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PERFORMANCE CRITERIA IN THE NHS:

LESSONS FROM THE RESEARCH AND DEVELOPMENT COMPUTER PROGRAMME

Report of a Conference held at the King's Fund Centre on Thursday 4 December 1980.

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King Edward's Hospital Fund for London is an independent charity founded in 1897 and incorporated by Act of Parliament. It seeks to encourage good practice and innovation in health care through research, experiment, education and direct grants.

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KING EDWARD'S HOSPITAL FUND FOR LONDON

PERFORMANCE CRITERIA IN THE NHS: LESSONS FROM THE RESEARCH AND DEVELOPMENT COMPUTER PROGRAMME

Report of a Conference held at the King's Fund Centre on 4 December 1980

Chairman: A J Kember, Regional Administrator,
South West Thames Regional Health Authority

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INTRODUCTION

This conference was organised by the King's Fund Centre in conjunction with the Management Support and Computers Division (MSC) of the Department of Health and Social Security (DHSS). The purpose was to present and discuss progress made in developing and applying 'performance criteria' in relation to assessing effectiveness and efficiency in the National Health Service. The conference was based upon research which had been sponsored by the DHSS to evaluate the use of computers in hospital patient administration. * A list of participants is attached in appendix 2.

In opening the Conference the Chairman, Tony Kember, reminded the audience that with the present move to smaller, and perhaps more parochial, operational health authorities and the Secretary of State's declared intention to establish more positive monitoring arrangements in the NHS, the Conference was taking place at a particularly appropriate time.

PERFORMANCE CRITERIA: THE DEVELOPMENT OF THE CONCEPT

The first speaker was Professor Robert Cohen of the London Hospital Medical College who, until recently, had been Chairman of the DHSS Computer Research and Development Committee and the Evaluation Working Group. He explained that the performance criteria technique was an approach to the evaluation of systems which had been developed through the need to assess the outcome of the DHSS experimental computer projects. Earlier methodology had been based on measuring preselected variables before and after the introduction of a computer and noting the effect, but these measurements had proved of very little practical value.

As he saw it, there were four groups of people interested in computer evaluation information: potential customers for computer based systems; users of the experimental installations; customers who have installed a system and need to assess whether it has fulfilled expectations; the various funding agencies (including the DHSS and industry)

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*See the 'Performance Criteria Project Report' published by the DHSS (Computers and Research Division - CR3C) in March 1978.

Of these four groups the first was by far the most important. Characteristically, such people would have identified a particular problem in their own environment and be seeking information to help them to decide which available system - whether computer or manually based - would give them the required level of performance in their particular circumstances at a cost which they could afford. What they needed therefore, were performance measures related to a system rather than measures of the improvements (or the reverse) achieved in different circumstances on another site. Consequently, it seemed necessary to the Evaluation Working Group, to define what characteristics of performance would weigh most heavily with potential customers in deciding what system to install. The DHSS had therefore mounted a national study involving about one thousand Health Service staff to determine, for nine fields of health care activity, which were the most important criteria of performance and how to measure them.

Professor Cohen went on to suggest that the performance criteria technique (which is described in greater detail below) had a general application to systems of all kinds, whether computer based or not, although it was important to emphasise that the technique did not establish norms of performance. Perhaps 'performance characteristics' would be a better term. Problems of the transferability of computer systems remained, particularly technical ones, but these were not insurmountable. The criteria which the project had adopted might be challenged but he felt that the democratic approach which had been followed had probably produced a very satisfactory result in the short term. However , there was still a need for imaginative and innovative thinking about performance objectives for the longer term which could only come from individuals and would involve some risk taking in the support of research projects thus generated.

