

# Perspectives in NHS Management

## Can you measure performance?

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The National Health Service collects a vast amount of information on a routine basis, but much of it is unused. For years any attempts to use such information to evaluate performance has been criticised by the medical profession. The fact that annual hospital returns fail to distinguish between discharge and death, or that a hospital activity analysis print out sometimes presents the number of women patients suffering from diseases of the male genital organ, are two of many examples that serve to undermine confidence in the statistical information produced by the NHS.

Reservations about using routinely collected data can be divided broadly into three areas: technical, conceptual, and emotional. Firstly, although we might hope that data would display certain technical characteristics like accuracy, completeness, relevance, and timeliness, they rarely do. Information collection can be a chore that is frequently delegated to the most junior staff, with adverse effects on its accuracy and completeness. A vicious circle develops in which information is not used because it is inaccurate and inaccurate because it is not used. The information that is presented invariably comes in an unattractive manner, with rows of figures rather like a railway timetable. Furthermore, the NHS tends to gather together information on a national basis in an aggregated form thus making district by district comparisons virtually impossible.

Secondly, the concept of examining the performance of any health service is traditionally based on using indicators of input, process, outcome, need, demand, and environmental influences.<sup>1</sup> Our understanding of relationships between these six dimensions is limited. To what extent is case fatality (outcome) influenced by the level of staffing (input), length of stay (process), incidence and prevalence of the condition (need), the patients' expectation and knowledge (demand), and their socioeconomic circumstances (environmental influences)? Our attempts to answer this type of question tend to polarise around two sorts of study. There are those that are detailed but include small numbers of patients—for example, randomised controlled trials—and those that generalise about morbidity using national census data. We can say with confidence that Charnley hip prostheses may be successfully implanted in patients suffering from arthritis and that for certain conditions older patients will stay in hospital longer than younger patients. What we do not know is the extent to which the traumatic and orthopaedic services in a district are acceptable and whether, given differences in case mix, socioeconomic conditions and resource input, they produce the expected result. Indeed, we do not know what results to expect and would be hard pressed to explain variations in performance.

Thirdly, there are also severe doubts about being able to measure quality. Tender loving care and bedside manner are easier to recognise than specify and measure, and this difficulty sometimes raises an emotional barrier that results in clinicians

distrusting any attempts to evaluate a service. Evaluation is then left to subjective value judgments and expert opinion.

It is not surprising, therefore, that attempts to use such information to assess performance—for example, the current Department of Health and Social Security performance indicator work—have been roundly criticised due to the inadequacy of the database. The shortcomings of NHS data led to the setting up of a wholesale review of data systems in the NHS chaired by Mrs Edith Körner.<sup>2</sup> The timescale to undertake and implement such a review is of necessity going to be at least five years. Despite the obvious limitations within existing information, we thought that greater use could be made of its worthwhile elements and also that using data improved its accuracy and completeness. Moreover, if we are seen to be making progress in tackling these technical failings we are in a stronger position to address the more important conceptual and emotional reservations.

### Collecting and processing data

We started our study of routine data by looking at separate mental illness and mental handicap hospitals of over 100 beds in England. Later we extended the study to examine 34 selected specialties on a district basis. From the outset we accepted that a statistical picture would never precisely portray how a service or hospital performs, but, acknowledging that deficiency, we took the following approach.

We examined existing data sources to identify items that might make some contribution to assessing input, process, outcome, environment, need, or demand. Indicators of performance were derived from the data, which were not expected to be precise measures, but merely displayed the variety that existed in the country. Given the volume of information available, it proved easy to produce a large number of indicators, although there was the usual preponderance of input measures (doctors, nurses, beds, etc) and a virtual absence of outcome measures. For most specialties we selected some 32 indicators, such as beds per catchment population, length of stay, waiting list per bed, patient/staff ratios, etc.

Then for each of the indicators chosen we identified the technical and conceptual reservations that might help to explain the amount of variation observed. In particular, we tried to establish what might indicate good or poor performance. For example, when examining a patient/nurse ratio in mental handicap it was thought unlikely that a high number of nurses per patient would be any indication of good care, but that low levels might make high standards of care difficult to maintain. We gathered data for the whole of England with the help of staff in each regional health authority and transferred it to an expanded BBC micro-computer. Programmes were written in order to allow colour graphic display of the data.

### Presenting information

Information was then made available to clinicians and managers in the form of colour diagrams and text commentaries.

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Printed diagrams were always accompanied by text that sought to guide the users in the interpretation of the diagram produced. The different diagrams used are described below.

### HISTOGRAMS

These show the position of an individual district or hospital in relation to all other districts or hospitals in England (top of fig 1). It is also possible to show all hospitals or districts in one region, or a group of districts and hospitals with similar characteristics—for example, teaching districts, hospitals of a certain size, etc. For each histogram an explanatory text is produced, which explains the method of calculation and the reservations about interpreting it.

