related information to taxpayers and service users. Such developments are ostensibly a response to growing public concern about value for money and quality of public services for which full market mechanisms cannot (yet) be introduced. They have their parallels in the Framework Agreements and performance targets for the Next Steps agencies (semi-autonomous bodies which provide an increasing proportion of the services formerly supplied directly by staff of central government departments) and recently privatized utility companies. However, such services are rarely starting from scratch when it comes to collecting performance-related information; the innovation is in its presentation to the general public and its links to reward systems for managers.

The recent developments, their links to the ‘wave of performance assessment’ seen in the UK from the early 1980s (as described by Pollitt, 1986) and debates about models of responsiveness are covered in depth in B887 Managing Public Services. The rest of Section 3.2 is developed from material in Unit 10 of B887.

For any manager charged with the development of a new system for the collection and analysis of routine performance data in order to produce regular statistics indicating comparative performance, it is tempting to start with the things that are easy to count and the statistics that are already collected. However, the resulting indicators may be of little or no relevance to current decision-makers.

Activity 5

What sorts of hazards could accompany the development of a package of PIS for any organization based on whatever happened to be available or was easy to measure?

Comment

Among the many hazards we could find:

- undue attention being given to data related to external obligations such as tax assessments and routine financial or employment returns for which the original requirement may have lapsed
- too much weight being placed on things which are easy to measure like certificated sickness absence and formal complaints
- inadequate attention being given to sensitive subjects such as reasons for staff turnover
- lack of information about customer satisfaction which may require considerable investment to collect properly
- a mass of data that does not inform anyone but encourages scepticism or rejection of more useful information.

As performance-related data and information are rarely free goods, and bad information can lead to damaging decisions, there are some principles of good practice to be borne in mind here. Returning to the SIS principles, it is important to be clear about what system is under scrutiny and for what purposes. Assuming
the information may lead to action, it is also vital to understand as much as possible about how the sub-systems, elements and environment interact – an understanding that will grow as the performance measurement process develops. Designing a PI system is an iterative process.

First, it may be necessary to decide whether your priorities lie with tackling performance problems, or performance measurement problems. Performance measures and indicators (which we will refer to collectively as PIs here) can be seen as the basic building blocks in any sort of performance management system. The collection and analysis of appropriate data may provide direct measures of attributes of concern. For example, a university department may have a policy that overall examination pass rates for all courses should fall within a range of 85 to 95%. At the end of any one course, after all the exam scripts have been marked, either this standard is attained or it is not, and in the latter case the marks can be adjusted statistically to bring them into line. Of course, it is important to understand any significant deviation from the normal pass rate; statistical adjustment may be a valid way to reduce the effect of individual markers’ tendencies to be lenient or severe, but not a valid way to cope with a cohort of students who are more capable than their predecessors.

Alternatively, the PIs may be indirect (sometimes proxy or substitute) indicators from which we infer, on the basis of hypothesized relationships, characteristics of organizational structures or behaviours. For instance, in order to implement an equal opportunities policy, an employer may take a number of steps to improve career opportunities for women; annual monitoring of changes in the ratio of women to men in promotions above a certain grade can indicate whether recruitment and staff development processes are operating in the desired way.

Having decided that one or more performance measures or PIs are required, for an identified and current purpose, what are the general characteristics of a ‘good’ measure or PI? Some ground rules are set out in Box 2.

**Box 2 What makes a good performance indicator?**

- Timeliness – the immediacy and frequency with which data become available as information. To exercise effective control, data need to be collected at appropriate time intervals (to detect trends or cycles) and analysed rapidly enough for action to be taken which will have the desired effect.
- Capacity to measure direction and pace of change, indicated by the level or state of key variables measured after the elapse of appropriate intervals of time and compared with intermediate targets or a desired trend.
- Sensitivity, assessed in terms of the intervals at which data are collected and the calibration of any measures – are they small enough to detect the levels of change we want to observe? The risk of missing a change, or dismissing it as an error, artefact or due to chance, must be minimized.
- Specificity – this is problematic in many areas of performance evaluation. With how much certainty can we say that A, or a particular aspect of A, causes B? How far can we progress beyond noting correlations? Organizational performance assessment can rarely take the form of controlled experiments, so assumptions need to be made explicit and open to challenge.
- Validity – how confident are we that we are measuring what we want to measure? Assume we can assess progress towards an objective by measuring the value of certain attributes. To test validity we ask whether our measure correlates highly enough with the attribute of interest to be regarded as a good predictor of that attribute.
- Reliability – the extent to which a measurement procedure or instrument will produce the same result when used by different people (or the same person on another occasion), other things being equal.
Ambiguity – lack of clarity and explicitness – can seriously damage the confidence placed in a measure, and can be one factor affecting the accuracy of data collection or recording. This can be a particular problem with scaled or subjective measures, less so for frequency counts.

The accuracy with which measurements are made and data are recorded is not simply a function of the carefulness of the individuals involved. Normal motivational factors such as the clarity of instructions, explanation and understanding of the significance and purpose of data collection, convenience and complexity of collection procedures, and the presence of distractions can all contribute to the quality of raw data. Staff who handle data need to have the necessary skills for any coding or manipulation, as well as an interest in their tasks that is conducive to accuracy. These factors may well be amenable to management intervention and should be considered when data collection is planned. When you use performance-related data you need to have some idea of the level of accuracy which is likely to exist, and to be able to assess whether it meets your needs.

Can artefact effects be eliminated – for example the ‘Hawthorne effect’? (That is, the subject of investigation being changed unintentionally by the process of investigation; see Roethlisberger and Dickson, 1939.) Perhaps we can change the way we look at and classify things, or adjust our expectations of what it is worth looking for during the evaluation?

Availability and cost-effectiveness (which are often related) deserve some consideration; data collection, analysis, storage and retrieval costs can be considerable. As suggested earlier, performance monitoring often uses data collected for other purposes, and therefore does not incur much additional cost – but you must judge its value for your needs in terms of the factors outlined above. The costs of obtaining ‘bespoke’ data (assuming it is feasible), compared with the anticipated benefits, may preclude their collection. The 80:20 ‘Pareto principle’ often applies to performance measurement – the costs of obtaining that final 20% response rate from a survey may be out of all proportion to the additional information obtained! However, the non-availability of good data may reflect vested interests rather than technical impossibility.

Feasibility – can targets be set, if appropriate, and are the targets based on realistic expectations?

(Source: Adapted from B887 Managing Public Services, Unit 10 Managing Organizational Performance.)

Activity 6

Taking two or three performance indicators or measures that are regularly used in your organization, how far do they satisfy the ground rules in Box 2? What are the implications of any shortcomings:

- For you in your work?
- For external stakeholders?
Broadening out a little from our focus on PIs *per se* to the development of a suite of measures that can contribute to an overall organizational profile, it is important to consider the balance between 'industry standard' measures, or even more general standard ratios, and organization-specific indicators. Four key criteria for evaluating new and existing sets of measures were introduced in Unit 6: relevance, directness, clarity and cost-effectiveness (RDCC Criteria). These considerations apply in all contexts, not just when assessing financial performance. (You may like to look back at your notes for Activity 10 in Unit 6.)

The focus of this unit is on a large public service organization. Where the process of performance assessment (rather than the performance itself) has been studied in depth, the distinction between public and private sectors is perhaps less significant than you might expect. In a comparative study of 14 organizations Carter *et al.* (1991) found that the problems of performance assessment, and methods for the design of PI systems, crossed the public/private divide. Just as we have identified some ‘ideal’ characteristics of performance measures and data within PI systems, Carter *et al.* move from description towards a prescriptive theory of PIs. While the form of a PI system should be contingent on the needs of the organization, Carter and his colleagues identify elements of best practice from their case studies. PI systems should be:

- relevant to organizational needs, reliable and unambiguous
- comprehensible and usable – parsimonious (providing a realistic number of indicators which managers and other users can understand and use for monitoring), timely, and 'custom-built'. Relabelling existing statistics is not good enough.