IDENTIFICATION OF PERFORMANCE CRITERIA

The next speaker was Brian Molteno, Regional Management Services Officer, Trent RHA, who had chaired the project team which had identified the performance criteria. These were defined by

the sponsoring committee as:

> "Salient pieces of information which indicate the effectiveness of areas of NHS activity and which can be measured to help in making decisions on the efficiency of particular systems (computer-based or not)'

The teams task was to discover whether performance criteria could be identified so that their validity would be recognised at all levels in the service. The areas of NHS activity were limited to nine which had been supported by experimental computer systems, namely:

In-patient administration
Out-patient administration
Waiting list management
Medical records
Nursing records
Pathology services
Pharmacy services
X-Ray services
Health Centre records

Initially the team approached Health Service staff in two Districts with a series of open-ended questions relating to their objectives for performance improvement and their current problems. From these interviews lists of potential performance criteria were drawn up. A preliminary questionnaire was then prepared and tested which resulted in a final list of 322 Criteria spread over the nine subject areas: these were selected regardless of the cost and feasibility of measurement, but were as far as possible 'system sensitive'.

The team was now ready for their main study to which a total of 761 people responded, drawn from the ranks of Consultants, General Practitioners, Nurses, Administrators and Management Teams. An ingenious system was adopted by which the criteria were printed on to cards. Respondents were asked to sort their cards into seven degrees of importance. There was provision for the weighing of individual criteria within each importance group.

The results - perhaps predictably - showed no obvious consensus over all disciplines, but a fair degree within each discipline. For example the most important criterion in the area of in-patient administration was identified as follows:

Consultants	- availability of case notes and X-rays
Nurses	- patient satisfaction
GPs) Administrators)	- timeliness of discharge letters
Chief Officers & Officers of DHSS	- bed utilisation

Clearly there was no means of resolving these conflicting views of importance so when it came to the final ranking of the criteria for each area of activity into priority bands, the highest ranking awarded by any of the groups of respondents was the determining factor. Although there was no obvious break point in the ranked criteria, it was decided for practical reasons that only those in the higher bands could be included in the evaluation study. Those selected for the in-patient administration area are attached in appendix 1.

Mr Molteno accepted that there was some degree of bias in his samples since they had been selected on the basis of those most likely to be willing to co-operate. Equally, he thought that improvements in the methodology were possible - in particular, more dialogue with respondents was desirable - but time was, and always will be, the enemy. Despite these limitations, he felt that the job had been adequately done and that the results were reasonably reliable.

PERFORMANCE CRITERIA: THE PRACTICAL APPLICATIONS

The practical application of performance criteria in a number of Districts were then described by Neil Zammett and Alaric Cundy from the North East Thames Regional Health Authority. A formidable but very comprehensive handbook had been produced by teams of experienced evaluators and based on the higher ranking criteria identified by Mr Molteno's team to provide, as far as possible, a standardised approach to the gathering

of information. As may be seen in appendix 1, information is grouped under the four main headings of profile data, quantitative data, costs and qualitative data and is derived from routine statistics, ad hoc measures and attitude surveys involving both staff and patients. The measures to be employed are described in great detail in the handbook.*

In applying the technique within a District, the first step was to obtain a general acceptance and sanction and to resolve any differing expectations of the survey. This was best achieved by the formation of a multi-disciplinary steering group. Having surmounted the initial hurdles most studies done so far had gone very smoothly. Apart from their primary purpose of computer evaluation, they had proved of considerable practical benefit to local management, showing up weaknesses in systems and pointing the way to desirable improvements. Four common problem areas (not perhaps unknown to the service) were master index maintenance, records library space, microfilming policy and unfiled reports. A full project report, with supporting 'data packs' for each topic area, was produced for every hospital together with an abstract of the report for wider readership.

Following completion of the first 20 or so studies, attempts were being made to compare the performance criteria measurement results from the Districts concerned with a view to assessing the merits of various approaches to patient administration systems in NHS hospitals.

Comparative work had so far been completed on master index systems and on waiting list and in-patient management. The evidence was very clear that a computer on-line index, where normal access was by means of a visual display unit scored best in terms of accuracy, access time, effort and staff time (taken as a part measure of cost) with, generally speaking, computer batch/microfiche systems, old fashioned cards and semi-automated 'Kardveyor' type systems taking second, third and fourth places.

