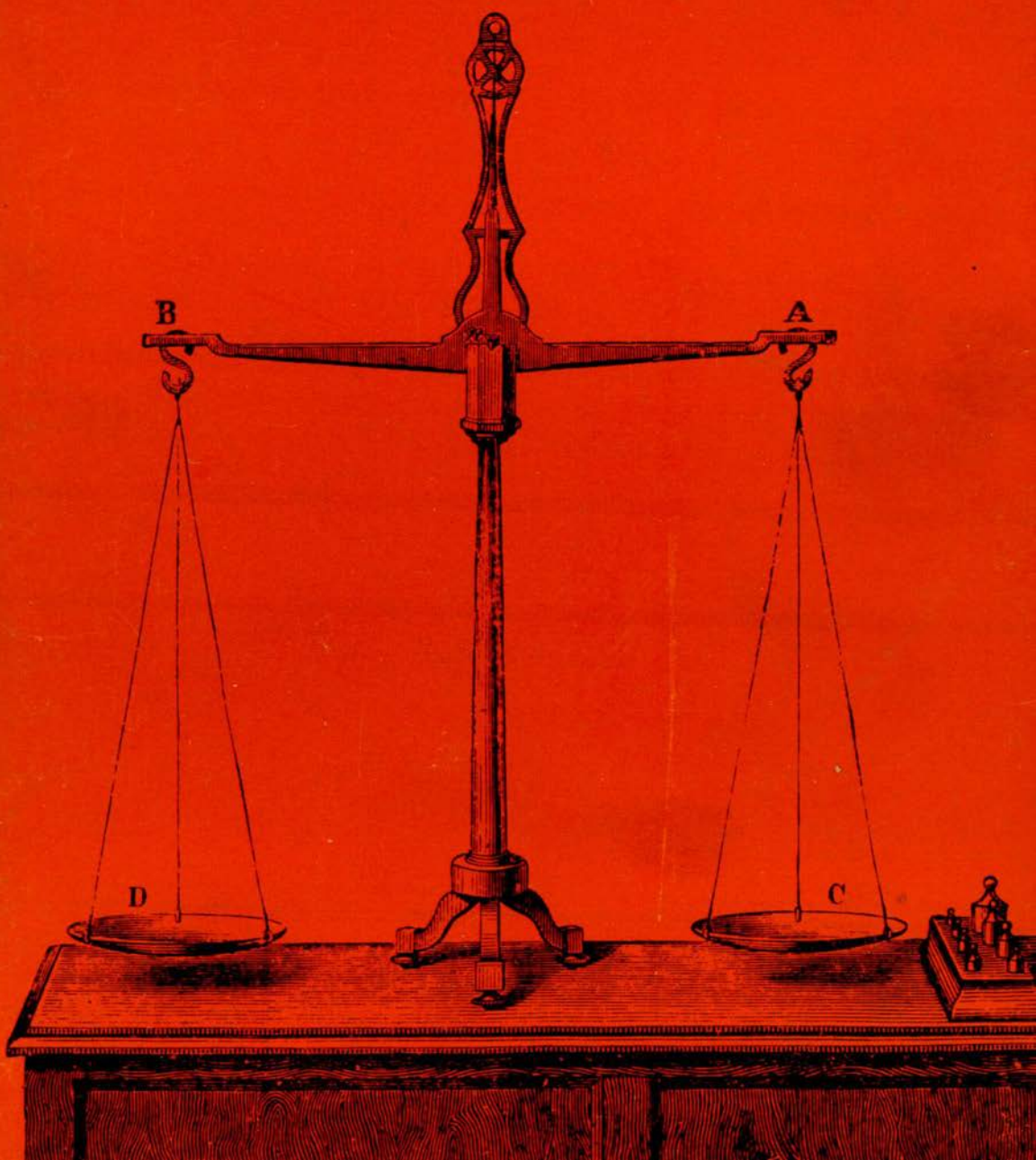


MEASUREMENT AND MANAGEMENT IN THE NHS



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Foreword by Lord Butterfield.

OFFICE OF HEALTH ECONOMICS

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To undertake research on the economic aspects of medical care.

To investigate other health and social problems.

To collect data from other countries.

To publish results, data and conclusions relevant to the above.

The Office of Health Economics welcomes financial support and discussions on research problems with any persons or bodies interested in its work.

FOREWORD

The late John Vaizey posed a challenging question about the 'explosion' of health care costs in the Western World. 'Why was it seen as a problem', he asked, 'when even more rapid growth for example in home entertainment and electronics was seen as an economic achievement?' Clearly, the answer does not depend only on the fact that Health Services in Europe are generally financed out of collective funds. In the United States, where much of medical care is still privately financed, 'cost containment' is an even more fashionable issue than in Europe.

One explanation, put forward by the first Chairman of the Office of Health Economics, Dr Colin Cooke, is that people simply fail to realise that Health Care is an 'industry'. It involves investment, research, and employment like any other innovative enterprise. Its growth not only improves the health of the population (with all its own attendant economic benefits), but also generates wealth for its employees and suppliers in the same way as other industrial organisations.

It is true that in the context of the tax-funded NHS in Britain, the growth of health care must to some extent be managed as part of the national economy as a whole. This is a complicating factor, but it should not conceal the fact that the expansion of the health care sector adds to national wealth rather than detracting from it.

Thus, this paper looks at the economic issues facing the National Health Service in the late 1980s from the standpoint of 'The NHS as an Industry'. Albeit, it is an industry with a very special social responsibility in society which creates strong emotional feelings and which invokes conflicting political ideologies. But the fact remains that irrespective of these political issues it must conform to fundamental economic principles.

The improved well-being of the patient (that is, the successful *outcome* of medical care) must always be the primary consideration of those in the National Health Service. But no one should think of the service as being a financial parasite on the national economy. It generates wealth in addition to well-being. This paper is about how it can fulfil these dual roles most efficiently. The NHS lacks the conventional economic yardstick of 'profit' to measure its success. The developments which are discussed in the following pages explain the steps that are being taken to try to produce alternative measures of economic effectiveness.

John Butterfield

BACKGROUND

Britain's National Health Service came into existence in 1948, in the wake of the Second World War. It was intended to implement the recommendations of the Beveridge Report (1942) and to mobilise health care for the benefit of the population as a whole. One of its most laudable objectives was to make effective medical care freely available to the entire population. It was successful in this objective, although standards of care, particularly in general practice, inevitably varied in different places (Collings, 1950). Despite the fact that theoretical equality of access to the Health Service never succeeded in reducing social inequalities in health, (Black, 1980) the inability to pay for treatment has never been a barrier to access. To a large extent the National Health Service has satisfied the basic objectives of its architects.