It is important to be explicit about the assumed relationships between data, PIs and objectives, to reduce the risk of narrow pursuit of a PI target while losing sight particularly of complex, qualitative organizational objectives. Mayston (1985) studied non-profit performance indicators in the UK and the USA in the mid-1980s, from the perspective of public sector economics. He attributed the underuse of available indicators both to a lack of clearly identified roles for PIs in decision making, and to the need for appropriately designed (reliable and decision-relevant) indicators within an effective control framework. Mayston identified nine roles or objectives for non-profit PIs which address the preferences of all key stakeholder groups:

Role 1 to clarify the organization’s objectives.
Role 2 in the evaluation of the final outcomes resulting from the organization’s activities.
Role 3 as an input into managerial incentive schemes.
Role 4 to enable consumers to make informed choices.
Role 5 to indicate performance standards in the licensing or contracting of privatized services, and to monitor the fulfilment of these terms.
Role 6 to indicate the effectiveness with which different service activities in a given policy area contribute to each of the dimensions of achievement relevant to the policy area.
Role 7 as a trigger for further investigation and possible remedial action to improve the quality of inputs and outputs.
Role 8 to assist in determining the most cost-effective set of service levels to attain a given target in each direction of achievement.
Role 9 to indicate areas of potential cost-saving in attaining any given set of intermediate outputs.

Pollitt (1987, p. 89) presents a very similar list of roles, with the important addition of 'To provide staff with feedback designed to enable them to develop and improve their practice'.
Activity 7

Which, if any, of the above roles cannot be said to apply to for-profit organizations? Why not?

Comment

With the possible exception of Mayston’s fifth role, which may now take on new meanings particularly in Eastern Europe, all of the above roles are relevant — indeed, desirable — for for-profit organizations in my view. Of course, within each sector some organizations should seek such roles and others need to be wary of them.

If PIs can really perform all of these roles, giving them relevance to all functions, it is surprising that many organizations do not appear to have developed comprehensive and integrated PI packages! On the other hand, such diverse roles imply diverse sources and forms of data, required at different times and in varying degrees of accuracy and detail. It is not altogether surprising that organizations have met their needs for performance-related information in ad hoc ways as those needs have been articulated. Further, a scheme that plays all of the above roles thoroughly is likely to be an unwieldy centralized system which is not fully trusted by its various stakeholders. The public sector PI systems we see today may potentially fulfil all of the above roles but may not actually do so, not least because the impetus for establishing the system has come from outside the organization in the name of public accountability rather than from a shared desire from managers and users for service improvement.

No single set of indicators or performance assessment scheme is likely to perform all the roles identified by Mayston and Pollitt, not least because the costs of data collection and analysis are likely to place competing claims on limited budgets. However, the use of PIs has continued to spread in the non-profit sector — for example in the UK, education and services supplied by local government authorities are being scrutinized, and developments in the British police service were mentioned in Unit 5. Their application seems to reflect only a limited number of the potential roles identified above, with efficiency assessment frequently to the fore. To appreciate these tensions and limitations more fully we must explore the wider issue of management information needs and systems — an area where the public/private divide is only one among several factors contributing to the successful operation of PI schemes.
Activity 8 - Continuous

If you have not already been building up a file of reference material from the media about performance evaluation in organizations other than your own, now is a good time to start. For your mini-project (TMA 04) it will be appropriate to review the role which a comprehensive set of routine, regularly collected PIS covering all major organizational activities could or does play in the organization you will be studying. As in performance benchmarking, it is often valuable to compare your own organization with practices in both similar and dissimilar ones. Such comparative data may appear at particular times of year (for instance, school league tables in England tend to be published in late autumn; company annual reports some time after the end of the financial year) although reports by external bodies such as the Audit Commission may appear at any time. How they are actually used by managers and other stakeholders is often under-investigated. Your work for this course could provide valuable insights in this area.

In the UK public services studied by Carter et al. (1991), they conclude that many users of PI systems have been working hard to develop valid measures of effectiveness (using proxy outcome indicators if necessary), and are actively building in quality and customer-satisfaction measures. They identify a range of organizational characteristics which, rather than technical difficulties, have affected the implementation of PI systems. Complexity, heterogeneity and uncertainty are identified as particularly influential factors in the ways that organizations go about assessing performance. In the NHS, levels of all these factors are high and, like many public services, multiple stakeholders make multiple objectives inevitable and inherently problematic. For instance, while it is comparatively low on complexity:

... [the police service is] high on heterogeneity and uncertainty. The ownership of performance is often uncertain; the principal actors, though lacking professional status, enjoy a high degree of autonomy; authority is divided between central and local government and accountability is fuzzy. So the fact that the NHS and the police have a similar record when it comes to the design and use of PIS seems to vindicate our emphasis on organizational characteristics as decisive factors influencing the assessment of performance across and within the conventional public/private groupings.

(Carter, 1991, pp. 96–7)

Carter makes a useful distinction between two approaches to the use of PIS which it could help you to be aware of in your own work context. He distinguishes between a descriptive 'tin opener' approach and a prescriptive 'dial'-type indicator use (setting objectives or targets against which performance can be measured). The 'tin opener' and 'dial' distinction is broadly akin to that between 'norm-referenced' and 'criterion-referenced' uses of indicators. In the former, performance is judged simply in terms of location in relation to the mean; in the latter, a 'correct' or an optimal value can be established. Most of the PIS in the NHS are norm-referenced, and their use by higher levels in the hierarchy to monitor lower levels has tended to take the form of an expectation that managers will be using the package effectively and appropriately, rather than aiming to position their authority or unit. Carter et al. (1991) describe a common evolutionary organizational learning cycle which the NHS experience has exhibited - from the 'perfunctory compliance' with their introduction (discussed in Box 3), through reactive and critical resistance, to a broader appreciation of the potential value of PIS as weapons in the battle for resources. Although the strongest stakeholders have tended to shape the roles and content of PI systems so far (so PIS cannot be seen as truly neutral), this is not inevitable.
Box 3 The NHS experience of performance indicators

The National Health Service in England has probably one of the most mature and extensive PI systems in Europe, at least outside the former Eastern Bloc command economies. A set of comparative PIIs (now called Health Service Indicators – HSIs) was first published by the central government Department of Health (then Department of Health and Social Security) in 1983. Reflecting the hierarchical structure of the NHS, the HSIs are based on data collected locally within the NHS and submitted to the Department at regular intervals and a new set of indicators is published annually. The HSI package has traditionally been dominated by acute hospital services, but long-stay hospital and family practitioner data have gradually been added. The 1991/2 HSI set (issued in 1993) provides little information on community health services, reflecting changes in data definitions, NHS structures and service patterns. However, more information about health status and preventive care is now included, to assist in monitoring the implementation of the 'Health of the Nation' health promotion strategy introduced in 1992. None the less, the content of the indicator package still reflects its origins in the statistics routinely collected in the 1970s, adapted to reflect the introduction of the 'Körner' system of NHS information (a new system named after Dame Edith Körner, who chaired the committee which developed it). It has been closely linked to performance reviews of regional and district health authorities since the early 1980s, reflecting sustained parliamentary concerns about accountability as well as a governmental 'value for money' focus.

Although the scope, presentation, hardware and software of the HSIs have changed over time, the format of most indicators is still based on frequency distributions, scattergrams, rankings or box plots. The system is designed to run on IBM-compatible personal computers, and new sets of disks and manuals are distributed widely within the NHS annually. Health authorities have been strongly encouraged to include HSI data and interpretation in their published annual reports. To reflect the division between the functions of providing and purchasing health care, the 1991/2 HSIs present most data on service delivery at the level of individual provider unit (e.g. hospital). This, it is argued, allows unit managers to assess their comparative performance while enabling those purchasing services for their local population to see how both actual and potential providers performed against the standards they may seek.

The structure of the indicator package has changed over the years, but it generally enables users at regional, district and unit (provider) level to compare their performance with national and regional means or clusters of like organizations. There are a limited number of key top-level indicators, most of which have several associated lower-level indicators. The data are presented as rates, ratios or absolute values. The 1991/2 set is rather less extensive than the previous issue in which there were 3700 indicators in all! As with the cascading of organizational objectives and tasks, however, the total is of little significance; more important is the ease of identification and interpretation of indicators of concern to any one user. A time-series function enables users to monitor trends over time, although the time lag in issuing new annual sets of indicators, and changes in NHS organization and in data structures can make direct and up-to-date comparisons difficult.