* 'Handbook on the Measurement of Performance Criteria' Management Support and Computers Division. DHSS - June 1979.

No such clear pattern had emerged for in-patient and waiting-list systems. Three principal reasons were suggested for this situation. Firstly, 'profile' type data, such as bed usage, length of waiting list, etc., were generally too insensitive to permit simple comparisons between hospitals. Secondly, not all the computer systems were being used to their best effect and thirdly, some of the performance criteria related to applications where computer research and development had not been attempted. It had not proved possible over the relatively short time scale to establish any improvements in waiting list admission rates as a result of the introduction of computerised systems.

The main lesson from measuring the accuracy of recording of patient movements was that this was appreciably greater if the information was used for immediate operational purposes rather than just to complete a periodical statistical return. Other points of interest were that General Practitioners preferred in-patient discharge letters to be delivered by hand by the patient and that, contrary to expectation, the total proportion of time spent by nurses on administrative and clerical duties related to the in-patient management system was very low.

Mr Cundy concluded by suggesting that from a number of studies yardsticks could be distilled, which if developed multi-dimensionally, might form the basis of a standard monitoring system with respect to those criteria judged by the NHS as a whole to be good indicators of system performance. Much of the data would be contained within the computer and could be evaluated automatically at the required intervals as in the following Orwellian example:

Monitor report for month beginning 1st April 1984

Turnover interval 1.7 days - within bounds

Patient DNA rate 3% - within bounds

Hospital Cancellations - 25% - exceeds target of 4%: take action.

WHERE NEXT ? DEVELOPING THE CONCEPTS AND CRITERIA FOR EVALUATION

The final speaker was Ron Akehurst, Lecturer in Economics at the University of Lancaster, who examined the possible future development of the performance criteria approach. His opening point was that any evaluation tool must be used by managers unless its development is to be simply an expensive academic exercise. He suggested that a tool was more likely to be used if it possessed the following characteristics:-

(a) The measures used are seen as being appropriate.

(b) The information provided can be easily used without a great deal of further detailed analysis.

(c) The information is not provided at too great a cost

(d) There is an awareness among potential users of the tool and its value as a decision aid.

Mr Akehurst explained that the evaluation of any investment involved the two steps of determining the physical effect and resource implications of any change and then placing a value on the consequences of that change. In a health service context this was extraordinarily difficult to do since, as yet, there were no adequate measures of final outcome, nor was it easy to determine the effect of intermediate procedures (such as patient management systems) on the final outcome.

The definition and measurement of performance criteria was an attempt to overcome our ignorance of the true consequences of system changes by appealing to a group of 'experts' to identify 'important' measures of health service activity and rank them in a way which would provide a mixed judgement on what inputs physically affect output and on the relative valuation of the intermediate outputs themselves.

Evaluation measures should be appropriate to a decision maker if they embodied his values and his views on the way the world works. On this basis he felt that the performance criteria evolved by Mr Molteno's team should have a high level of acceptability in the NHS. That was not to say, however, that they should not be further refined and updated in the future.

The use of the information produced by the measurement of performance criteria was essentially a matter for local management. They needed to apply their own values and judgements to the systems operating in their hospitals, but they could do this with some knowledge of the results and local circumstances found in hospitals elsewhere. Above average results achieved in one hospital could provide a norm or standard for others to work to even if the relationship were not clear. In the field of hardware provision (which was where the exercise began) some fairly clear indicators seemed to be emerging.

On the question of cost, Mr Akehurst pointed out that any system of evaluation must cost money and the only alternative to spending this money is not to attempt any formal evaluation at all. Information on the cost of applying performance criteria was, however, scanty at present and he accepted that it was necessary to develop some rough guide of the resource implications of doing so.