Indeed, the extent of its success could never have been foreseen by Beveridge and his contemporaries. Brain surgery, a wide range of transplants, open heart surgery, and the replacement of diseased hips and knees with artificial joints are all procedures which were unimaginable in the 1940s. More than anything else it is this technological progress which has created the shortages which now occur in medical care under the NHS. In addition, steadily rising affluence and better standards of living have led to increased expectations of good health as well as more material benefits. Understandably, the public expect the latest advances in medical technology to be available whenever they are required.

At the same time, the consequent pressures on the health service have led to another realisation. The introduction of central bureaucratic control of the Service in 1948 – in place of unacceptable 'market forces' – was intended to ensure the better use of medical services; but it did not automatically lead to greater efficiency. Indeed the reverse occurred. Without normal 'market signals' (as economists call them) the incentive to operate at maximum efficiency was absent under the National Health Service. For almost 40 years, it never occurred to those responsible that measures were required to relate the huge use of national resources for medical care to some meaningful measurements of outcome. It was considered sufficient to relate the steadily mounting expenditure to an obvious increase in medical activity, without systematically trying to assess the efficiency of that activity, or to quantify the benefits which it produced. The quiet revolution which has been taking place in the NHS in the 1980s has been to start to rectify this situation and to introduce proper principles of economics and management into the Service. The NHS White Paper of January 1989, despite the controversy which it has generated, can be seen as no more than a further step in this overall process (HMSO, 1989). There is, however, still a long way to go before economic efficiency within the NHS is generally achieved. Nevertheless, major steps are being taken in that direction, and the objective of economic as well as clinical efficiency for the NHS is widely accepted.

THE THEORETICAL ECONOMIC PRINCIPLES

Figure One shows a very simplified model of the normal industrial economic process. The basic inputs of manpower, materials and capital are converted into goods or services which can be sold, and the efficiency of this process of conversion is measured by the profit earned. Figure Two shows the correspondingly simple model for the NHS. The problem immediately arises that neither the outcome nor the efficiency of the service is easy to measure, in the way that other industrial output and profits can be measured. In particular, it is essential in the National Health Service situation to distinguish between 'activity' and 'outcome'. To give the simplest of examples, it is clearly of no benefit to a patient to be operated on twice instead of once, if at the end he feels no better and lives no longer.

However, with these very simple models it can also be argued that for

Figure 1 The basic economic model

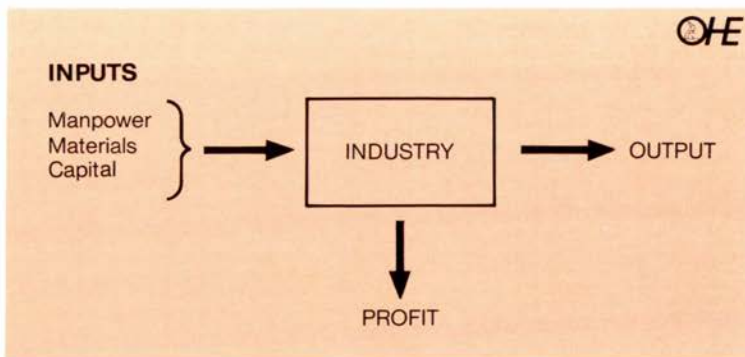


Figure 2 The NHS model

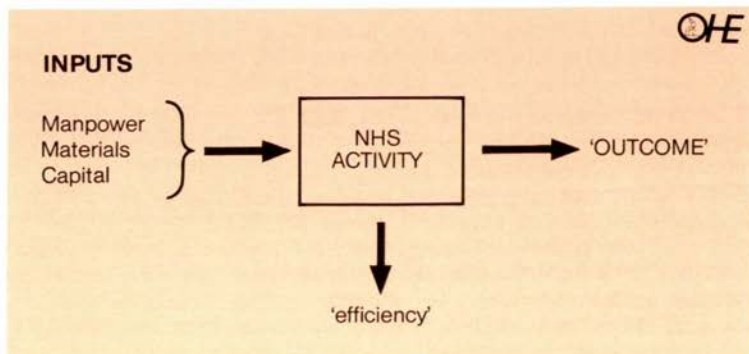


Figure 3 More sophisticated industrial model

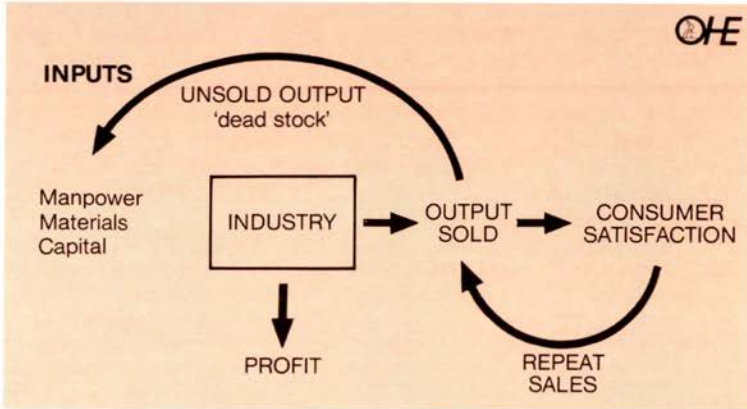
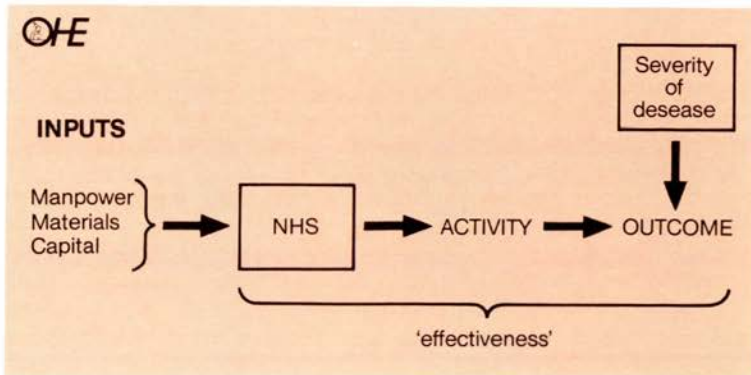


