

Criterion based audit

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Observations in Britain and overseas suggest that the introduction of medical audit seems to have fallen into four phases. In the first (philosophical) phase the debate is whether doctors should be involved, in the second (organisational) phase who should lead and what resources are required, and in the third (practical) phase what should be audited and exactly how; in the fourth (invasive) phase ideas on audit are disseminated through publications and education. This account focuses on the practical phase and the search for a simple method of audit that is applicable generally to medical and surgical specialties. It may therefore be useful first to define the principal characteristics that differentiate formal medical audit from traditional methods of clinical review (box).

Differences between audit and traditional review

- Use of explicit criteria for measurement rather than implicit judgments
- Numerical comparison of current practice patterns against these criteria
- Comparison of practice among peers
- Formal identification of action required to resolve any discrepancies disclosed
- Recording the process to retain information and increase impact of audit on future management.

Although some innovative methods have been described, which might be applied in hospital practice (such as reciprocal visiting¹ and videotape recordings of sample consultations²), audit techniques generally fall into one of three categories.

(1) Review of routine statistics and selected adverse patient events, including that of all predefined adverse events such as morbidity and mortality and of routinely collected statistics. This excludes most patients, who benefit from medical care without complications.

(2) Review of randomly selected records. Analysis of individual patient records by a senior doctor, with an agreed format gives valuable insight into objectively selected cases. Judgments of the "adequacy" of medical care, however, remain largely subjective.

(3) Review of a topic. Analysis of an agreed topic may be carried out by prospective study (which might include a survey of patient satisfaction) or by a retrospective analysis of medical records (which assumes that good practice is reflected by good records and that audit on this basis may approximate the two). Criterion based audit, widely adopted in North America, Australia, and The Netherlands, offers a realistic method of audit based on analysis of medical records despite their current elusive and inadequate state in the United Kingdom and less advanced computer systems.

Practical steps to criterion based audit

STEP 1: CHOOSE A TOPIC

The audit group should select a topic that is of general interest. To gain most benefit for time spent it

is important to pick a topic that is significant either as being common, high risk, or high cost or as an issue of contention or local interest. It may be a diagnosis (such as schizophrenia or pulmonary embolism), an investigation (such as an intravenous pyelogram for haematuria), a treatment (such as palliative radiotherapy for carcinoma of the bronchus), or a general problem (such as chest pain in the accident unit). Locally relevant topics may arise from review of the routine statistics and by meetings on morbidity and mortality.

STEP 2: CHOOSE CRITERIA FOR SCREENING RECORDS

The purpose at this stage is not to define a universal protocol for clinical management but to identify key elements in management, which should be apparent to a non-medical analyst from the medical records. These criteria are to allow large numbers of records to be screened so that only those records that fail substantially to meet them are selected for further clinical review. A limited number (12-15) of simple questions that can be answered either yes or no and that are self evident from the medical records should be defined. For an audit of inpatient care, for example, these questions may fall under the headings of:

Referral—The acceptable method or delay between referral and first contact with the specialist—for example, not more than four weeks between diagnosing carcinoma of the bronchus and starting palliative radiotherapy.

History—Reference to items essential in establishing a diagnosis—for example, the duration and radiation of chest pain in suspected myocardial infarction.

Examination—Essential clinical observations—for example, the type and distribution of rash in psoriasis.

Investigation—Reference to critical diagnostic tests—for example, lung scanning in pulmonary embolism.

Treatment—Evidence of agreed essential management—for example, administration of streptokinase within six hours after onset of chest pain in acute myocardial infarction.

Follow up—Critical decisions in the monitoring and modification of treatment—for example, the frequency of haematological monitoring and responsibility (consultant, junior doctor, or general practitioner) for deciding to discontinue anticoagulation after pulmonary embolism.

Outcome—Evidence that the initial objectives of intervention have been met—for example, return of an otherwise healthy subject to full function within an agreed time after elective surgery.

Communication—Evidence that relevant information is given promptly to patients, relatives, general practitioners, or referring consultants—for example, sending a discharge letter to the general practitioner within seven days after discharge, defining the diagnosis, what the patient was told, current treatment, and the arrangements for follow up.

The criteria should occupy no more than one page but may require a glossary to clarify certain points. These may include "allowable exceptions" and target levels of compliance. Before embarking on a full audit testing the criteria on six records or so may be valuable to ensure that the audit assistant has a chance of obtaining the required information. The group should

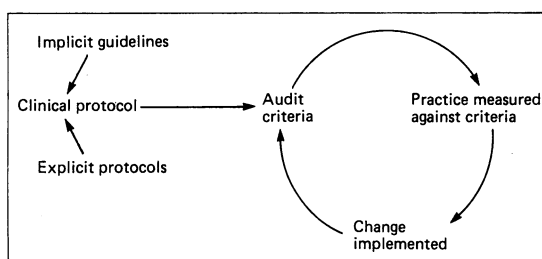
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agree on how many records should be selected and how recent they should be. For example, 20 consecutive admissions with the agreed diagnosis may be selected from those of the previous year for each firm.