If the concept of performance criteria were to be extended and become part of a wider NHS monitoring system, management had to be made more aware of it and be persuaded of the value of it. To achieve this, further developments of the methodology was required. For a variety of reasons, the DHSS could no longer take the leading role which it had in the past and there was a need for a regionally-based research group which could check the continued acceptability of the measures used, disseminate information about the technique and any further modifications, collate and compare results and relate performance criteria to other monitoring measures being developed in the Service.

Mr Akehurst concluded by saying that he felt that one of the main strengths of performance criteria was that they embodied the judgements of people actually involved in running services since they grew out of a process of consultation rather than dictation. Although the NHS was suspicious of "cook-book" solutions, the technique provided a standard measure of performance on which locally determined judgements and decisions could be based.

DISCUSSION

In the general discussion which followed, performance criteria were debated from two different but overlapping points of view. Firstly, how successful had they proved in the evaluation of computer systems ? and secondly, what was their potential as a technique for monitoring systems and services more broadly ?

In view of differing hospital 'profiles' and local influences, there seemed to be little optimism among the experts about the direct transferability of systems from one site to another. Nor did it appear possible to make any generalised cost/benefit statements about the use of computers in patient administration systems.

Nevertheless, there was a strong current of opinion in the audience that there was an urgent and widely felt need in the NHS for advice from the centre on investment in small computers and some impatience that the very substantial outlay on the R & D computer programme was not producing more in the way of concrete results to help managers at the sharp end. Reference was made to the similar problem which existed in the USA where, because of their different health care system, there was an even greater need to evaluate the contribution of computers from a cost-benefit point of view and action to do this country-wide was now being taken. However, the impression left at the end of this part of the discussion was that, given an adequate local input of systems analysis, it should be possible to produce some standard computer packages which could be exported from the sites where they had been developed for use elsewhere. Evaluation by the performance criteria technique had certainly produced some evidence of situations where their use was beneficial.

Discussion fairly soon moved to the possible application of performance criteria as a surrogate measure of outcome. Clearly the work done so far had been concerned with the fairly mundane aspects of administration systems improvement. But to what extent do good systems contribute to improved outcomes ?

Can a causal relationship be inferred or demonstrated ? Of course the performance criteria so far established had been intended to evaluate systems rather than the quality of patient care, but the systems in question did in varying degrees contribute to patient care and there was ample evidence that the studies which had been completed had produced useful and usable pointers to management action (for example, the need to speed up the preparation and despatch of discharge letters to the GP). But could not much of this information have been produced more easily and cheaply in other ways ?

Certainly, the costs of applying the technique (let alone the costs of developing it) were called into question and no very satisfactory answers were forthcoming. Nevertheless, it was clear that the process of looking at the nine areas of activity listed above in a typical District General Hospital could be measured in man-years rather than in man-days or even man-months.

It was suggested, therefore, that the system might be re-designed into a hierarchy of stages, stage 1 being a profiling or signposting exercise which could be followed if necessary by further stages looking at particular matters in varying degrees of depth. If, as many present seemed to accept, it would be worth developing performance criteria much more widely to provide a comprehensive assessment of patient care and support systems, then some streamlining and cost cutting would be essential. Equally it was felt that more emphasis needed to be placed on cost-effectiveness in devising the criteria themselves; this had not been done in the pilot exercise for fear of distorting values by cost considerations. In the real world costs will always be a limiting factor. The 'democratic' method of determining criteria however, met with general approval since it was felt that any standards defined by the centre, or even by management teams, were unlikely to be acceptable to operational staff. As Ron Akehurst said, the NHS is a loose coalition of

power groups and we might as well recognise the fact. The suggestion was made that the performance criteria technique might be used for the experimental monitoring exercise which the Secretary of State was proposing to mount in the North Western Region. Opinions were divided as to whether it would be abused and discredited if taken up in this way or whether it would provide a logical and tested methodology for something which is going to happen whether we like it or not, and is better done well than badly. However, most people seemed to think that performance criteria was best kept as a tool of local management to assist in local decision making and target setting. It's use might possibly be subject to some national policy provided that the temptation of establishing national norms which would be applied without consideration of local circumstances could be avoided.