Figure 4 The extended NHS model



industry as a whole 'output' is in itself no measure of the community's well-being. The public must want the goods and services that are produced and must benefit from them. Figure Three, therefore, gives a rather more sophisticated model of the industrial process. Here 'consumer satisfaction' becomes the measure of achievement, and 'unsold stock' will add to costs and reduce profit and efficiency. In Figure Four, the NHS model is expanded to parallel once again the general industrial model. Whereas the *efficiency* of the Health Service is a measure of the success with which it converts resources into activity, its *effectiveness* must be related to outcome in terms of survival and well-

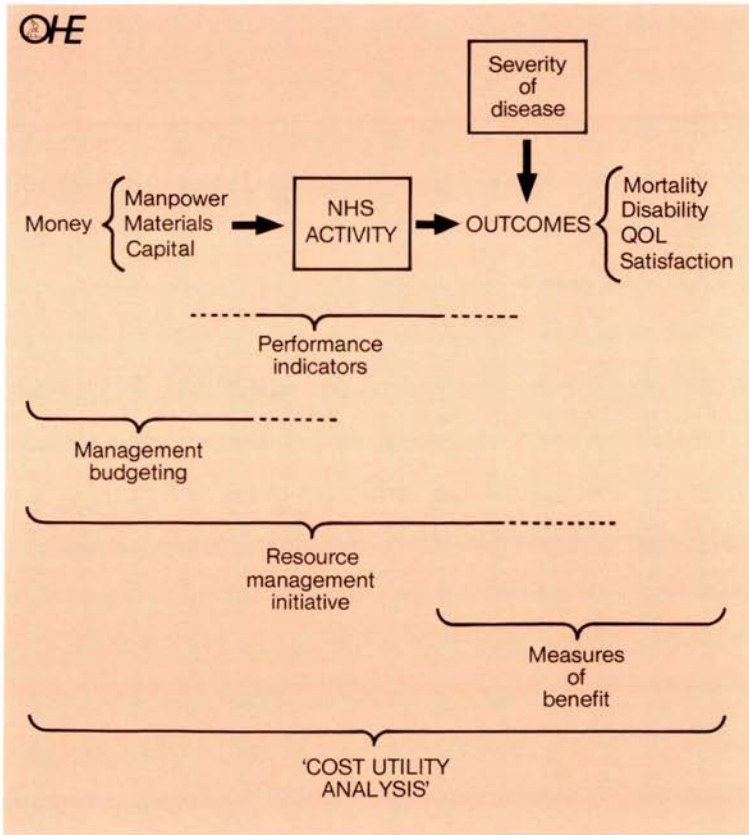
being. Perhaps, an 'efficient' surgeon could say that 'the operation was a success, but the patient is dead'. An 'effective' surgeon certainly could not.

The developments in the management of the National Health Service in the late 1980s are starting to embody these basic principles of economics. One early move was the introduction of 'performance indicators' in 1983. These attempt to measure the performance of individual departments within the NHS hospitals in terms of operations carried out per consultant, for example. The indicators have been criticised on the grounds that the definition of comparable units of work (for example, pathological tests) are misleading (Skinner *et al.* 1988) (Murray, 1988). Nevertheless they have forced doctors, nurses and more especially managers to think in terms of the amount of activity which they perform in relation to available resources (Lowry, 1988). There is, however, no attempt to relate performance to measures of outcome, and (bearing in mind the criticisms of their accuracy) performance indicators on their own have been of limited value. The attempts to measure performance and activity with the Health Service were also advanced by the introduction of 'Korner' sets of statistics, which record in much more detail than previously, and on a more systematic basis, the activities carried out in the NHS. This initiative was started in the early 1980s (Korner, 1982). However, from the start these statistics related only to activities rather than to outcomes. In addition, although the Korner sets of statistics have provided many more details for individual District Health Authorities, they seem to have made it more difficult to obtain an overall picture of NHS activity. In 1985, formal steps were also taken to introduce management budgeting (DHSS, 1985) which involved the different departments in hospitals starting to be responsible for keeping within preset cash limits for expenditure.

The next much more significant step has been to introduce experiments in what has been called 'resource management' (DHSS, 1986a). The Resource Management Initiative (RMI) is a more sophisticated approach than the application of performance indicators and management budgeting and will be fully discussed in the next section. At its most advanced, the Resource Management Initiative will eventually include formal attempts to measure the outcome in terms of patient survival and recovery. Still using the model illustrated in the previous Figures, Figure Five shows the way in which the various management initiatives fit into the overall economic philosophy described so far. Most importantly, this philosophy needs to be taken into account as the recommendations of 1989 NHS White Paper are discussed and implemented.

Whereas performance indicators in the main tend to relate NHS resources to NHS activity, and management budgeting had been concerned only with costs, the Resource Management Initiative is starting to relate resources used to outcomes. This, in turn, will eventually include the use of measures of benefit, such as 'health profiles' and 'health indicators', which have been fully discussed in a previous OHE

Figure 5 Breadth of Managerial Measurement



booklet (Teeling Smith, 1985). At its most fully developed, the concept of resource management could come close to a fully developed 'cost utility analysis'. This is the phrase coined by economists to relate resources used to the outcomes achieved in terms of human well-being. Whereas a classical 'cost benefit analysis' is concerned only with financial measurements, a cost utility analysis is concerned also with the assessment of individuals' quality of life. Thus in the late 1980s for the first time the National Health Service is making a determined effort to relate the £26 billion* which it costs to the benefits which it produces in terms of human welfare. The current progress with these experiments is discussed in the next section.

It is, however, also relevant here to mention the other development which should help to make the National Health Service more effective. This is the work now being done to attempt to pay hospitals for the work actually undertaken, rather than to give them an arbitrary budget based on their local population. Now, in some Regions, when patients are transferred from their local home area to a distant hospital, some of the finance from their home area follows them to the hospital where they are treated. This is a tentative move towards a fully costed health service, where hospitals in particular are paid for the work which they undertake, rather than for the population which they theoretically serve. The proposal in the NHS Review to grant NHS hospitals a self governing status is a major step in this direction. There are, however, problems to be overcome in accurately defining costs, including the allocation of capital. Hospitals in districts with a very high site-value may end up at an economic disadvantage compared to those in 'cheaper' districts.