### PROFILES

In order to display several indicators each histogram may be converted to a percentile bar (bottom of fig 1), which enables three forms of profile to be produced:

(a) Multi-indicator. Fig 2 is an example of gathering together six indicators on one subject—in this case a mental handicap hospital.

(b) Multispecialty. It is also possible to have a similar presentation that displays one indicator for several specialties—for example, beds per catchment population for eight different specialties.

(c) Multiyear (mental hospitals only). An alternative presentation takes one indicator for a 10 year period and examines relative performance over time.

On all the standard profiles any values that are unusual by English standards and might suggest performance problems automatically generate a comment that draws attention to that issue.

### SCATTERGRAMS

These display any two indicators to see if any simple relation occurs between them. Each scattergram may be supplemented by various statistical measures.

### Requests for information

Information was sent to clinicians and managers only when requested by them. The availability of the service was publicised merely through presentation at lectures, publication of papers,<sup>3 4</sup> and by word of mouth. The analysis of mental illness and mental handicap institutions has been available for three years, and services at a district level for two years. We have been asked for information about all 221 mental hospitals in the study and most of those requests have come from hospitals and districts. Information about district services has been requested by over 150 districts in England, with one third of those requests coming directly from consultants. Within three months of the service being made available on BBC microcomputer over 60 health authorities have purchased equipment to enable them to take information on floppy disc. We have also undertaken work for organisations such as royal colleges and the Health Advisory Service.

The speed of data turnaround has been dramatically reduced. The Department of Health and Social Security's published statistics for mental illness and mental handicap hospitals are still some five or six years behind. The data for this study are received from regional health authorities nine months after the event and processed in our unit in less than two weeks. With regard to acute services, once data are received, which last year took 11 months, they can be processed in about four weeks. The problems of aggregation, lack of timeliness, and difficulty of access have been greatly changed and there is evidence that accuracy and completeness are beginning to improve.

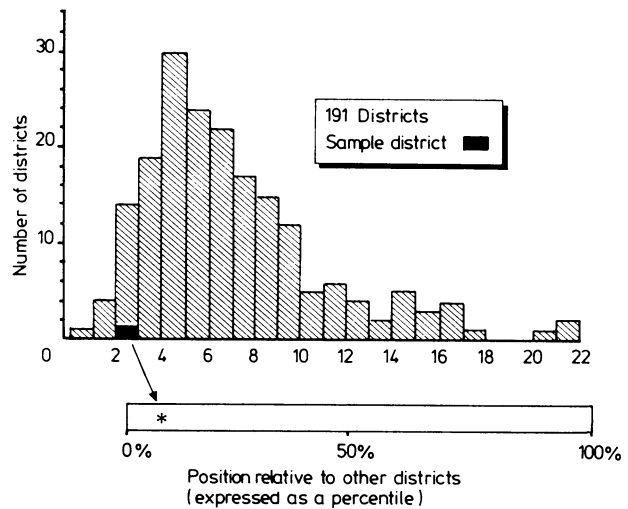


FIG 1—Waiting list per bed for general surgery, 1982.

Indicator	Range for all hospitals	Figure for sample hospital	Position relative to other hospitals (expressed as a percentile)				
			0	20	40	60	80
Size of hospital (No of beds)	74-1390	303	*				
No of patients per consultant	77-1789	152	*				
No of patients per nurse	0.8-3.0	13	*				
No of patients per therapist	5.7-454	49	*				
No of patients per psychologist	83-5440	303	*				
Length of stay (days)	113-10667	295	*				

FIG 2—Mental handicap hospitals' profile, 1980.

### Measuring performance?

Given the technical limitations of the information sources at our disposal it is hardly surprising that the NHS has been reluctant to develop indicators of performance from such information. What our project demonstrates, however, is that we can no longer refer to deficiencies such as inaccuracy, incompleteness, and lack of timeliness as bland excuses for failing to attempt serious evaluation. While we do not suggest that measuring performance is a problem that has been solved by the arrival of the microcomputer, there is evidence that the huge variations in performance cannot all be explained away by the inadequacies of error prone data. Early results indicate that current NHS data are capable of identifying performance failure.

Our analysis of mental hospitals over the past 16 years has already shown that certain groups of hospitals have a much greater risk of performance failure.<sup>4</sup> It is the large, badly staffed institutions with a slow turnover of patients that are more likely to be the subject of scandal and inquiry. In our study of district services we find that data are available that if treated with caution may highlight those areas that need further examination and possible help.

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### References

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This is the ninth in the series of articles on NHS administration and management, which started on 28 April.