AN ASSESSMENT OF THE USE OF PERFORMANCE CRITERIA IN
THE EVALUATION OF THE NHS EXPERIMENTAL COMPUTER PROGRAMME

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Abstract
This paper presents an initial assessment of the methodology currently being used in the Evaluation of the NHS Experimental Computer Programme. A broad background to the NHS Computer Programme and its Evaluation is followed by a brief a priori assessment of the Performance Criteria approach to evaluation. Detailed results relating to the pre-computer X-ray system at The London Hospital (Whitechapel) are discussed. It is concluded that the criteria can adequately quantify the performance of a system, though the cost of the information is high. A path to a cheaper and even more effective methodology suggested but requires the completion of the current work. The ultimate achievement will be a powerful measurement tool, for use in both manual and computer systems.

BACKGROUND

The broad objective of the National Health Service (NHS) Experimental Computer Programme was to explore ways in which computers might help in the running of the NHS (1), (2). To this end, the Department of Health and Social Security (DHSS) has funded fifteen experimental computer projects at hospitals and health centres throughout England. The experimental projects have specifically concentrated on Patient Administration systems and include applications in nine topic areas - Inpatient Management, Outpatient Management, Waiting List, Master Index, Nursing, Pathology, Pharmacy, Radiology and Health Centres (refs. 3, 4, 5, 6, 7).

From an early date, there has been a realisation of the importance of the evaluation of these prototype systems. Barber (8, 9) has described early work at The London Hospital, which included attempts at deriving cause-effect models (10, 11).

In 1974 the DHSS issued its first standard guidance for evaluation (12), based on the concept of "Improvement Objectives": for each computer application a list of object-
ives was drawn up and then evaluation effort concentrated on measuring the highlighted topics before and after the implementation of the computer system. Barber (13) suggested an alternative approach to evaluation, recognising the importance of Technical, Project and Overall Programme Evaluation in advance of the more detailed Improvement Objective or Application Evaluation. During 1975, most of the projects within the Experimental Programme produced major progress evaluation reports (14, 15, 16).

The DHSS produced a summary of these reports (17), which was referred to a working group. In its consequent report (18), the working group summarised the main problems with the existing evaluation methodology, which were seen as:

- the long time scales between before and after measurements, caused by prolonged implementation programmes made it difficult to isolate the effects of the computer.
- the methodology took no account of how well or otherwise the hospital was operating before the computer was introduced.
- the detailed improvement objectives related to specific local problems which only in some cases were of general interest.

The working group proposed a study to develop a new approach to evaluation, based on the concept of "Performance Criteria".

Performance Criteria were defined 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)".

Using this concept, the effectiveness of computer systems was to be judged by comparing relevant measurements at both computer and non computer hospitals. A large enquiry was mounted (19, 20) involving nearly 1,000 NHS personnel to derive a short, concise list of such performance criteria.

The sponsoring working group recommended to the DHSS that the new Performance Criteria approach to computer evaluation be adopted as standard, even though the derived lists of criteria were longer than had been hoped. Since then, the DHSS have sponsored further brief studies to develop standard measures based on the selected Performance Criteria (21). Detailed measurement work started in the summer of 1978 on applying the Performance Criteria technique, although there is some evidence of alternative approaches still being pursued in parallel (22). Examples of the standard measures now being used are given in Table 1.

**A PRIORI ASSESSMENT OF THE PERFORMANCE CRITERIA APPROACH**

One problem in the Evaluation of experimental computer systems is that there are at