One of the ideas related to the principle of 'internal pricing' is based on the 'diagnosis related groups' (DRGs) developed in the United States. These DRGs define particular types of treatment, for which standard average costs are reimbursed. Thus hospitals are paid according to the number of different types of patient which they treat, instead of on the basis of a predetermined budget or a fixed charge per patient day. As with performance indicators, there are problems in defining exactly the type of case; and there may be a tendency for a patient to be categorised into a more 'complicated' DRG than is justified, in order to earn higher fees for his treatment (Wennberg *et al*, 1984). Nevertheless, the concept of the DRG does provide a basis for comparisons of a hospital's actual costs against a theoretical average for the same type of case. It also provides a basis for 'pricing' cases when they are transferred between Districts within the National Health Service or between the NHS and private hospitals.

THE RESOURCE MANAGEMENT INITIATIVE

The Resource Management Initiative was announced in a DHSS circular in November 1986 (DHSS, 1986a). It extended the principle of management budgeting on an experimental basis in the following six NHS hospital sites:

Freeman Hospital, Newcastle upon Tyne
Clatterbridge Hospital, Wirral
Arrowe Park Hospital, Wirral
Royal Hampshire Hospital, Winchester
The Royal Infirmary, Huddersfield
Guy's Hospital, Southwark

These sites were not selected at random, but were chosen because their management had already started to develop more progressive ideas

about relating the use of resources to the work done within the hospitals. Guy's, in particular, had already introduced new organisation structures which were very much in line with the philosophy of the Resource Management Initiative. In the event, the initiative at Clatterbridge Hospital never properly developed, and it was later replaced by Pilgrims Hospital, Boston.

The two key changes envisaged in the Resource Management Initiative were first a managerial reorganisation, giving clinicians more management responsibility, and second a profound improvement in management information systems. The different sites have individually put different emphasis on these two aspects of the initiative.

As far as managerial reorganisation is concerned, the intention is to involve clinicians much more directly in management and budgeting decisions. This is probably most advanced in Guy's Hospital, where a scheme with thirteen 'Clinical Directors' is fully operational. Each clinical director has responsibility for the costs, efficiency and effectiveness of his own department. He is assisted by a manager and a nurse-manager, although in at least one case these two positions have successfully combined in a single individual – a nurse with general management responsibilities. In practice, the concept of the clinical director has not been confined to the six experimental sites. Other hospitals have also introduced the same principle.

Two important factors will have been responsible for the success of this management initiative, if indeed it proves as successful as preliminary impressions suggest. The first is that the role of the clinical director has never been precisely defined. It has been allowed to develop to suit the personalities and the situations as they differ in each individual site. Secondly, great care has been taken in the choice of the directors themselves. Strongly individualistic and possibly controversial consultants have not been selected if they would be unacceptable to some of their colleagues. This means that the clinical director is not necessarily the most senior member of a team, and may therefore need considerable tact and management skill to achieve his or her objectives.

The main emphasis of the new clinical management approach has so far been to monitor and assess clinical activity. However, it is intended that the initiative should extend eventually to full budgetary control, relating resources used to outcomes achieved. This will depend very largely on the success of the second aspect of the Resource Management Initiative – the development of better information systems.

Again within the experimental sites there has been a considerable degree of flexibility in the way in which the move towards better information has been approached. At the Freeman Hospital, for example, the objective has been to integrate separate computer systems from different departments of the hospital into a cohesive whole. By contrast, other hospitals have started *ab initio* to introduce a completely integrated hospital-wide information system. Interestingly, one of the most successful examples of this approach is again not at one of the six experimental sites, but at the Hammersmith Hospital. There, each patient has a unique number, and every activity or measurement relat-

Figure 6 New RMI hospitals

The following hospitals have been chosen to join the resource management initiative:

Northern RHA: North Tees General Hospital; South Cleveland Hospital; Darlington Memorial Hospital; Bishop Auckland General Hospital; Royal Victoria Infirmary; Newcastle upon Tyne; North Tyne-side General Hospital, and the Royal Infirmary, Sunderland.

Yorkshire RHA: Hull Royal Infirmary; Grimsby District General Hospital; York District General Hospital; Bradford Royal Infirmary, Airedale General Hospital; Calderdale Hospital; Leeds General Infirmary; St James's Hospital, Leeds, and Pontefract General Infirmary.

Trent RHA: Chesterfield and North Derbyshire Royal Hospital; Glenfield Hospital, Leicester; City Hospital, Nottingham; Royal Infirmary, Doncaster; Northern General Hospital, Sheffield; and Children's Hospital, Sheffield.

East Anglian RHA: Addenbrooke's Hospital, Cambridge and Norfolk and Norwich Hospital.

South East Thames RHA: Royal Sussex County Hospital, Brighton; Eastbourne District General Hospital; Maidstone District General Hospital; Greenwich District Hospital; St Thomas's Hospital; William Harvey Hospital, Ashford; and Queen Mary's Hospital, Sidcup.

Oxford RHA: Wycombe General Hospital; John Radcliffe Hospital, Oxford; Radcliffe Infirmary, Oxford; Northampton General Hospital; and Milton Keynes General Hospital.

West Midlands RHA: East Birmingham Hospital; Burton General Hospital; and Queen Elizabeth Hospital, Birmingham.

Mersey RHA: The Countess of Chester Hospital, Chester; Leighton Hospital, Crewe; Warrington District General Hospital; Southport District General Hospital; and Whiston Hospital, Prescot.

North Western RHA: Royal Lancaster Infirmary; North Manchester General Hospital; Manchester Royal Infirmary; Hope Hospital, Salford; Stepping Hill Hospital, Stockport; and Leigh Infirmary, Wigan.

Source *BMJ* (1989)

ing to that patient throughout the hospital is coded to that number. This allows the computer system to produce very accurate profiles not only of individual patients but also of departments treating those patients, and of patients within a particular DRG.

Part of the process of improving management information in this way relates to producing more accurate diagnostic classifications, along the principle of the 'Diagnostic Related Group'. This will eventually provide meaningful comparative data for similar groups of patients, and will allow the clinical managers or directors to judge more accurately the performance of their own teams.

It was originally envisaged that the Management Resource Initiative would be evaluated before it was extended to other hospitals. This evaluation is being undertaken by the Health Economics Research Group at Brunel University, which is due to report shortly. In the meantime, however, the initiative is being extended to the further 50 hospitals listed in Figure Six, and the White Paper on the NHS envisaged that it would eventually cover 260 short-stay hospitals in England (*British Medical Journal*, 1989).

