SPECIAL ARTICLE

MEDICAL AUDIT

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SYNOPSIS

The evaluation of medical personnel, institutions and programmes, or "medical audit" is gaining vogue, especially in developed countries. Parameters include various segments in the spectrum of health services. The main assessment techniques include the "tracer" approach (and subsequent modifications) which identifies certain health conditions to be used as criteria of standards; the "trajectory" approach, which tracks patients within given diagnostic categories as they proceed through a component of the medical care system; the "Physician Performance Index"; and the use of structural data, such as the characteristics of individual physicians and institutions. Much controversy still exists concerning the validity of auditing methods, although in general the medical profession has accepted the need for evaluation.

Traditionally, the medical profession was enshrined in an aura of awe, reverence and mystique by the community at large. Partly this stems from the priestly origin of the profession, which used to practise in ancient temples like Hippocrates did. In the medieval ages, many physicians were lay-monks attached to monasteries. Partly, this arose from the veil of mystery with which the medical profession covered itself. Prescriptions, for example, were in Latin until recent times. Few laymen could read that language. Coupled with the notoriously bad handwriting of doctors and the usage of abbreviations borrowed from the apothecaries and alchemists, this had the effect of making the laymen well and truly puzzled, frustrated and bewildered.

In recent years, however, there is a worldwide trend for laymen to demand more information and better services from their doctors. In developed countries litigation against doctors has been on the increase. Morever, medicines are so expensive that more and more of them are being paid by the governments, employers and medical insurance companies. To an increasing extent, physicians are expected to justify their bills according to their competence and effectiveness of their treatment.

This trend also applies to the evaluations of both medical personnel, institutions and programmes. The process is called

"medical audit", after the accounting term "audit" which means the official examination of accounts.

Intellectually or morally, it is difficult to object to an exercise which seeks to make sure that the standard of medical care is up to reasonable standards. The problems are, however, what standards could be considered reasonable and who should consider whether or not those standards are reasonable. Moreover, other things such as objectivity, uniformity and validation of assessment procedures or criteria would be most important in such an "audit".

The Evaluated

The evaluated would consist of both personnel and institutions. In large countries, there would be considerable diversity between various personnel and institutions. In the United States of America, for example, differences have been detected between American-trained physicians and those trained abroad. Such differences do not necessarily indicate superiority or inferiority and may be merely a reflection of different emphases in curricular or educational objectives.

Institutions also differ widely among themselves. The patients they see may be different in socio-economic status, ethnic group, religion or educational standards.

Evaluators

Not all evaluators are medical practitioners. Some are administrators, management scientists, systems analysts, economists and social scientists. Perhaps it would be ideal if all evaluation could be done by multi-disciplinary teams, in which should be some medical practitioners familiar with medical practice and record-keeping.

Evaluation Matrix

There are different categories of assessment or evaluation methods which have been formulated. For audit in an institutional setting, general parameters such as mortality after surgical operations may not give a true picture of the standards of an institution or as patient education or rehabilitation could similarly neous factors such as the state of patients before undergoing operation for necessary surgery. A surgeon who may operate on cases which others may shrug off as hopeless would very likely have a higher mortality rate on his patient list. Nor is the popularity of a doctor or hospital necessarily a good indicator of comptence or effectiveness.

To date, most assessments of the quality of care address only narrow segments of the complex spectrum of services. Some are concerned only with the care provided by single facilites or groups of providers. Others focus only on care given to those patients who have sought care for specific health problems. Most concentrate on only diagnostic or treatment activities.

ASSESSMENT METHODS

1. **The Tracer Approach**

The term "tracer" refers to the health conditions examined by the assessment. It was first proposed by D.M. Kessner and his colleagues in 1973 (1). It assumes that the care provided for the tracers as a group is similar to all care and assumes that efforts which improve deficient care in the tracers would also improve care for other similar conditions. However, these assumptions are not yet supported by experimental evidence.

Based on this approach, Nutting and his co-workers utilized a system in which the functions of prevention, screening, health status monitoring, diagnostic evaluation, treatment planning, follow-up and on going management were recombined to fit the needs of a particular analysis. Other functions, such as patient education or rehabilitation could similarly be defined if needed (2).

Most functions can be separated into three sequential events

(a) Contact between a consumer and a provider
(b) Recognition of the need for service once contact is made
(c) Provision of service after contact and recognition

To assess each function and its triad of sequential events, different types of indicators are used.

(a) Population-based indicators, which can be computed from a sample of the community or patients and express the percentage of individuals in need of a specific health service who receive that service within a specified period of time E.g. the percentage of infants who had received their necessary immunization fully by 12 months of age.
(b) Encounter-based indicators, which are computed from consumer contacts with a particular component of the provider system and express the percentage of consumer encounters in which a specific need for service is satisfied. E.g. the percentage of infants due for an immunization in whom the immunization was provided.
(c) Health status indicators, which express the percentage of patients for whom a change in health status has been documented. E.g. the percentage of infants in whom immunity to the diseases against which they have been vaccinated can be demonstrated.

Such methods of evaluation have the following advantages:-

(a) They can focus attention on a particular geographical location or medical discipline
(b) They can pinpoint areas where deficiencies are greatest
(c) They can generate action to rectify the deficiencies

Such methods of evaluation suffer from the following limitations:-

(a) The causes of deficiencies are not identified
(b) The many possible remedial actions are not identified or analysed
(c) The remedial actions are evaluated during or after implementation unless a separate study is undertaken.