The process of choosing a topic and selecting criteria should take about one and a half hours, but the chairperson may need to attend to the wording of the criteria before giving them to the audit assistant who should, ideally, have been present at the meeting. Defining explicit criteria from the implicit judgment of each individual is an educational and challenging part of audit. It forces discussion and resolution of divergent opinions, which in many clinical meetings would remain unresolved. Often junior medical staff pose the most searching questions about how decisions are made and most appreciate an agreed common policy on patient management. It should be emphasised that this stage is merely for defining criteria for screening records; it is not for defining general policies of patient care. As the audit progresses, however, defining an explicit agreed protocol to replace several individual and implicit approaches to clinical management may become easier. The practical result of such an audit will therefore be a reconciliation of the existing protocols (either implicit or explicit) with what is shown to be actual practice (figure).



Linking audit with clinical guidelines

STEP 3: ANALYSE SAMPLE RECORDS

Analysing sample records is the most time consuming phase of criterion based audit but can be done by non-medical staff with the criteria developed as above and if non-medical staff are available to apply them. The total time required depends on how easily the records are recovered, the complexity of the criteria, and how many records are chosen for the sample. For example, 20 records from each of four firms may require 15 minutes each for analysis, which with time for retrieving and tabulating results might add up to 26 hours' technical time. This phase falls into four activities.

Identifying case numbers—Some form of case register is required to identify the record numbers of suitable patients according to procedure, diagnosis, or problems. All NHS hospitals can in theory produce such an index, but deficiencies in accuracy, completeness, and timeliness often lead clinicians to resort to ward books, theatre registers, and other manual systems—especially for outpatients.

Retrieval of case records—Of 94 records recently identified by a teaching hospital for audit, only 30 could be found, many of which were temporary folders for the most recent admission because the principal record could not be found. The extent of the problem varies among hospitals and departments, but the time required to retrieve records should not be underestimated. Indeed, the elusiveness of medical records may well be a valuable subject for audit.

Abstracting data—Each record is abstracted according to the criteria previously agreed, thus generating one completed sheet per case record.

Analysis of findings—The results of each firm are summarised on to a single sheet, which may include the numbers of records that differ substantially from the

agreed criteria. An overall summary table presents the aggregate results of the four firms but does not include any identification of individual patients. The aggregate results are circulated to each firm before the second audit meeting.

STEP 4: DISCUSSION OF RESULTS

The discussion of results tends to include questions on the validity of the criteria chosen and on the significance of compliance or non-compliance. For example, should the criteria be adjusted to fit current practice or vice versa? Specific issues of administrative and clinical management that arise from the differences in patterns of practice—usually greater than expected—should lead to explicit decisions on policy changes; these should make clear who would be responsible for following through the recommendations. The conclusions do not often relate to shortage of resources (but if so would provide a cogent argument for funding); more often they concern the organisation of work (for example, the value of traditional hospital discharge summaries) or clinical decision making (for example, the use of chest radiography in suspected pulmonary embolism).

The chairperson should maintain a record of the participants, the general subjects discussed, the conclusions reached, and the action to be taken (no more than one A4 page), not only as a record for the specialty but also as a means of advising the district audit committee and any other medical colleagues. It would also constitute an adequate record for demonstrating audit to obtain recognition for training posts and to assure managers of effective internal review. The working papers that identify individual cases should be destroyed.

STEP 5: REPEAT AUDIT

It is important to agree in advance when the audit should be repeated to identify whether the agreed changes have been made and whether the original audit made any impact on clinical practice and management. As the criteria have already been agreed repeating the audit is fairly simple but requires technical time.

Discussion

This approach to audit may seem cumbersome, but it permits an objective and systematic approach without undue demands on clinician time, assuming that technical assistance is available. Criterion based audit is applicable to almost any clinical circumstance and can readily include practical issues of communications among doctors, clinical organisation, clinical decision making, efficiency of care, and the satisfaction of patients with their management and the information available to them. The use of explicit criteria “reduces to a minimum the use of healthcare professionals whose time is exceedingly costly, and whose interest in the review process is less than enthusiastic.” Jessee pointed out the added advantages of objectivity, the ability to examine process and outcome of care simultaneously, and the greater potential for influencing change, compared with normative comparisons.⁴ If this method were rotated with others in a regular programme including meetings every fortnight any specialty would be unlikely to cover more than three criterion based audits within a year, including time for follow up. This would require an audit assistant for between 150-200 hours/year, even assuming that he or she were not busy with any other related activities.