Some examples of HSIs from the 1991/2 set, which are particularly pertinent to efficiency assessment, are:

HR67 – Standardized percentage of residents' episodes admitted as day cases for selected clinical specialties, analysed by NHS District and Region of residence. (That is, the percentage of patients for whom a health authority purchased hospital care who received surgical treatment with no overnight stay – generally a very efficient form of care – for conditions amenable to such treatment; standardized to minimize the effect of the age, sex and mix of cases admitted.)

TH01 – Total expenditure on operating theatres: total operating hours (annually, by hospital and NHS Region).

XA01 – Family Health Services Authority (FHSA) administrative costs: resident population (i.e. annual average expenditure on specified items per member of the population whose general practice services are purchased from practitioners, who are independent contractors, by each FHSA).
Although the HSIs now include population data (including mortality and morbidity figures) for use in the development of health promotion and preventive care services, conclusions about the effectiveness of health care purchased or provided from such data can only be very tentative. As discussed in Section 2, many factors other than health care interventions contribute to the health status of individuals and communities. However, deaths among particular age groups from several specific clinical conditions have been identified as ‘avoidable’ in developed countries (because the conditions should have been largely preventable, as with lung cancer or treatment should be effective, as with appendicitis). These deaths have become the focus of national and international health policy and health care purchasers are encouraged to use such morbidity and mortality data as indicators of service effectiveness.

The authors of the HSI Handbook (Department of Health, 1993) freely admit that the package contains few indicators of overall quality of service, but they suggest that waiting times for admission for elective surgery are useful proxy indicators. Day case treatment can also enhance quality of care from the patient’s perspective, provided it is well managed. While it may be disappointing that, after a decade of quality initiatives in the NHS, new quality indicators have not been developed, this is perhaps a recognition of the complexity of making judgements about comparative service quality based in routinely collected data and taken out of context. Checklists to draw attention to ‘good practice’ have complemented the quantitative data on human resources, activity and finance in some editions of the indicator user’s handbook.

PIs do not in themselves indicate the objective ‘desirability’ of particular values. Attention has tended to be focused on ‘outlier’ PIs, those where the value for a region, district or unit falls within the top or bottom 10% or 20% of the distribution. (This use of ‘outlier’ is specific to the HSIs – in other contexts an outlying value might be treated as a unique anomaly of limited interest.) This may be of limited help to some stakeholders – patients may feel that being in the unremarkable middle is not good enough. Clinicians may be happy with relatively high cost per inpatient case whereas accountants may seek a position at the opposite extreme. With the interaction of complex policy objectives, even the most efficient authority will be at the undesirable end of some distributions sometimes. However, a constructive approach is to accept that outliers have several potential causes and to focus on outliers which are accepted as accurate (assumptions about inaccuracy being a popular reason for ignoring PIs) and reflect a situation which needs fuller investigation. This approach can reveal attitudinal and skill problems at local level in dealing with management information generally. Resolving such problems is essential for the benefit of local managers regardless of those higher up the accountability ladder.

The NHS performance indicator system is presented as a way of identifying potentially interesting aspects of local services that is accessible to many stakeholders – to be used as a ‘tin opener’ rather than a ‘dial’, in Carter’s terminology (cited above). How have health service managers been using this valuable management tool? In the late 1980s there was a large-scale survey of the use of the NHS PIs in district health authorities (Jenkins et al., 1987; Jenkins, 1988). The findings of this study suggest that technical barriers to the widespread use of PIs have been overtaken by behavioural ones. Most district general managers, planners, information officers and many District Health Authority chairs could be counted as regular active ‘users’. But half or fewer unit general managers and senior managers, consultants or secretaries to Community Health Councils (the ‘patient’s watchdog’) could be counted as active users even if those who sought information from the indicators via other users were included. Only about one-third of users said that PIs influenced their decision making, tending to use them reactively and not learning more than they had already expected. Many managers claimed that the indicators were not relevant to their management style, and tended not to use quantitative data in general. The most frequently reported uses were in service changes – expansions and developments as well as reductions and rationalizations – and in reviews at unit, hospital or specialty level.

As earlier studies of the management of long-stay hospitals had found (e.g. Yates, 1986), relevant statistics were often available but were not used. Few users surveyed were able to consider the interrelationships between several PIs, although it is rarely
possible to use single indicators in a meaningful way. These findings suggest a major training need. On the other hand, the more expert users will have benefited from the enhancement of the indicator system, enabling them to incorporate their own data and construct their own indicators. Jenkins and her colleagues concluded that the presence of an enthusiast, of high status, was an important factor in encouraging the active use of the available data by a range of people in decision making and action in their everyday work.

There is a strong case for further research into the use of the revised HSI set, which could usefully be complemented by research into the use of other forms of PI as they are developed in other sectors and countries. In the wider context, the World Health Organization is supporting adaptations to the package as a contribution to the redevelopment of health care systems in Central and Eastern Europe. As you may have gathered, in my view the NHS PI system has its shortcomings, not least in terms of the things it leaves out. However, it is a set of reasonably good quality data presented in an accessible way and developed over a few years with feedback from users. As such, it deserves to be more widely used by those within the NHS and other interested parties, within the broader contexts of health service management and public policy making. Frequently the best way to improve performance-related information is to use it, not to ignore it.

In Section 3.3 you will meet a systematic review of the problems which can accompany the excessive use of PIs, particularly where outcome assessment is concerned.

### 3.3 The distorting effects of performance indicators

We have noted that the PI system in the NHS is rather more valuable in assessing the comparative efficiency of health care providers than in evaluating their effectiveness. It is dominated by data about volumes of inputs, processes and outputs. Many NHS stakeholders are more concerned about the nature of those processes, particularly in terms of the less tangible aspects of quality, and their longer-term outcomes. ‘Outcome’ is itself a complex concept. Of particular concern to individual patients and their carers at home is clinical outcome or ‘health gain’ – the prognosis in terms of quality of life as well as life expectancy. We will explore the problem of placing values on health gain for individuals and communities in Sections 4 and 5.

Outcomes of health services can also be interpreted in terms of their impact on management and political action, and their impact on the economy and physical environment. The underexploited scope for NHS performance indicators to be used to improve management effectiveness and the attainment of policy goals was of concern to Jenkins and her colleagues, whose study was described above. The behavioural impact of performance measurement has been relatively neglected – a matter of some general concern as performance measurement activity expands in all sectors.

In the article which you are about to read, Peter Smith takes one of the few accessible performance indicators of health care outcomes – perinatal mortality rate – as the focus for a study of the ways in which such indicators are used or abused by health service managers.
Activity 9

Now read the article ‘Outcome-related performance indicators and organizational control in the public sector’ by Peter Smith in the Reader. Then answer the five questions below. The whole activity may take at least an hour.

You may find it helpful to skim-read the article first and then re-read it, concentrating in particular on Smith’s discussion of the cybernetic model of organizational control (at the end of section 1) which is relevant to the course as a whole, and the typology of inappropriate managerial behaviours which he argues can result from excessive reliance on outcome-related PIs, illustrated in section 3. The ‘4IA’ model introduced in Unit 6, Section 4 – information acquisition, interpret and analyse, identify applicability, incorporate into activity – could provide you with a systematic approach to analysing the article and assessing its wider relevance.

1. Are you convinced that Smith has demonstrated the emergence of some of the dysfunctional behavioural responses to the use of ORPIs in the NHS, or do you feel that his study itself had shortcomings that may affect the validity of his conclusions?

2. How far is it fair to say that those responses are particularly characteristic of the public sector?

3. From your own experience of the use of any form of PIs, do you agree that the seven types of dysfunctional behaviour Smith outlines can pose a potentially serious problem? Consider each one in turn and note examples from work or other contexts.

4. Are outcome-related indicators likely to be more problematic than those related to inputs or processes? If so, why?

5. What do you consider to be the most significant implications of the phenomena Smith describes, if they really exist, for organizational control? What sorts of wider implications might they have?

The following points may assist your interpretation of the article.