MEASUREMENT OF OUTCOMES

For the first twenty or so years of the National Health Service, it was considered sufficient to demonstrate that the numbers of patients treated had increased in order to 'justify' higher expenditures. Activity was taken as a proxy for achievement. Now in the 1980s, it is recognised that an increased in activity alone is not a sufficient measure of improvement in the service. What matters is the *outcome* for the patient. This can be measured as reduced mortality, as reduced morbidity in clinical and biological terms, and finally – perhaps most significantly – as reduced suffering and disability. Over the past ten years, this last measure has been put on a formal basis by economists in terms of the patients' 'quality of life'. It is measured either by a 'health profile',

Figure 7 Percentage of deaths assessed as containing 'avoidable' elements (Surgeon assessor's opinion)

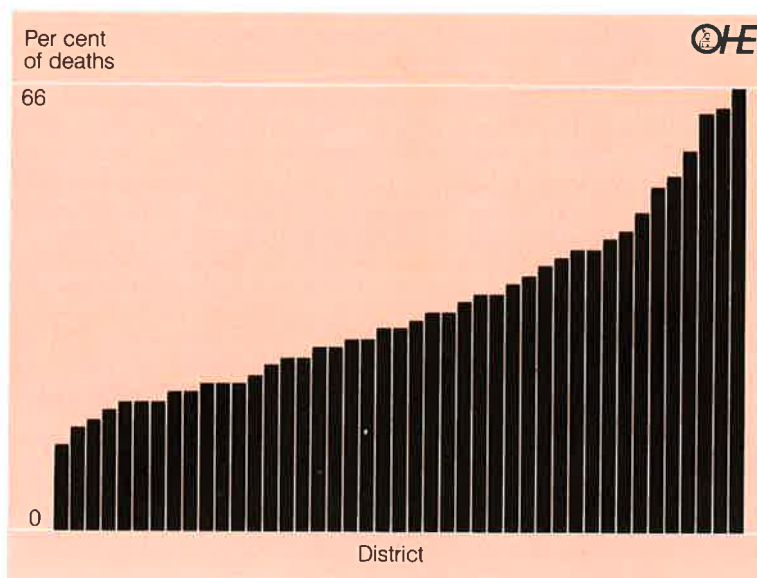


Figure 8 Avoidable deaths: Range of standardised mortality rates for certain conditions in Districts in England and Wales for the period of 1982–86

<i>Disease or condition</i>	<i>Standardised mortality rates</i>		
	<i>Minimum</i>	<i>Average</i>	<i>Maximum</i>
Three common surgical procedures (appendicitis, abdominal hernia and cholelithiasis/cholecystitis)	0	100	288
Hodgkin's Disease	0	100	287
Chronic Rheumatic Heart Disease	0	100	606

Notes:

(a) A standardised mortality rate of 100 would occur when the actual number of deaths equals the expected number of deaths given the age distribution of the district population.

(b) Hospitals are the most important providers of care for each of the diseases and conditions shown above.

(c) See also Appendix 1 and associated notes.

Source:

'Avoidable Deaths Indicators for DHAs, 1974–83', J Charlton and A Lakhani, April 1986, and DOH Statistics.

such as the Nottingham Health Profile, or else as a 'health index', such as that developed by Rosser and Kind (1978). The health profile is referred to again later in this section. The health index depends on giving a range of different states of health a numerical value, which may be calculated by a variety of psychometric techniques.

In the 1960s, it was easy to demonstrate that premature mortality had been greatly reduced by the advances in medicine which were freely available under the NHS. Deaths among children and young adults fell dramatically. More recently, there have been sophisticated attempts to measure differences in mortality between hospitals and health service Districts, in order to give some indication of the comparative success of treatments on a geographical basis. In particular, for example, the Confidential Enquiry into Perioperative Deaths (CEPOD) studied three Regions during 1986. Figure Seven shows the percentage of deaths for different Districts containing an 'avoidable' element according to a surgeon assessor's opinion (Buck, N, 1988).

Using an analysis of the DHSS Hospital In-Patient Enquiry data, Kind (1988) compared the death rates for patients in different Health Authority districts. He concluded that on a standardised basis, the mortality rate varied from 151 per cent of the expected rate in the 'worst' District to 58 per cent in the 'best'. The almost threefold difference on this measure of 'outcome' may be explained by factors in

addition to quality of care, but it underlines the need for better comparative data on outcomes, even in terms of crude mortality rates.

Thirdly, the National Audit Office (1988) have recently further emphasised the variations in avoidable deaths under the National Health Service. Figure Eight shows that for chronic rheumatic heart disease, for example, the standardised mortality ratios varied from zero to six times the average rate.

Apart from measures of mortality alone, recent attempts have been made to use the concept of 'quality adjusted life year' (QALY) to combine measures of morbidity and mortality. The principle in calculating a QALY is that a patient's year of survival should be discounted by a score for their degrees of disability and distress. A year of perfect health would thus score one, while a year with 50 per cent disability and distress would score 0.5. The most widely quoted exercise using this approach was by Williams (1985). Figure Nine shows an adaptation of his original Table indicating the comparative cost per 'QALY' for selected health care interventions. The best value appears to come from preventive medicine. It has been suggested that this approach could be used as a basis for planning the national allocation of health care resources between different treatments, but much more work needs to

Figure 9 'League table' of costs and QALYs for selected health care interventions (1983-84 prices)

<i>Intervention</i>	<i>Present value of extra cost per QALY gained (£)</i>
GP advice stop smoking	170
Antihypertensive therapy to prevent stroke (ages 45-64)	600
Pacemaker implantation for heart block	700
Hip replacement	750
CABG for severe angina LMD	1,040
GP control of total serum cholesterol	1,700
CABG for severe angina with 2VD	2,280
Kidney transplantation (cadaver)	3,000
Breast cancer screening	3,500
Heart transplantation	5,000
CABG for mild angina 2VD	12,600
Hospital haemodialysis	14,000

CABG Coronary Artery Bypass Graft

LMD Left Main Disease

2VD Two Vessel Disease

Source: Adapted from Williams and DHSS (1986b) (1985) (1986) plus OHE estimate for stroke.

be done before valid policy decisions could be reached in this way.

A more down to earth approach is currently in progress under the aegis of CASPE, based at the Kings Fund in London. There, Iden Wickens and his colleagues, are engaged in three related exercises. The first is to assess the quality of care based on professional judgements, and this work is being undertaken at Brighton. Second, the patients' own assessment of the quality of their care is being measured in the Bloomsbury Health District. Thirdly, a formal attempt is being made to assess the outcome of medical intervention for four different diagnoses at the Freeman Hospital in Newcastle. This should eventually be linked into the Resource Management Initiative at the hospital, which was described earlier.