In conclusion, criterion based audit fulfils the requirements of many doctors, particularly in non-surgical specialties, for a method that is objective, yields quantitative data, and is repeatable. It is important that doctors identify the resources they require for



audit and how they propose to use them in a practical programme. The cost of recruiting and training audit analysts will certainly be less than the cost in opportunity of diverting clinicians from clinical practice. There is also therefore an economic argument for selecting criterion based audit rather than more traditional methods.

- 1 Royal College of General Practitioners. *What sort of doctor?* London: RCGP, 1985.
- 2 Coles C. Self assessment and medical audit: an educational approach. *Br Med J* 1989;299:807-8.
- 3 Donabedian A. Advantages and limitations of explicit criteria for assessing the quality of health care. *Milbank Memorial Fund Quarterly* 1981;59:99-105.
- 4 Jesse WF. Criterion based screening. *Identifying health care quality problems: a practical manual for PSROs and hospitals*. Chapel Hill: University of North Carolina School of Public Health, 1982.

Random review of hospital patient records

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In 1978 the departments of medicine and clinical pharmacology of Birmingham University instituted a regular weekly medical audit meeting. Details of the meetings and the effects of audit have been previously described.^{1,2} Basically, notes were chosen randomly from inpatient admissions once the final discharge summary had been completed. The notes of one consultant firm were then reviewed by another consultant firm, which commented on various points, including the quality of the notes at admission and follow up, appropriateness of investigations and drug treatment, speed of producing discharge summaries and their content, and evidence of communication among staff, patient, and general practitioner. These meetings were held regularly and successfully for many years. During the hour devoted to audit each week two sets of notes were analysed for each consultant firm and hence only a fraction of the total number of inpatients managed by the firm were reviewed. This style of audit has now been introduced throughout all medical firms in this hospital, primarily as a result of the decision of the Royal College of Physicians of London to make audit an essential feature of junior doctor training.

In this article I will discuss the advantages and disadvantages of this form of audit as practised by the original four consultant firms and now by 14 consultant firms. The views are mine and do not necessarily reflect those of my colleagues.

The advantages of the original audit were that, as practised, it was simple to do and entailed little administrative time, and no computers or additional staff were required as the secretaries merely choose at random two sets of notes for which a discharge summary had recently been completed. As only four consultant firms were concerned notes from each firm were analysed at each meeting so that all staff present were involved in the meeting. This also meant that an appreciable proportion of the work of each firm was audited, perhaps 10-20% of all admissions.

The disadvantages were that most notes were not audited, so that major mistakes could easily be missed; no attempt was made to audit outpatient practice; and by auditing after the patients had left hospital, it was too late to alter their management. The process did not entail other groups involved in patient management—for example, nursing staff, general practitioners, etc. In fact, nursing staff attended some of the early meetings, but it proved impossible to arrange for them to leave the ward regularly to attend.

Lessons and achievements

Despite these disadvantages several important lessons were learnt and achievements attained. First and foremost, it became clear that audit could be practised in a friendly, non-confrontational manner in a form that was enjoyed by all who participated. Major mistakes were, in fact, uncommon and, when identified, were usually incomprehensible even to those who

had made them. For instance, a patient of mine was prescribed spironolactone at a time when the serum potassium concentration was >6 mmol/l. How could this happen? It had to mean that prescribing at times took place without reference to investigations. The identification of the mistake allowed the ward practice to be reviewed. Although in this example the prescription was unequivocally wrong, most discussions usually centred around the appropriateness of certain investigations or treatments, when there is often no absolute answer. This disclosed that much of our medical practice was often based on habit rather than medical facts. Often no unified conclusion emerged—for instance, there is no one correct way of investigating an elderly patient with an iron deficiency anaemia or a patient with a swollen leg. Almost imperceptibly, however, after several discussions of similar cases, policies started to change and become more uniform.

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Initially, reporting of the illness and subsequent progress was poor; information on what had been said to patients regarding illness and progress in the inpatient notes and correspondence was almost non-existent. All these deficiencies improved immediately audit was instituted. Although it was possible to measure and show the benefit of audit on reporting in the notes and discharge summaries,² it was more difficult to do so for investigations and treatment and impossible for patient morbidity and mortality. The failure to show an effect of audit on investigations was at first sight disappointing but, on reflection, expected. The average general medical admission is an emergency admission with a condition that does not require extensive investigation and often settles rapidly—for example, asthma or heart failure—or, if not, requires long term management rather than prolonged investigation—for example, a dense stroke. To show an effect of audit on investigations I suggest that the elective investigation of a specific problem would need to be chosen. There are, however, few specific conditions regularly investigated by most doctors, making local comparisons difficult. The failure of this form of audit to have any demonstrable effect on outcome, has been leapt upon by some as an indication of the lack of benefit of audit and used to resist its introduction. It would be amazing, however, if this form of audit could be shown to affect, say, mortality in general medicine; you have only to think of the size of trials required to show an effect of treatment on survival after a myocardial infarction. No one city, let alone one hospital or one consultant, could expect to show significant effects of management on

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