Picking up Mr Akehurst's point about responsibility for developing the technique, Mr Maddison from the DHSS reminded the audience that the original purpose of the exercise was computer evaluation and as far as the DHSS was concerned, this was now nearing completion. If the NHS liked the system and wanted to use it then it must devise suitable meetings for doing something about it. Summarising, at the Chairman'e request, as one of those who had been involved, Mr Malcolm Jeffries, the District Administrator from Southend, said how satisfied they were with their computer installation. He still had doubts and reservations about performance criteria as a tool of management, but if it could be shown to have a new cutting edge, and if the process could be speeded up and made cheaper, it might have a future. It might, for example, support the purely subjective approach of bodies like the Health Advisory Service.

CONCLUSION

Looking back over the day as a whole, there was certainly some anxiety that performance criteria could prove to be 'one more gimmicky technique' which enjoys a brief vogue and then disappears into oblivion. After all, there is nothing new

in the definition of criteria against which standards of care and organisational efficiency can, in one way or another, be measured. Anyone who has visited the U.S.A. will be familiar with the many systems evolved in that country for doing that. In this country there are a number of examples within the NHS such as Management Survey, Management Audits,* and, most recently, the National Development Group check-list on the quality of services for the mentally handicapped.

What is perhaps new to the U.K. in the performance criteria approach is, firstly, the method of selecting and ranking criteria by consultation with an extensive sample of practitioners and, secondly, the attempt to be objective and scientific in measuring the fulfilment of these criteria. The latter in particular, is only done at a very considerable - but as yet unquantified - cost and it is questionable whether the benefits derived from the studies so far completed are commensurate with the resources used. Certainly, it is the question of cost that managers in the NHS will want an answer to before embarking on the very considerable task of developing performance criteria for all the many other areas of activity - some arguably more important than those so far tackled - which need to be covered if this is to become anything like a comprehensive monitoring tool with an established place in the future.

Despite some scepticism, there was, nevertheless, a strong feeling that the issues on performance raised by the Performance Criteria project needed to be squarely faced. This of course raises the very large question of what sort of monitoring strategy the NHS should have and what proportion of its resources should be devoted to it. That, in a non-commercial service-giving organisation like the NHS, there is a need for quality, resource and efficiency audit seems self evident. Equally, in view of the varied and complex services which are provided, a variety of different approaches and techniques will be needed. Apart from financial audit very little in a

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* for a review of some other approaches see 'Putting Meaning into Monitoring: a report of a conference held at the King's Fund Centre on 7 November 1978 (KFC 78/214).

systematic way is done at present. However, if each health authority contributed a mere 0.1% of its annual revenue allocation this would enable a lot more to be done. One thing is certain and that is that computers will play a part. As more and more procedures become computer controlled or computer assisted, so more and more control data will become potentially available. What has to be decided is what information is needed and how it is going to be used.

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(Area Administrator,
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KING'S FUND CENTRE

JANUARY 1981

Requests for further information about this conference or ideas for further development of this subject should be sent to David Hands, Assistant Director at the King's Fund Centre.

Further information about the Performance Criteria project may be obtained from the Management Support and Computers Division of the Department of Health and Social Security, 6 St. Andrew St., London EC4 3AD.

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PERFORMANCE CRITERIA FOR THE INPATIENT TOPIC AREA

1. CRITERIA PRODUCING PROFILE DATA:

PC 124 MEAN LENGTH OF STAY

Mean length of stay analysed by specialty and/or standardised for specialty mix.

PC 125 LENGTH OF INPATIENT WAITING LIST

Length of inpatient waiting list analysed by specialty, sex and urgency.

PC 127 BED USAGE

Bed usage measured by one or more of the following:

a. Turnover interval (average time bed remaining empty).

b. % occupancy.

c. Patient throughput (discharges and deaths per available bed).

d. Average lengths of stay.

PC 128 THEATRE USAGE

Percentage of available theatre time used (excluding closures due to infection, staff shortages, industrial action or renovations).