- At times Smith refers to ‘intermediate outputs’ and ‘long-term outcomes’, as distinct from ‘outcomes’. These are useful, if potentially arbitrary, distinctions; the measurement of intermediate outputs from a process may tell us about its efficiency, but to assess effectiveness we need to know about its eventual outcome. In the case of health care, it is often not possible to predict the long-term outcome of a process particularly as, over time, other factors may intervene to make causal relationships very hard to understand or predict.

- In section 1 Smith refers to ‘managerial’ and ‘allocative’ efficiency. He discusses managerial efficiency in quite a lot of detail, but a definition of allocative efficiency may be helpful: ‘This form of efficiency examines how to maximise total benefit from the resources available where it is accepted that not all objectives can be met in full because resources are limited. Studies of allocative efficiency may make use of CUAs [cost-utility analyses], CBAs [cost-benefit analyses], etc.’ (NAHAT, 1992, p. 8).

- Some issues in the debate about the use of quality adjusted life years (QALYs) as proxy outcome indicators, referred to in section 3.1, are discussed in Section 5 of this unit.

- The reference in section 3.4 to the ‘expert system’ developed to scrutinize the NHS PI set is one of the variants of the PI package that was described in Box 3.
• The use of the concept of 'negative feedback' in section 3.4 reflects the application of the cybernetic model of control where the result of comparing information about a system's performance with a relevant target leads to the adjustment of inputs in order to bring performance and target closer together. 'Positive feedback' in this context would indicate that the adjustment of inputs had the effect of increasing the distance from target. The implication of Smith's example is that adjusting inputs to improve the performance of the particular processes of concern (to meet politically influenced targets) will, in due course, result in poorer performance elsewhere (positive feedback) unless resources are sufficient so that none are diverted from other programmes which need them.

• 'Diagnosis related groups' referred to in section 3.7 are described further in Box 4 later in this unit.
4 Economic evaluation of health care

4.1 What does economic evaluation involve?

Economics is simply the study of the ways in which we allocate resources and their relative costs and benefits. It is underpinned by the (debatable) notions that there is a finite limit to the resources available for society, its sub-sections and individuals, and secondly that there is no limit to demand. Lying behind demand is the concept of ‘utility’, which is economists’ jargon for satisfaction. The greater the utility obtained from a visit to the cinema, the greater will be the price that anyone will be prepared to pay for it (utility in economics terms, then, can mean enjoyment), but only in so far as you can ‘afford’ to pay and then only in so far as you are in a position to be able to make a decision. People’s attitudes and behaviour in the context of investing in good health and health care are complex and often paradoxical, and ill health often removes the opportunity to make choices— for individuals and communities. So, in considering the application of concepts from economics to health care, it pays to be careful not to expect them to provide full answers to health care performance questions.

Whether or not a direct charge is made in exchange for health care, we cost safety and we cost life in countless ways. It is not the priceless thing that most of us assume it to be. Although health economics involves assigning quantitative values to health care activities and their outputs and outcomes, we must not forget that interpretation of the results of such relatively objective analyses almost always involves subjective judgements. The ramifications of health care provisions are extensive and assessing their costs and benefits may not be a simple matter of market economics. However, even if the demand for health care is not proven to be infinite, resources allocated to formal health care are definitely finite in most societies. Economic concepts can help us understand the relationships between supply and demand, and to undertake systematic analyses of alternative ways of meeting the demand.

At the core of economic evaluation of health care is efficiency evaluation, which does not always produce the expected findings. Increased attention to clinical and managerial efficiency in many health systems has been accompanied by steady growth in the number of patients treated. This does not necessarily mean that net savings result nor that resources are released to enable other services to be extended or developed. Very often such efficient use of resources can lead to increased absolute cost. For example, take the intensive use of operating theatres. The more patients operated on (‘patient throughput’), the more hours are worked by surgical and support teams. Optimizing the use of plant increases the cost per theatre day. Cost per patient may be reduced, although this is not necessarily easy to judge as the assessment of cost may or may not include full overhead costs, depreciation and the like, and will also reflect case mix.

So, although simple input/output ratios (often referred to as costs and consequences) may underpin much efficiency assessment, improving efficiency can be as complex as improving the more qualitative dimensions of performance. Recall the discussion in Unit 5, Section 4.3 of the dysfunctional effect of defining ‘efficiency’ in terms of deviation of actual from expected ‘standard’ output, and the merits of being aware of the theoretical maximum efficiency when continuous improvement is sought. Where improved economy as well as efficiency are
management objectives, more efficient use of staff and capital resources may be desirable only if it results in lower overall costs. Better use of operating theatres may produce cost savings only if the same number are treated in a shorter period (rather than additional patients receiving treatment) after which, in extreme cases, theatres are closed and staff redeployed. This sort of decision could follow from a rigorous cost-minimization analysis which would identify the least cost option among several routes to identical outcomes. A secondary outcome of completing the required number of successful operations by more intensive use of operating theatres may, however, be a redistribution of some costs to patients, and may be counter to local or national policy objectives such as the reduction of waiting times.

**Activity 10**

Read the article by Appleby and Little in Appendix 1. (Some notes are provided there to explain a few specialized terms.) The authors, who work for a body representing health authorities and NHS Trusts and for a District Health Authority respectively, are writing primarily for an audience of NHS managers.

Note the key points of their critique and, thinking of any organization or sector you are familiar with, assess whether similar problems apply in efficiency assessment there.

**Comment**

There are a number of criticisms that can be levelled at the idea of an NHS Efficiency Index which are specific to that context – whether the components of the index are fundamental to the service’s objectives, for instance. As one needs to assess the achievement of outcomes in order to judge this, if input, process or output measures are part of an aggregate measure or index then they need to have a demonstrable and positive relationship with outcome. The ‘cost weighted activities’ included in the proposed index discussed by Appleby and Little have at best a tenuous link with the NHS objectives we met in Section 2.2, and they exclude primary health care and preventive care, which are arguably the keys to attaining those objectives.

An equally fundamental and general point is that the value of an aggregate or a composite index, particularly one intended to assess relatively small differences in comparative performance, is only as high as the accuracy and reliability of the data which it incorporates.

Appleby and two other health analysts (Appleby, Sheldon and Clarke, 1993) followed up the article in Appendix 1 with some suggestions for a better system, taking user comments into account. Their main points are widely applicable. For instance:

- the use of ‘rolling averages’ covering two or more years would overcome the tendency for organizations to suboptimize performance to avoid exceeding efficiency targets (and thereby having higher targets imposed the next year)
- disaggregating a composite index into more meaningful and simpler indices provides a sharper instrument for assessment, revealing more precisely the sources of inefficiencies which may otherwise be masked by particularly efficient areas of activity
- the inclusion of a highly-weighted yet crude measure within a complex index (such as the ‘finished consultant episode’, which may be a hospital stay of one day or one year) again limits the value of the index as either a diagnostic or a control mechanism and could usefully be replaced by a more specific unit of activity. (Diagnosis related groups, described in Section 4.2, may have a role here.)
- an index that is supposed to show how major policy objectives are being achieved needs to incorporate measures explicitly reflecting those policies. An NHS Efficiency Index that does not include a measure related to health promotion, when reducing avoidable deaths is a key part of health policy, is about as relevant as an index for monitoring the efficiency of a retail chain's security operations that excludes credit card fraud.

Appleby et al. (1993) argue that, while a highly aggregated index of limited accuracy may be of some use as a national barometer, it is too crude to perform the many potential roles which a standardized efficiency index could potentially play for health care purchasers and providers as well as for central government overseers. And while an ‘efficiency index’ can tell us whether our organization is doing more of the same at lower cost, it still leaves unanswered the question of whether it is doing the right things.

Economic evaluation is often undertaken in the interests of providers of care or those charged with allocating resources to several competing programmes. Although quantitative judgements are made, the choice of factors to quantify may be highly selective – for example, the costs and benefits to the provider, rather than to the wider community (which may be much harder to assess). Increases in patient throughput and shorter lengths of hospital stays in many countries have resulted in, and been made possible by, a greater reliance on family care and higher costs for the community. These costs will be seen in nursing and GP services (often paid for from different public spending budgets or by the patient or their insurers), and absenteeism or inconvenience to relatives and other carers. Thus visible costs, which are controllable because they are visible, become invisible, and thus potentially less controllable. They may also become less of a matter for official concern. It is important to recognize the viewpoint from which any economic evaluation has been undertaken.