2. **The Trajectory Approach**

This is essentially an extension of Williamson's work on "health accounting" (3). The method tracks patients within given diagnostic catagories as they proceed through a component of the medical care system. It was first termed as the trajectory system by Donabedian (4). Using the trajectory system, Brook

and Stevenson reported on the adequacy of primary care as provided in an emergency room setting. The study sample was composed of those patients who, after presenting with non-urgent gastrointestinal symptoms, were scheduled for investigations of the upper gastrointestinal tract, barium enemas or cholecystograms. Williamson's four care factors - diagnostic process, diagnostic outcome, therapeutic process and therapeutic outcome - were identified for evaluation. For each of these components explicit criteria were adopted.

In a study of a primary health care clinic in a large government hospital that holds a major affiliation with a medical school, Zuckerman and his colleagues (5) studied a sample of patients who came for an emergency gastrointestinal complaint or with an acute phase of an otherwise chronic gastrointestinal condition. In their study the following parameters were used:-

(a) Diagnostic process

(i) Recording of present or previous history of gastrointestinal problems
(ii) Ordering and performing of various examinations
(iii) Scheduling of x-ray studies.

(b) Diagnostic outcome

This focused on the completion of x-ray studies as shown by the medical record.

(c) Therapeutic Process

(i) Adequacy of treatment process compared with established criteria
(ii) Patient knowledge concerning the results of x-ray examinations and awareness of subsequently scheduled appointments
(iii) Whether the patient sought additional professional help for the same condition from another medical source after being seen in the primary care clinic

3. **Process assessment (the Physician Performance Index)**

This method was originally developed by Lyons and Paine (6). Bates and Sidel adapted it to approximate clinical decision-making more closely. They applied the method to the assessment of emergency room care of asthmatic adults in a voluntary and a municipal hospital. Weighted assessment criteria for evaluation of the treatment were used. They were based on six protocols for examination and treatment of asthmatic adults obtained from major teaching hospitals and on relevant asthma literature. The draft criteria lists were submitted to a panel of experts for suggestions and necessary modifications made. These criteria related to history, physical examination, laboratory tests, treatment and follow-up. Both 24 hour outcome and 7 day outcome scores were obtained.

4. **Use of "Structural Data"**

The use of "structural data" was once the only tool for measurement of quality of medical care. Such data included the following:-

(a) Characteristics of individual physicians

(i) Medical school performance
(ii) Type of medical school
(iii) Postgraduate training
(iv) Certification (postgraduate)
(v) Site of practice
(vi) Age and experience

(b) Characteristics of institutions

(i) Teaching status
(ii) Size
(iii) Volume of patterns
(iv) Ownership
(v) Malpractice rate
(vi) Medical staff organization
(vii) Solo or group practice

Although the use of "structural data" has now largely given way to assessments by the other methods already mentioned, it could still be useful when a crude indicator of the quality of performance is needed and only limited funds and time are available. (7).

The present status of Medical Audit

In developing countries, Medical Audit may be said to be scarcely existing. In developed countries quality evaluation within the hospital has progressed dramatically and today the majority of hospital medical and nursing staff in countries such as U.S.A. are regularly evaluating the care they provide (8). However, there has not been a comparable development and implementation of methods for the review and evaluation of ambulatory health care (9).

In a survey of the Medical Audit chairmen in each of 70 general hospitals in Illinois, U.S.A., Osborne found the majority of the small hospitals completed medical audits merely because they were required to do so. They believed it was relatively easy to identify the new physicians who deviated from expected standards. Many of the medium and large hospitals found medical audits useful. However, although such audits might identify areas where continuing medical education was needed, they seldom provided enough detailed information upon which to develop the content of a programme of continuing medical education (10).

Throughout the world, there are lots of Medical Audit programmes, such as the Professional Standards Review Organization (PSRO) reviews or the Joint Commission on Accreditation of Hospitals Performance Evaluation Procedure (PEP) audits. Several authorities in U.S.A. have expressed skepticism about auditing methods. Few would question the need for the medical profession to examine itself, but doubt remains as to the validity of the methods employed.

The standards need to be developed for two aspects:

1. Quality assessment (whether the standards have been met)
2. Quality assurance (for assuring that deficiencies are remedied)

Standards need to be defined for two elements:-

1. Process (actions taken by the physicians)
2. Outcome (effects of the process of the patient)

Wherever possible, those standards should deal with both psychological and physiological (technical) aspects of both process and outcome.

Psychological process standards are particularly hard to develop. Although all doctors knew the importance of recognizing and resolving the fears and misunderstanding of a patient and his family, of feeling and expressing compassions, it is hard to define standards of observable behaviour that can adequately capture the nuances of such human communication.

Researchers have therefore concentrated mostly on technical standards. However, few of the process standards adopted have been confirmed by studies of efficiency. There are inherent problems for assessing technical process. Although there are routine mechanisms for assessing the accuracy of most laboratory procedures, there are no similar mechanisms for assessing the accuracy of the history, physical examination and "bedside" laboratory procedures performed by clinicians.

Another problem is that the assessment of process (and, to some extent, outcome) requires the review of medical records, which are often incomplete or illegible. However, improvements in paper medical records and advances in computer technology may overcome these obstacles (11).

CONCLUSION

Much progress has been made in the subject of Medical Audit in recent years. Various assessment methods have been devised, including the tracer approach, the trajectory approach, process assessment and the use of structural data. Many variations of these methods have been made. Often they require further validation. In general, the medical profession has accepted the need and desirability of evaluation. The problem is how best to do it.

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