All of these three projects are at an early stage, but the Freeman Hospital study is particularly interesting as it is using clinical and biological measurements as well as measures of patients' quality of life. The four diagnostic groups are diabetes, rheumatoid arthritis, cardiac angioplasty and cholecystectomy – two 'chronic' and two 'acute' conditions. The objective is to produce generally applicable measures to assess the quality of management of the patients. On the biological or clinical side, the aim is to produce 'expected values' which represent a satisfactory outcome for the treatment. In addition, the patients' quality of life before treatment (where possible) and at three months and twelve months after discharge from hospital will be measured, using either the Nottingham Health Profile or the Sickness Impact Profile. These are 'instruments' which measure the degree of a patients disability and distress for a number of distinct parameters such as pain, sleeplessness, lack of energy and so on.

All of these attempts to measure the quality of care, whether on a national basis or for individual physicians or surgeons, are at a tentative stage. However, the principle of trying to measure outcomes of treatment, rather than simply the quantity of health care activity in hospitals, is now well established. There is little doubt that within a few years, meaningful measures of outcome will have been established as a basis for fully fledged 'cost utility analysis'. These analyses will embrace the whole economic and medical spectrum from the use of resources at one end to the survival and well-being of the patient at the other.

GENERAL PRACTICE

So far the discussion of measurement and management in the NHS has concentrated on the hospital service. However, the great majority of episodes of ill health are treated in general practice, and in addition the general practitioners act as 'gatekeepers' for all except emergency care in hospitals. The White Paper proposals have introduced measures which are intended to increase the economic efficiency with which the general practitioners perform, both within their own practices and in their demands on hospitals. For the first time, it is proposed that general practitioners should face formal budget restraint on their activities.

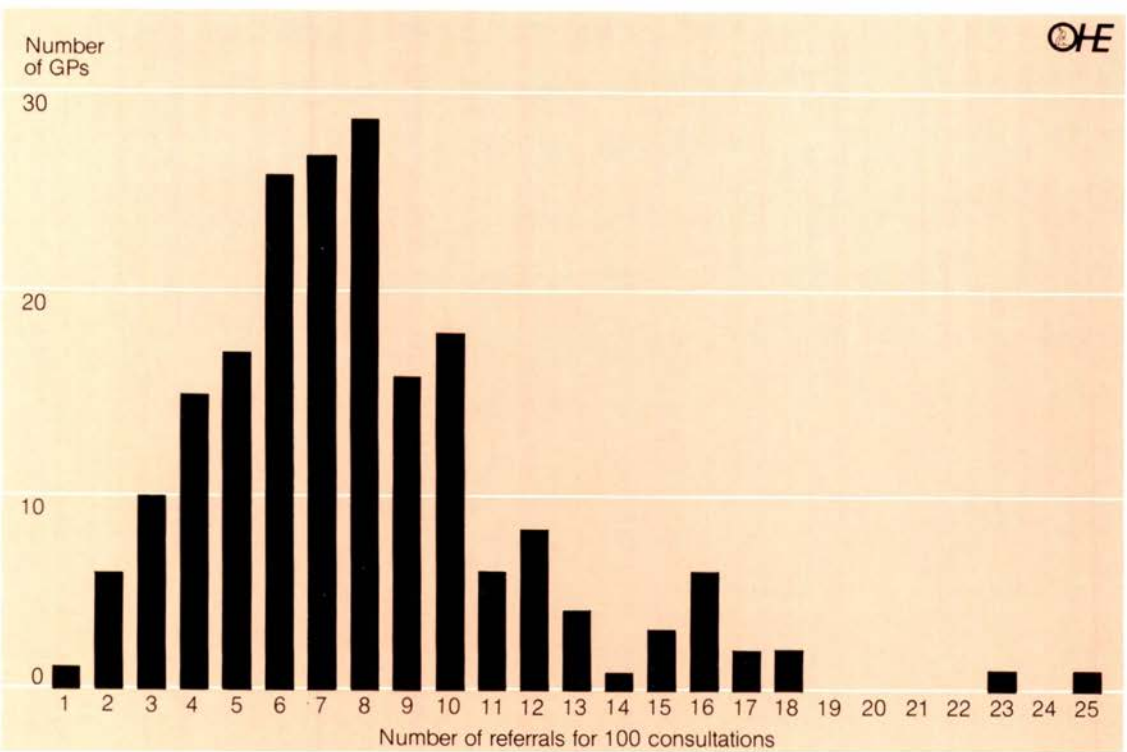


Figure 10 Referral rates of 199 GPs (Manchester, Salford & Trafford)

Source: Acheson 1985.

Figure 11 Patient care costs for 11,000 people, at 1985/86 prices

75,680 prescriptions @£4.235	=	320,504
3,873 lab tests @£10.0	=	38,730
10,275 'units' of x-rays @£16.0	=	164,400
1,875 referrals to out-patients @£115.4	=	216,375
686 'non immediate' in-patient stays @£736.79	=	505,437
		£1,245,446

Source: Metcalfe 1989.

The White Paper sets out two forms of general practice budgeting. For smaller practices, this will be confined to 'indicative budgets' for prescribing. However, larger group practices caring for more than 11,000 patients will have the option to become full 'budget holders', responsible not only for their own practice costs but also for the costs they incur in the hospitals through their routine referrals. In both cases, one intention is to reduce the variation in the use of resources which currently exists between practices. Figure Ten shows the variation found recently in rates of referral between apparently similar practices in the Manchester area (Acheson, 1985). Even excluding the extremes, there is a sixfold variation in the rate of referral among the main body of general practitioners.

The concept of 'budgets' for general practitioners is not without problems. Metcalfe (1989), for example, has pointed out that the suggested budgets of '£600,000 to £700,000' for practices of 11,000 patients would represent only about half of the costs which such a practice would actually have had to meet in 1985/86. These costs are shown in Figure Eleven. The items listed are those which Working Paper Number Three of the White Paper (DOH, 1989a) indicates that a 'budget holding' practice would be expected to fund.