In spite of these reservations, the forms of economic evaluation we are going to consider in this section have in many cases been developed in order to bring greater fairness to decision processes that may otherwise reflect power distributions and traditional practices more strongly than client and community needs. None the less, they still reflect the extent to which objectives can be clearly specified, inputs and outputs quantified, and relevant boundaries drawn. The location of economic evaluation of health care within the broader spectrum of performance measurement and evaluation has been neatly summed up by Drummond et al. (1987), who define it as ‘the comparative analysis of alternative courses of action in terms of both their costs and consequences’. What is involved?

*In this type of evaluation we are asking the questions:*

1. Is this health procedure, service, or programme worth doing compared with other things we could do with these same resources?

2. Are we satisfied that the health care resources (required to make the procedure, service or programme available to those who could benefit from it) should be spent in this way rather than some other way?

*It is imperative to note that although economic evaluation provides important information to decision-makers, it addresses only one dimension of health care programme decisions. Economic evaluation is most useful and appropriate when preceded by three other types of evaluation, each of which addresses a different question.*
1. Can it work? Does the health procedure, service or programme do more good than harm to people who fully comply with the associated recommendations or treatments? This type of evaluation is concerned with efficacy.

2. Does it work? Does the procedure, service or programme do more good than harm to those people to whom it is offered? This form of health care evaluation, which considers both the efficacy of a service and its acceptance by those to whom it is offered, is the evaluation of effectiveness or usefulness.

3. Is it reaching those who need it? Is the procedure, service or programme accessible to all people who could benefit from it? Evaluation of this type is concerned with availability.

(Drummond et al., 1987, pp. 5-6)

You may recall that a similar set of dimensions was introduced in Unit 7, Section 2.1 where they were encompassed in Maxwell's definition of 'quality'. It is worth reiterating that formal health services, even in developed societies, play a relatively minor part in determining the health status of individuals or the wider community. However, whether we are assessing the role of self-medication, complementary medicine, health education, public health infrastructure such as sewers, or conventional primary and specialist health care, professional workers play a key part in developed societies. And whether we are looking at publicly funded provision or private purchases and markets as allocative mechanisms, the relationship between costs and benefits to the parties involved is always a significant factor in the extent and nature of resources used in the pursuit of human health. Where, as in the NHS, a major part of the public spending allocation is committed by relatively autonomous clinical professionals, whose workplaces are run by managers on behalf of government (and therefore on behalf of us), cost-benefit considerations are particularly complex.

In the rest of Section 4 we will explore several key concepts in economic evaluation, regarded by Drummond et al. as 'full economic evaluation' as they involve the examination of both the costs and the consequences of two or more alternative means to a specified end. They are general approaches, presented here in a health care context. In Section 5 a relatively new form of cost-utility analysis is introduced which reflects the special nature of care mentioned at the start of this unit. The descriptions which follow are only thumbnail sketches but if you are interested in a fuller exploration of health economics, from among the many available texts you might like to look at Drummond et al. (1987) for effective coverage of how to assess as well as undertake economic evaluations; and Teeling Smith (1987) for a review of international developments in health economics. First we note a key factor for consideration when undertaking any economic evaluation.

4.2 Opportunity cost

In assessing the quality and adequacy of standards of service we must look at not only the cost of doing something but also the cost of not doing it. If we do one thing, and we do not have unlimited resources, then it must necessarily be at the cost of not doing something else. If I buy a scanner for £1 million when I have only £1 million to spend, I cannot afford to do the 70 or so heart transplants that I might otherwise be able to afford. This foregone opportunity illustrates the concept of opportunity cost, which should be considered alongside the other forms of evaluation discussed below. (Note that when we refer to 'costs' in the context of costing methodologies, 'opportunity cost' is only one of at least 18 meanings in English!) (Bardsley et al., p. 85)
Comparing the value of the option chosen with those foregone can be complex and become the focus of conflict between stakeholder groups. Choosing the scanner in the example above may save many more than 70 or so lives, but people waiting for a heart transplant now may place an inestimably high value on their own treatment. So also may their consultants, and the relative power of different groups of professionals in obtaining their specialist resources is the subject of much public and health service debate. The role of the manager in resource allocation and service planning can be particularly difficult, although to an extent in the NHS the separation of purchasing from providing care may have reduced some of the interpersonal tensions. Economic evaluation provides some well-tried methods for establishing comparative costs in a standard way in such contexts, albeit primarily where activity, costs and benefits can be expressed in financial terms.

Of course, there may be many intermediate strategies in deciding on the mix of services to provide. Two equally desirable activities may be partially funded while remaining within the resource budget. If services can be purchased from a range of suppliers, there may be scope for price bargaining, sharing a facility or gaining cost benefits from economies of scale. It is important that health care managers in any system seek to stimulate the organizational learning and reflection necessary to develop appropriate modes of provision, as well as standards and targets for quality and quantity. Essential ingredients for such learning are the availability of good management information, including comparative data at activity as well as institutional levels; and a common measurement language for making comparisons within and between countries. Box 4 describes the development of one such language.

**Box 4 Comparing costs using Diagnosis Related Groups**

Activity-based costing and total factor productivity (TFP) were discussed briefly in Unit 5 in the context of techniques of productivity assessment. Such analysis continues to pose a challenge for many public services, partly because they often operate on a large scale, partly because of their nature as services where outputs are generally harder to measure than in manufacturing, and particularly because the absence of a market for trading has obviated the need for detailed cost attribution. Even in recent decades, with pressure to reduce public spending in most countries, mechanisms to understand where costs are incurred have often been slow to develop.

One approach that has been developed with considerable international collaboration is that of Diagnosis Related Groups (DRGs), which was mentioned in Section 2. The origins of the DRG approach lie in research at Yale University in the 1970s by an industrial engineer and a nurse (Robert Fetter and John Thompson, respectively) who sought to use concepts from operations management to develop a tool to improve hospital management. Underpinning their work were the assumptions (somewhat radical at the time) that:

- patients presenting with similar problems would receive similar treatment
- these similar treatment patterns would use similar resources and thus cost roughly the same
- the resources consumed should be amenable to accurate measurement
- differences between hospitals in terms of case-mix can also be measured and described
- and therefore that doctors and hospitals can be compared in terms of their patterns of resource consumption for similar cases.
In a useful study of the diffusion of DRGs into and through Europe, Kimberly and de Pouvourville (Kimberly et al., 1993, p. 6) sum them up as:

... a sort of patient classification system that groups patients with similar characteristics together. As a management tool, DRGs are designed to permit hospital managers first to understand existing patterns of resource consumption, second to observe anomalies or apparent aberrations, and third to predict patterns of resource consumption in the future based on what is known about the recent past.

In the USA, DRGs rapidly became linked into the system for calculating payments for health care. Kimberly and his associates studied the ways in which DRGs have developed and been accepted or rejected in nine European countries through the 1980s, not merely as information or performance management systems but particularly as an example of managerial innovation. The differences between countries in terms of patterns of care (use of hospitals for social as well as clinical care, popularity of day surgery, etc.) and system structures make it sensible to expect national systems to develop within a broadly similar approach. Of the seven countries in the study which are moving more or less rapidly towards implementation of a DRG-based approach (nationally or in some cases at a more local level), England was one of the first to become involved.

At the time of writing, the Department of Health is encouraging the use of a variant of DRGs, called Healthcare Resource Groups (inevitably, HRGs). Their development is closely linked to the Resource Management Initiative which broadly speaking has been a long-running programme to develop activity-based costing more fully in the NHS. The NHS Management Executive’s Information Management Group describes HRGs as:

... groups of patients who are expected to consume similar amounts of health care resource. The groups are defined on the basis of diagnoses and procedures, and each group may contain cases with a range of diagnoses and procedures. Diagnoses and procedures are currently coded using ICD9 (International Classification of Diseases, Version 9) and OPCS4 (Office of Population Censuses and Surveys, Version 4). Information on the primary and secondary diagnoses and on the principal and secondary procedures is used to assign a record to a particular group, together with information about age, specialty and whether the patient was alive or dead at discharge.