2. CRITERIA PRODUCING QUANTITATIVE DATA:

PC 101 ACCURACY OF DOCUMENTATION

Rate of procedural errors (e.g. failure to register a transfer) and/or rate of transcription errors over specified period of time

PC 102 TIMELINESS OF DISCHARGE LETTERS

Average delay between discharge and discharge letter being despatched to GP.

PC 103 TIMELINESS OF DISCHARGE SUMMARIES

Average delay between discharge and discharge summary being despatched to GP.

PC 105 LEGIBILITY OF DOCUMENTATION

Subjective assessments by admission, discharge and ward clerks of legibility of admission, transfer and discharge documentation.

PC 106 'MISSING' CASE NOTES AND X-RAYS

Proportion of case notes and X-rays not available at time of admission.

PC 117 TIME SPENT BY NURSES ON ADMINISTRATIVE AND CLERICAL DUTIES

Time spend by nurses on the ward on administrative and clerical duties which are not nursing functions (e.g. excluding nursing records pharmacy ordering, etc).

3. COST CRITERION:

PC 131 TOTAL COSTS

The costs incurred, including revenue expenditure, indirect costs and resources used for which financial cost statements would be inappropriate.

4. CRITERIA PRODUCING QUALITATIVE DATA:

a. Measured wholly by attitude surveys

PC 104 COMPLETENESS OF DISCHARGE SUMMARIES

Frequency with which important information is omitted from discharge summaries.

PC 107 USEFULNESS OF DISCHARGE SUMMARIES

GPs views concerning usefulness of discharge summaries received.

PC 119 COOPERATION BETWEEN HOSPITAL AND GPs

GPs and hospital staffs views on degree of cooperation.

PC 120 COOPERATION BETWEEN DISCIPLINES

Views of admission/discharge/ward clerks and doctors/ nurses/other staff towards degree of cooperation between them.

PC 121 PATIENT SATISFACTION

Patients' and relatives' views concerning inpatient procedures.

b. For which quantitative measurements are supplemented by attitude surveys

PC 102 TIMELINESS OF DISCHARGE LETTERS

Average delay between discharge and discharge letter being despatched to GP.

PC 103 TIMELINESS OF DISCHARGE SUMMARIES

Average delay between discharge and discharge summary being despatched to GP.

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PERFORMANCE CRITERIA IN THE NHS: LESSONS FROM THE RESEARCH AND DEVELOPMENT COMPUTER PROGRAMME - CONFERENCE 4TH DECEMBER 1980.

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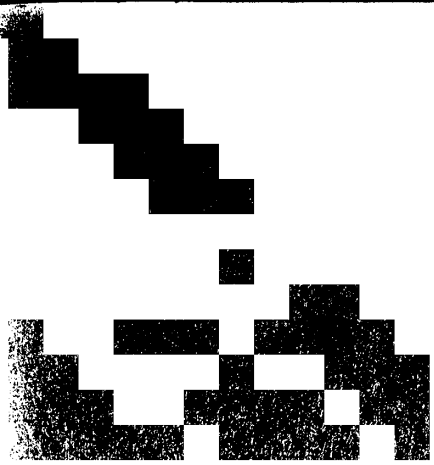
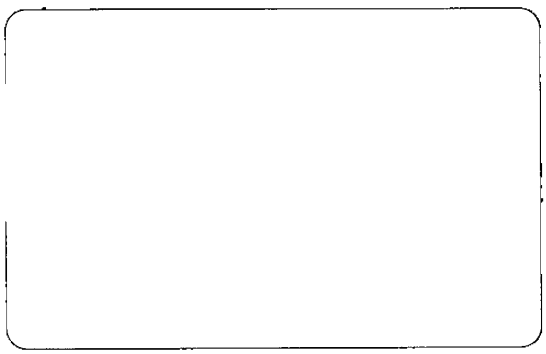
* Mr N ZAMMETT	Asst. Regional O.R. Scientist	North East Thames RHA

* Denotes Speakers



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