As far as the proposed 'indicative budgets' for prescription costs in other practices are concerned, there would need to be special account taken of 'high cost' patients such as chronic diabetics and the very elderly.* There is also a danger that general practitioners might be discouraged from desirable preventive medicine, such as early detection of hypertension. It is often estimated that only half of all middle-aged male hypertensive patients have been diagnosed by their general practitioner. Doctors could potentially be penalised for prescribing the hypotensive medicines which might be necessary once other pre-

*The extent of the risk of general practitioners declining to accept 'expensive' patients unless their budgets are realistically calculated has been underlined by figures from the United States Medicare Programme. In 1982, 7.7 per cent of the population covered accounted for 70.7 per cent of the total Medicare budget. At the other extreme, 39.3 per cent of the population made no demand whatsoever for medical care. (Scheffler, R. 'Adverse Selection: the Achilles Heel of the NHS Reforms', *Lancet*: 1989; 1: 950-952). It is hard to imagine that this sort of skewed demand can be taken fully into account in setting NHS budgets.

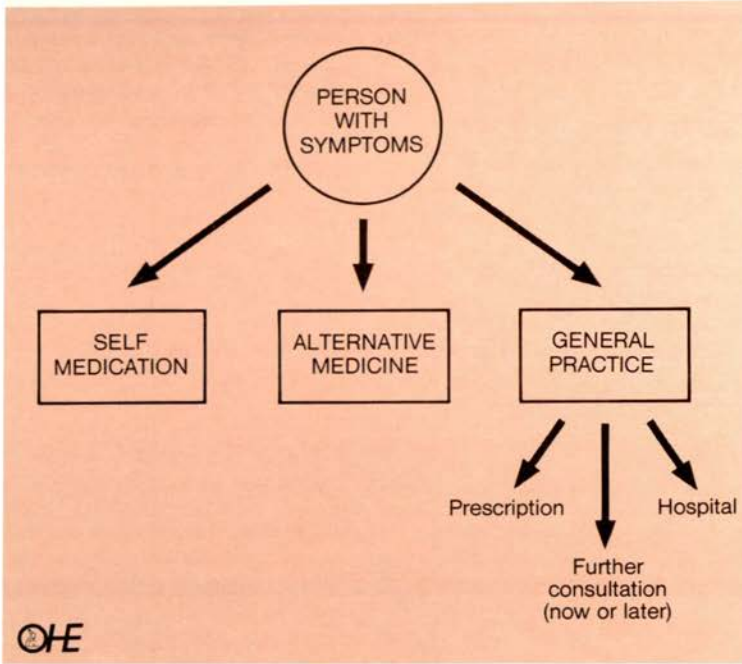
viously undiagnosed patients had been detected. This could lead to higher long-term costs for the Health Service, because it has been shown that the effective control of hypertension more than pays for itself by the reduction in stroke at a later date (Teeling Smith, 1988). The way to avoid such a danger would be to ensure that budgets are constructively set, taking account of the practitioners' objectives such as proposed screening programmes or other initiatives which may lead to higher costs in the year ahead. However, if the purpose of budgets is merely to reduce costs, general practitioners are right strongly to oppose them.

Once again, as in hospital, the only meaningful criteria for the effectiveness and efficiency of a general practice is the relationship between its use of resources and the outcomes in terms of patient survival and well-being. Budgets would need to be set by first defining desirable objectives for the practice, and then estimating the cost of achieving those objectives. Any budget which is based on costs alone, merely to contain expenditure, must inherently lead to inefficiency, whether in a business or in a health service.

However, the principle of general practitioners as budget holders is not new. It was discussed, for example, at an Office of Health Economics meeting at Cumberland Lodge in Windsor as long ago as 1984 (Teeling Smith, 1984). Significantly, that discussion looked ahead to legislation in 1996 – not implementation by 1991, which is the target date set in the White Paper. There is a real question as to whether meaningful 'outcome' measures can be in place in general practice within two years, in order to make an assessment of the general practitioners' use of resources a realistic exercise. If all that happened under the White Paper proposals was the promised 'downward pressure' on costs without any consideration of the effects of patients' well-being, it could become a very uneconomic approach to the problem of maximising effectiveness and efficiency. The whole issue of budgeting will need to be resolved in the discussions which will take place on the White Paper in the coming months. So far, the Working Paper on 'Indicative Prescribing Budgets' is vague on how the principles of the budget will be applied in practice (DOH, 1989b). It does not take account, for example, of the fact that many general practitioners' prescriptions are made on the recommendation of consultants. Nor, more importantly, does it look at the whole relationship between practice and hospital costs.

Figure Twelve shows the pathways which a patient experiencing symptoms may follow. If the route ending up with a prescription may sometimes be 'blocked' by a doctor's fear of exceeding an 'indicative budget', the alternative pathways include referral to hospital. Such referrals may not only be unnecessary, but would be both inconvenient to the patient and costly to the Health Service. (Incidentally, if the public start to find it harder to obtain an NHS prescription, they might increasingly direct their attention to alternative medicine. This could be desirable in the short-term from the Treasury's point of view, but it is debatable whether it would lead to better health or long-term economic efficiency.)

Figure 12 Pathways for a patient.