(Department of Health, 1992b, p. 3)

These standard classification systems should provide reliable, comparable and comprehensive data about diagnoses and surgical procedures, as hospitals have long been legally required to use them in completing routine returns to central government summarizing their activity. The data are collected in the same format from every hospital and, together with other data items, form part of the In-patient Minimum Dataset which is used for a variety of local and national management purposes. It is important for a system like HRGs to be regarded as a valid basis for making comparisons, particularly because they will be used in resource allocation, service planning and performance assessment. Because they are based on items of information which are already collected and coded, hospitals do not have to collect data specially for use in HRGs so bias arising from incomplete data is comparatively unlikely, although other aspects of the quality of discharge data have been criticized. Devising the software to enable data from patient records to be coded to allocate patients to health care groups that are acceptable to clinicians and that take treatment, specialty and clinical complications into account is very time-consuming. The detailed aspects of patient grouping are one of the sources of variety between countries developing DRGs.

A disadvantage of using this pre-existing dataset is that it excludes outpatient and non-hospital treatment, and is driven by treatment received rather than health needs to be met or prognosis. This in turn means that the current set of English HRGs is of most use to health care purchasers (local health authorities and fundholding GPs) and providers (particularly hospitals) when defining the cost of care, and placing and
monitoring contracts. Once a hospital's inpatient activity is analysed in terms of HRGs, they can be used to predict resource consumption, set budgets for an expected mix of cases and set prices for contracts for packages of care being negotiated with purchasers. Actual resource use can be monitored against that predicted using HRGs, and scope for improvement identified by comparing the hospital's average length of stay for a given procedure with a regional average.

However, even these cost-related roles are constrained by the use of 'length of stay' (as a proxy for resource consumption) as the dependent variable, because this may tell managers little about the reasons for differences between hospitals or over time. The power of HRGs lies particularly in allocating patients to 'groups' based on treatment and diagnosis at a level of detail which maximizes sensitivity to variation in case management (which may indicate scope for increased efficiency), while taking adequate account of variables such as age and complications. Analysis by HRG provides indicators, not answers.

The use of HRGs and other forms of DRG in the direct service of stakeholder groups such as clinicians and patients is the subject of research more than practice (at the time of writing). Such analytical tools can potentially play a valuable part in needs assessment, clinical audit and other forms of outcome assessment. However, the speed of adoption of DRGs for resource management which Kimberly et al. observed was due in considerable measure to the existence and acceptability of the US model and the availability of classification systems that lent themselves well to groupings in terms of resource use. Systems for grouping people on the basis of patterns of clinical need or likely health care outcome are relatively less well developed.

As an aside, looking at DRGs as an example of managerial innovation Kimberly et al. attributed their relatively rapid diffusion in Europe to contemporaneous pressures for 'administrative modernity and fiscal responsibility in health care' (p. 352) and the absence of other approaches to case mix management on the market. Other conditions were also favourable (such as the availability of technical assistance from the original developers, and the relatively low cost of a refined classification system which could be observed empirically). They concluded with some observations about factors which contribute to the diffusion of innovation more generally, namely:

- the development of momentum, from multiplication of interest in the innovation
- the connectedness of groups of people whose support for the innovation is important (doctors, DRG researchers, policy makers)
- the development of the diffusion to the point where it cannot be undone. In the case of DRGs, while different models or technologies may be adopted, the fundamental shift in the way of viewing the production process of hospitals which underpins them is not reversible.

The message for managers seeking to implement change is to create and manage momentum and connectedness until the innovation is irreversible.

In any situation in which we make a decision to limit resources, we need resource allocatory mechanisms. Ideally, these should be based on data that enable us to identify and measure the opportunity cost as well as direct costs. In other words, we need to know not only what it costs us to take a course of action but what it will cost us if we decide not to take it. This has major implications for the comparison of costs within and without the health care sector. It may well be that to have a very powerful and well resourced public health promotion and preventive medicine programme will increase the net sum of health in a nation, rather than spending the same amount of resource on acute medicine. However, in spite of policy developments such as the UK's 'Health of the Nation' targets, linked to the WHO's 'Health for All by the Year 2000' programme (an international programme to improve health status through health promotion and dis-
ease prevention – see WHO, 1985), there has not been a significant transfer of resources from, for instance, the treatment of smoking-related diseases to the prevention of smoking. This suggests that political as well as health economic factors are very influential when opportunity costs are compared.

## 4.3 Cost-effectiveness analysis

Cost-effectiveness analysis (CEA) is intuitively more appealing than cost-minimization analysis (mentioned in Section 4.1) for people making difficult decisions about the allocation of scarce resources. The name suggests that the decision maker's interest extends beyond financial considerations and into the achievement of objectives which are the reason for the organization's existence. Unfortunately, the complexity of those objectives often limits the power of CEA.

Here the interest is in the relative success of different sets of inputs (organized into health care programmes, treatments, and so on) in achieving a desired output. So an initial requirement is a way of measuring the output or consequences, such as additional years of life or number of teeth free of decay. The output of each of the routes being compared has to be capable of being expressed in common terms (so options that produce, in one case, longer life and, in another case, lower levels of pain, cannot be compared using CEA). Assuming that we can distinguish between desirable and undesirable levels of output, we can then compare the inputs or costs involved in achieving the output. A low cost input may be desirable only if it produces an acceptable level of output.

However, defining 'costs' is again tricky, and CEA is perhaps at its most valuable when all the options are under the control of the person who has commissioned the analysis. A GP exploring approaches to the reduction of borderline hypertension might compare several forms of medication with a programme of dietary advice, fitness tests and routine monitoring. Their costs will comprise staff and equipment and part of the cost of the medication; the consequences can be measured in terms of millimetres of mercury drop in diastolic blood pressure. Obviously, patient compliance and underlying tendency to hypertension will be beyond the doctor's control, but the options can reasonably be assessed and influence practice policy. A decision will be required about whether the reduction in blood pressure for the lower cost option is good enough or whether the objective is to attain a specific target, where the lower cost option would be chosen only if it achieved that target. However, one option which CEA tends to ignore is that of a viable 'do nothing' alternative, so whatever the outputs it assumes that some costs will be worth incurring (providing scope for resources to be used to no net gain).

Where inputs to the alternative approaches involve other actors, or where causal relationships are not fully understood, the situation is less clear cut. For example, adding fluoride to water supplies is, it is argued persuasively and based on scientific tests, a cheap way to reduce levels of tooth decay in children radically. Costs can be covered by water supply charges to customers unless a government subsidy is available. Per tooth saved, and starting from a base of high levels of decay, it may well be less costly than an intensive and sustained health education programme (paid for out of taxation in the UK), frequent dental inspections (paid for out of taxation where patients are children), and elaborate tooth-cleaning equipment (paid for by consumers). But if the costs of fluoridation include those borne by people who are allergic to the chemical and have to buy bottled water, and the legal fees borne by water companies in fighting claims for
damages, the equation may be less clear cut. Another option could be a moderate health education programme, fluoride tablets for children provided in a comprehensive way, and incentives to use fluoride toothpaste and other tooth-cleaning equipment. Fewer teeth may be saved, but the costs to be borne by the various stakeholders may be lower too.

Incidentally, to assess the opportunity cost equations, one needs to think about how the costs of any approach may be spread out – a water company saving money from legal fees may then pay higher dividends to shareholders; a health authority saving money on dental treatment may be able to make further inroads into oral health improvement; a family saving money on painkillers for children with toothache can spend more money on sweets!

CEA does have a strength in that it is not dependent on comparing like inputs with like, provided the outputs can be expressed as a common denominator. To quote Drummond et al. (1987) discussing two alternative ways to treat kidney failure – kidney transplantation and dialysis in hospital (that is, regular treatment to remove harmful waste products from the body artificially to compensate for the failed kidneys) – with the aim of extending life:

... although the alternatives used in this example are similar in that both could be considered variants of an overall renal programme, it should be noted that cost-effectiveness analysis can be performed on any alternatives which have a common effect. Thus kidney transplantation could be compared to heart surgery (or even mandatory seatbelt legislation!) if the common effect of interest was life-years saved. Similarly, an influenza immunization programme could be compared to a bone care programme (or even a community safety education programme!) if a common effect of interest, perhaps disability days avoided, could be identified.

(Drummond et al., 1987, p. 11)

An additional aspect of evaluation which this example should remind us of is the level of focus taken, and objective of the actors at that level. The options compared here reflect the views which could be taken from several different system levels. This illustrates the scope for CEA to be applied in situations where stakeholders' interests differ and yet for valid comparisons to be made between diverse routes, provided a common objective is agreed.

### 4.4 Cost-benefit analysis

When we are considering allocative efficiency, rather than mere technical efficiency, we want to know how we may derive most benefit from invested resources. We need to be able to decide which objectives give most benefit for a specific amount of resource and how much we should spend on them. This is where cost-benefit analysis (CBA) plays a major role.

Although one of the key characteristics of CBA is often regarded as unsavoury – that is, its general tendency to use monetary amounts as a common denominator – this does enable comparisons to be made between options where the consequences are different in nature. It also enables alternatives with multiple outputs (which may not be common to each alternative) to be compared. Suppose a
manager is presented with competing proposals for projects from two teams for the use of a known sum of money (a donation from a local fundraising group, for instance) – the purchase of a nebulizer (a machine to help a person with asthma to breathe), leading to fewer days off work, and several ophthalmic procedures that will mean patients no longer need complex lens prescriptions (for which the cost is shared by the state and the patient). These diverse consequences can be translated reasonably easily into financial terms and the option that generates the greatest potential gain for the agreed cost can go ahead.

Drummond et al. (1987) extend their example of treatments for renal failure to illustrate the circumstances of multiple and common effects, and compare the power of CBA with that of CEA. They include dialysis undergone at the patient's home as an addition to the options of hospital dialysis and kidney transplantation, and they add 'quality of life' (e.g. the occurrence of marital disruption) and incidence of medical complications among the consequences as well as life years gained.

In order to pursue cost-effectiveness analysis we would now have to compute cost-effectiveness ratios for three effects. In the event that one alternative was not clearly superior on all three counts, we would be faced with the task of either designating (implicitly or explicitly) a primary effect on which to base the comparison, or finding a method whereby the multiple common effects could be combined into one common denominator.

(Drummond et al., 1987, p. 12)

Provided that the inputs (costs) can be assessed in financial terms then, by translating the value of outputs (consequences) into an appropriate monetary currency, the options can be compared without difficult and often contentious decisions about weighting or prioritizing effects. The comparison may be made in terms of the ratio of financial (dollar, franc, etc.) costs to financial benefits, or a simple sum – the net benefit (or loss) of one option compared to the others. CBA potentially enables a wide range of interests to be considered, too; and, provided that they can be translated into financial equivalents, benefits to patients and carers in terms of lost income can be considered alongside savings to hospitals on treatments.

Of course, attempts to evaluate everything in financial terms may lead to contentious or highly artificial comparisons which should perhaps be beyond the realm of management decision. Marital disruption, for instance, may normally be assessed by lawyers in the case of divorce. Placing a monetary value on this when a couple are supporting each other in the face of enormous strains may be felt by everyone concerned to be an inappropriate way of comparing options.

Assuming that it is reasonable to express costs and benefits in terms of a common financial denominator, the notion of 'costs' is also complicated when we consider that expenditure may take the form of revenue or capital, may be direct or indirect (overheads, for instance), may not be incurred through a conventional purchase of goods via a market, and so on. Several definitions of cost in the context of productivity were introduced in Unit 5; here we will briefly consider the relative merits of considering average and marginal costs and values using an example from the health economics literature.
Bringing values into marginal costing

An important rule of CBA is 'Do nothing unless benefits exceed costs'. It is tempting to make cost-benefit comparisons on the basis of average cost (the average cost per unit of output) rather than marginal cost (the extra cost of producing one extra unit of output, within the same programme of care). Mooney (1986, p. 59) states that in marginal analysis '... if no budget constraint exists, then a programme should be expanded or contracted to the point where marginal benefit equals marginal cost; if there is a budget constraint, then all programmes should operate at a level whereby the ratio of marginal benefit to marginal cost is the same for all.'

An example of the need to consider implied values when assessing average cost and marginal cost is provided by Mooney et al. (1980). In 1971 the Minister of Health announced that the government would not be proceeding with the childproofing of drug containers on grounds of cost. In an article in New Scientist, Gould (1971) examined this decision and put forward some interesting, if rough and ready, figures which serve to highlight the importance of looking at implied values in health policy making. (While the assumptions used are grossly over-simplified, it is the principles involved which are important.) Gould's argument was essentially this. About 60 children die each year as a result of swallowing various medications. In addition, about 16,000 children are admitted to hospital either because they have, or are thought to have, swallowed certain medical preparations.

Now if it is assumed (as it was by Gould) that the cost of drug proofing per annum was £500,000 and the cost per in-patient episode was £30, it becomes possible to estimate the implied value of a child's life. This is done as follows:

\[
\text{Cost of drug proofing} = £500,000 \\
\text{Cost of 16,000 child admissions at £30 each} = £480,000 \\
\text{Net cost} = £20,000
\]

Forgetting the non-fatal morbidity involved for the children and assuming that a third of the 60 deaths could be averted by child proofing, these figures imply that the government was not prepared to make a net outlay of £20,000 to save the lives of 20 children. Thus the implied value of a child's life was less than £1000.

While it is possible to question the accuracy of Gould's figures and his assumptions this provides a further simple, if crude, example of implied values. Ideally it is the implied marginal value that is required but for this particular policy the average and marginal values may well be equal. It could be of course that different methods of child proofing are available and that their effectiveness differs. If this were so then it would be possible to obtain implied marginal values for the various methods.

(Gould, 1971, quoted in Mooney et al., 1980, pp. 95-96)

The importance of marginal costing as a measure in the allocation of health care funding is indicated here, as is the effect of such measurement in implying a value for a person's life as a result of decision-making in a political rather than clinical forum. Significantly, it is not a decision-making tool generally given to patients; indeed, where clinical practice is concerned it is often outside the realm of managers.
Drummond and his co-authors sum up the case for CBA thus:

It is perhaps worth noting that (at least in theory) cost-benefit analysis provides information on the absolute benefit of programmes, in addition to information on their relative performance. That is, cost-benefit analysis provides an estimate of the value of resources used up by each programme compared to the value of resources the programme might save or create. This view of cost-benefit analysis implicitly assumes that each programme is being compared to a do-nothing alternative which entails no costs and no benefits. However, in practice cost-benefit analyses usually amount to a comparison of those costs and benefits that can be easily expressed in monetary terms, so very few analyses can aspire to this wider role. Also, there are very few instances where absolutely nothing is done to tackle a given health problem, so in most cost-benefit analyses the implicit do-nothing alternative has some costs and benefits attached to it.

(Drummond et al., 1987, pp. 12-13)

Certainly, cost-benefit expectations are far from being a driving force in changing clinical practice. Surgery seems particularly prone to the influence of ‘fashion’: the number of tonsillectomies performed during the 1950s and 1960s, hysterectomies in the USA, and insertion of grommets to relieve the childhood condition of ‘glue ear’ in the UK today cannot be explained simply in terms of changing morbidity patterns or the impact of newly discovered procedures. Taking the latter case, the number of grommet insertions has doubled over the past 10 years, and some doctors estimate that half of them are unnecessary. Relief from several painful and disabling ear conditions can be relieved by grommets, to the extent of preventing more permanent hearing loss in some cases. However, there are reasons to believe that rapid and effective treatment of allergic inflammations of the nasal passages or nasal rhinitis reduces the need for grommets to as low as 1% of ‘glue ear’ sufferers. In the UK this would be a reduction of some 89,000 operations per year. Complete non-intervention is probably an effective treatment for half of the children currently operated on.

When resources are constrained, the chance that costs are being incurred unnecessarily is particularly problematic. These examples illustrate some more general issues related to professional autonomy and management control, although the most colourful cases often come from the health care field. This sort of conflict may be better examined if appropriate measures of inputs, processes and outputs exist, but it also reflects the problems of the assessment of long-term outcomes in general. How do we test whether not to do an operation is as effective as to do it? Is it ethical not to treat some patients in order to test whether natural amelioration of a condition is fast enough to avoid excessive suffering, or should ‘rapid and effective treatment’ of nasal allergies and infections be the rule? What are the risks, and can the roles of managers, professional practitioners and the wider community be clarified so that conflict is minimized?