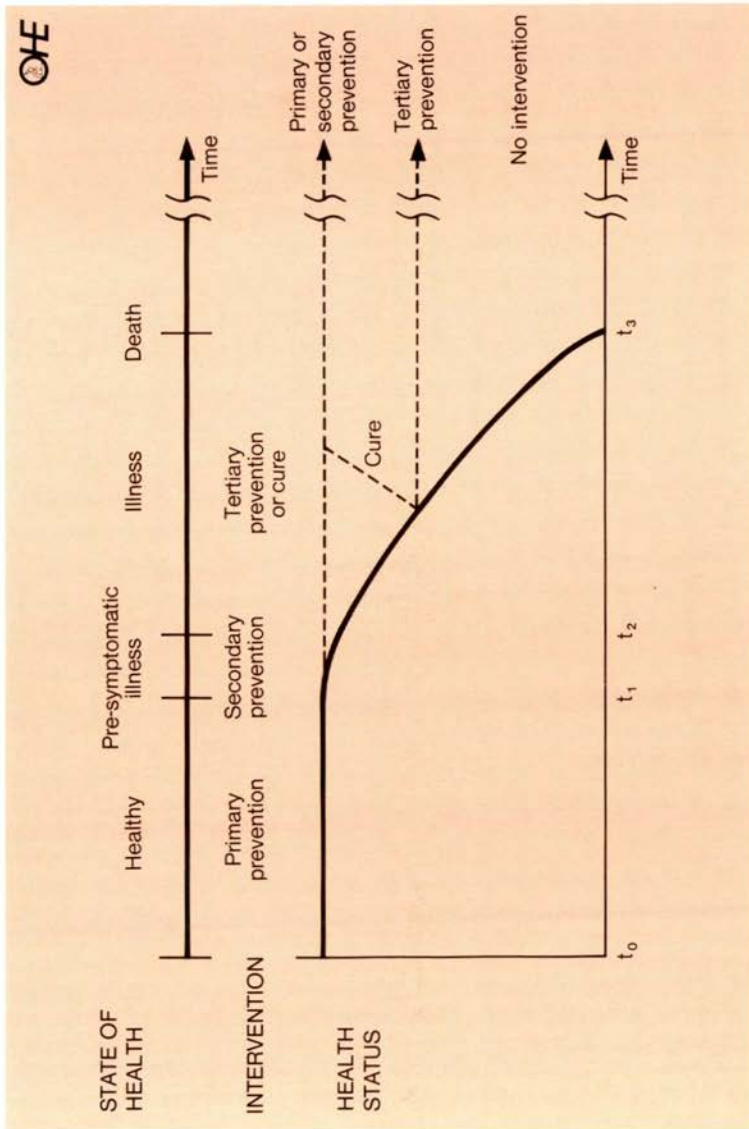
DISCUSSION

The objective of health care is to keep people as healthy as possible for as long as possible. Within the context of Britain's National Health Service it is also important to do this as economically as possible. Since 1948, in an essentially bureaucratic system of care, the incentives to improve efficiency have sometimes been absent. Progressively, in the 1980s, attempts are now being made to introduce economic incentives for efficiency into the Service. The 1989 White Paper is a further step in this direction.

Although the underlying philosophy of the White Paper is attractive to economists, it has been pointed out by many commentators that it appears to put too much emphasis on economy and competition without taking sufficient account of the broader objectives for the National Health Service.

Figure Thirteen, developed by Cohen and Henderson, and reproduced in their recent book on the economics of preventive medicine (1988), gives a useful model of the process of maintaining an optimum state of health. Primary and secondary prevention are the first lines of

Figure 13 Possible time paths of health status.



See note on opposite page.

Source: Cohen and Henderson 1988.

attack, and these involve improvements in the environment, healthier behaviour, and the implementation of immunisation programmes (for which incentives are being introduced for General Practitioners).

Secondary prevention, however, can also involve the detection and treatment of pre-symptomatic disease, such as diabetes, hypertension or osteoporosis. It has been suggested in the discussion on general practice that doctors may be discouraged by the existence of target budgets for their prescribing from going out aggressively to seek individuals who need treatment for such conditions. Early treatment can not only improve the patients' health, but can lead to savings in health care costs in the future (Teeling Smith, 1989). By reducing the risk of conditions such as stroke (by treating hypertension) or blindness (by treating diabetes), the future burden of physical dependence may be reduced. It would be sad, indeed, if short-term economy measures were to lead to more disability and to higher costs for the community in the future.

When it comes to tertiary prevention and to the prospects for care of the acute diseases, it is again important to provide incentives for *effective* care rather than merely *cheap* care. The earlier discussion in this paper described the tentative steps now being taken to develop measures of outcome for medical interventions. Until these measures have been refined to the stage where they can routinely be applied within the health service, there is a danger that managers may concentrate too much on an *economical* service rather than an *effective* one.

In the title of his classic monograph, Cochrane (1972), specifically referred to 'Effectiveness and Efficiency' in his 'random reflections on health services'. He put effectiveness first. In some ways, the White Paper fails to do this, putting too much emphasis on efficiency and economy. In a sense this was inevitable, because the measurement of outcomes is still not available.

However, it is essential that, as the White Paper is discussed and eventually implemented, a balance is maintained between quality and economy. Because precise measurements of quality are not yet generally available, this may mean relying on subjective assessments of 'what is best for the patient'. This will certainly not always be the cheapest treatment. Nor, of course, will it necessarily be the most expensive.

Figure 13 shows one possible profile of health status over time and the alternatives associated with each of the four types of intervention. In the example, the individual is *healthy* between t_0 and t_1 . The onset of presymptomatic illness arises at t_1 , becomes symptomatic at t_2 , and health status gradually declines until death occurs at t_3 . In this illustration it is assumed that each type of intervention is 100 per cent effective and that the inevitable death occurs somewhere off the right side of the graph. Any of the interventions could be deemed *beneficial* if the area under the profile with the intervention is greater than the area under the profile without it. (Actually the benefit may also vary according to how soon it occurs, so a further refinement would be to consider the timing of rises and falls in health status).

Returning to the model illustrated in Figure Five, it is clear that the Resource Management Initiative at present falls short of embracing measures of benefit. These will no doubt eventually be incorporated, so as to achieve a complete 'cost utility analysis' of health care. In the meantime, all that is going to be available is a comparison of the *activity* of different hospitals and consultants. Extending the analogy to general practice, all that will be available in the near future will be a comparison of *costs*. In neither case can these activities or expenditures be directly related to the quality of care, or the *value* of the treatment provided.

The White Paper is intended to advance the trend towards economic efficiency in the National Health Service. This trend is already well established, with the developments through performance indicators and management budgeting to the Resource Management Initiative. Thus the objective of the White Paper is highly desirable. However, this discussion has outlined some of the risks which will need to be avoided if it is indeed eventually to be seen as a positive step towards more effective care under the NHS.

More than anything else, time is going to be needed to iron out the potential problems. It may prove unrealistic to have implemented the proposals in the White Paper by 1991 or 1992.

However, the important overall picture which emerges is of a new acceptance that health care is an *economic* subject as well as a purely *medical* one. This involves the allocation of scarce resources in a way that results in the maximum possible benefit for the population. This should probably result in more concentration on pre-symptomatic illness, instead, for example, of heroic interventions for the terminally ill. So far, much of the planned economic analysis concerns hospitals, in relation both to their own efficiency and to the demands made on them by general practitioners. The next stage must be to broaden the base of economic analysis to include the whole spectrum of morbidity illustrated in Figure Thirteen. Only by adopting this broader viewpoint can the management of Britain's Health Services ensure the best possible use of resources and the optimum state of health for the population. Discussions need to be placed firmly in the context of a policy to make all aspects of health care activity as effective as possible. Measuring the benefits produced by the 'health care industry' is an essential element.

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