These questions are largely beyond the scope of this unit and even this course, although some issues relating to risk and uncertainty are explored further in Block 4. For the last section in this unit, we will examine one more concept and model from health economics that allows some difficult issues at least to be brought into open discussion – the concept of cost-utility analysis, and the quality adjusted life year or QALY. First, attempt Activity 11, which draws on the concepts of economic evaluation introduced so far.
Activity 11

Recall the steps of the systems intervention strategy (SIS), and imagine the situation of a purchasing manager in the NHS (the problem owner) who has to place contracts for £10,000 worth of additional surgical services to reduce waiting lists and times for treatment in response to a government initiative. The longest waiting lists are for minor surgery for children's hearing problems, treatment for knee problems (mainly men in their thirties) and cataract removal for people in their eighties. The average times that each group has been waiting to date are ten months, four months and eighteen months, although in each group some have been waiting for nearly two years. The approximate cost of clearing up any of these lists, taking average cost per case and numbers of people waiting, is £10,000, but twice as many cataracts or hearing problems can be cleared up as knee problems.

Each sort of treatment will contribute to the overall objective 'Reduce the number of people waiting for hospital treatment', and the manager needs to recommend to their colleagues how many of each procedure to place contracts for with local hospitals. What sub-objectives (contributing to the overall objective) can be distinguished? What sort of stakeholder groups might have a view about the allocation of this scarce resource? How should the manager identify 'measures of performance' for use when options are compared, taking the various customer interests into account?

Thinking in terms of the various routes to the overall objective that can be reasonably easily compared (such as treating all of one of the lists, treating a proportion of each based on time waited, etc.), what use might the manager make of concepts of economic evaluation in modelling and evaluating the various options?

This activity draws on a number of concepts and you should allow at least half an hour for it.
5 Cost-utility analysis and quality adjusted life years

The notion of utility (the value or worth of a level of health status) was introduced at the start of Section 4. One way of measuring utility is to identify the preferences of individuals or society for particular health states or outcomes of care. Cost-utility analysis enables us to compare cost-benefit ratios of different treatments for differing conditions, while bringing the relatively subjective notion of quality of life into the equation. Common denominators which have been developed for this purpose in recent years are 'healthy days' or 'quality adjusted life years' (QALYs). They are assessed by adjusting the length of time alive resulting from the treatment by the quality of that time perceived by patients (its utility value, usually expressed on a scale from 0 – death – to 1 – perfect health).

Doctors, managers and patients may find this a more acceptable way of evaluating alternative treatments than translating them into monetary terms. It addresses some of the difficulties in performance measurement in health care identified by Mooney (1986). Among these he mentions health status measurement and evaluation, which he sees as being 'difficult for three reasons: 1) health is a value laden concept, 2) health is multi-dimensional, and 3) it is normally not enough to be able to measure health ordinally, we need cardinal measurement' (p. 34). (Ordinal measurement was outlined in Unit 3.) The QALY is an attempt to achieve cardinal measurement of health status.

We are going to examine QALYs in a little more detail here.

Activity 12

Now read the article 'QALY league tables' by the National Association of Health Authorities and Trusts in the Reader. To explain the context, the article is an extract from a research report written by health economists at the Health Economics Research Unit, University of Aberdeen, for the National Association of Health Authorities and Trusts (NAHAT). NAHAT expresses to the public and policy makers the views of FHSAs, health authorities and NHS Trusts on issues affecting the NHS, and promotes research and collaboration. The research report from which this article was extracted was produced in the context of the growing debate from the late 1980s about how to set priorities where scarce resources need to be rationed. The target audience would include many Board members and health service managers involved in purchasing services for their local population, from health care providers, using funds provided by central government. Other chapters in the report include the principles and objectives of priority setting, needs assessment and marginal analysis. The authors conclude that the most desirable approach to priority setting is one which links health care inputs and outputs in ways that enable services and treatments to be compared on a common basis, providing appropriate criteria for making choices; and that 'league tables' of 'marginal cost per QALY gained' may have a part to play if used with care.

Make some notes on this particular technique and cost-utility analysis in general. What problems might accompany the QALY approach for managers, and for other stakeholders, particularly when used in deciding what sorts of treatments to purchase?
Comment

There are many perceived problems with QALYs. Among those that have been identified are:

1. Doubts about the validity and reliability of Quality of Life measures which are used to weight life expectancy.

2. The danger that so-called economies of scale will lead to specialist teams doing limited ranges of 'high QALY' treatments, e.g. 'hip factories', thus depriving areas of a full range of facilities.

3. New therapies will be at a disadvantage during development and future research will have no priority.

4. Potential for abuse, e.g. in making euthanasia decisions or exacerbating relative neglect of certain groups of patients.

5. QALYs do not take into account origins of disease and therefore are of little use in health promotion.

6. QALYs value units of time rather than individuals and their characteristics, which may not be the most appropriate approach to 'equity'.

7. QALYs do not help us to compare other non-health benefits from care, such as working days gained, learning, reassurance or the provision of employment.
6 Conclusions

'I believe that managing the Health Service is a nearly impossible task ...'
(Harvey-Jones and Masey, 1990, p. 143)

Anyone who saw the robust Sir John Harvey-Jones almost in despair when he tried to help a district health authority's management reorganization in the BBC television 'Troubleshooter' series will have picked up some messages about the complexity of performance measurement in the NHS. On the other hand, it would not be fair to accuse the NHS of avoiding the issue. For example, the HSI package is at least as ambitious as ICL's performance management system, which you met in the Case Study Booklet, albeit at a more macro level. If it could be updated more frequently it would probably be of greater value to a wide range of stakeholder groups, if they but knew it. You have been introduced here to some of the factors which can contribute to the effective development of PI systems, and some of the pitfalls if they are used without enough thought.

Performance monitoring, reporting, accounting and inspecting across and between levels in the health service occupies a vast amount of management time and the fact that the whole system has actually delivered almost enough health care of a largely reliable quality on a massive scale for 45 years must not be overlooked. Health services in many other countries have learned from the NHS; common challenges are now facing health services around the world and, in terms of performance evaluation, the NHS is learning from them too. Patient satisfaction and quality assessment, analytical tools like DRGs, and health promotion as a route to the WHO 'Health for All' targets are areas where shared experiences and joint projects are increasingly common.

In this unit you have met several relatively specialized activities and systems and it may sometimes take a lot of imagination before you can see comparable applications elsewhere. None the less, we have been concentrating on economic evaluation which it has been argued has general relevance whenever efficient use of resources is desired. PI systems can provide appropriate and reliable input data to economic evaluation, provided that principles of both PI design and good practice in economic evaluation are applied.

It would also be fair to say that economic evaluation studies have some way to go before their full potential is realized. Teeling Smith (1987, pp. 189-90) lists the methodological weaknesses which a study by Drummond and colleagues noted in a review of reported studies. Here are a few which must be noted if you are considering using CBA, CEA or CUA:

- failure to specify the viewpoint from which the study was carried out
- failure to base the economic study on evidence of a high enough quality (in these cases, medical evidence from controlled clinical trials)
- the unthinking use of average costs
- failure to consider the costs borne by other stakeholders (e.g. families, patients)
- inadequate allowance for uncertainty in cost and benefit estimation
- inadequate consideration of the link between the results of the appraisals and the decisions they related to
- failure to consider factors other than economic efficiency.

There are many similarities here with the cautionary messages accompanying the productivity measures introduced in Part 2 of Unit 5. Returning frequently to
consider the broader picture is particularly essential when we start to explore detailed quantitative performance ratios or indices. For instance, if 'equity' was not an NHS objective, 'maximizing health outcome' in terms of additional high quality years of life gained at least cost could be our target and QALYs (if their reliability was high enough) could be our main indicator. But if we want to ensure equal access to those additional years of high quality life, or sustained improvement in the effectiveness of health care, we will need a more extensive toolkit. We will return to the subject of evaluation of effectiveness from a range of stakeholder perspectives in Unit 9, in the context of education and training.
References


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Appendix 1  Health and Efficiency

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