Defining essential data for audit in general practice

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Medical audit may be defined simply as looking at what we are doing with the aim of making improvements in patient care and use of resources. Unlike research data, audit data are not intended to prove a hypothesis and require only as much scientific rigour as is needed to convince the participants of the kinds of changes needed. Audit is not a project in the sense that it has no end; the same audit may be repeated to check that the improvement is maintained. Data for audit should ideally therefore be continuously available as part of the process of care. Also, audit is not assessment that measures ability rather than performance, but the two are often confused because potential is commonly assessed by looking at what has been done. Recognition and promotion of this distinction is important in accepting the delegation of data handling. Audit is essentially looking backwards, and as none of the past can be changed audits should be small with only as many case studies as are required to produce valid findings. The data gathered for audit are transient and the details are of no value once conclusions have been drawn.

The nature of data for audit varies from objective numbers to subjective judgments depending on the topic examined. We may look at the basic structure of provision of care, at clinical processes, and at various outcomes for patients. Table I shows topics for audit, suggested examples, and the type of data required. In topics such as consultation and audit of deaths and new morbidity much will be quite subjective or debatable. Imagination is needed in meeting the challenge that the most important things are not measurable. The rest of this article is confined to considering numerical data.

Defining and recording data

Much of the data for audit are best defined in protocols, which, ideally, should precede any intention to carry out audit but in practice are often the first stage. In a protocol we define what we think we should be doing—our objectives—and the processes to

achieve them. The protocols may be organisational or clinical and may be based on personal decisions or agreed in the practice or on a more widespread basis. Although a broad measure of unwritten agreement exists on objectives, many written protocols seem to fail by attempting to gain a consensus that is too detailed clinically. The more widespread the protocol used, the more basic it and the ensuing audit need to be. Objectives are often expressed as criteria (for example, all patients aged over 75 should be interviewed about their repeat treatment every 12 months) and a level of performance (or "target"), set as the percentage of patients in whom this can be achieved. Criterion and performance together constitute a "standard," and the process of reaching agreement is referred to as standard setting. Doctors often seem to set unrealistic standards, taking little account of the time available or patients' compliance. More overall clinical benefit may ensue by reaching more patients at less frequent intervals, so that by changing the criterion more time is released to reach a wider population.

Auditing an entire area defined in a protocol is not necessary. The number of variables examined should be limited to, at most, half a dozen to give time to audit other areas and so help prevent subconscious rejection of difficult subjects. The problem here is that repeated audits of the same variables inevitably lead to a concentration on getting these right. Objective measurements such as "visual acuity 12/36" are more reliable than "fundi OK" in auditing management. Ideally, data should be recorded as part of the routine provision of care as any temporary recording methods are likely to induce only temporary changes in behaviour. Audits that result early in newly designed encounter sheets or follow up cards have often become projects to implement changes in a particular area and though commendable in themselves, they have displaced the auditing process. Data should ideally be gathered by ancillary staff so that the doctors' work is confined to analysing them and effecting necessary

TABLE I—Topics for audit in general practice and sources of data

	Examples	Source of data
Organisation of practice	{ Availability of appointments Delay in appointment time Response time in emergency calls	Record of appointments available per week, per day, and just before surgery May be available on computer appointment systems Recording time of receipt of message and arrival time
Consultation skills		{ Videotape or audiotape analysis Patient questionnaires
Examination skills		Outpatient clinics
Manual treatment skills		
Management of an acute diagnosis, symptom, or sign	{ Urinary tract infection Vertigo	Review notes to ascertain diagnosis Adherence to clinical protocol Numbers of patients
Management of chronic illness	Diabetes	{ Glycated haemoglobin/fructosamine concentrations Recording of weight, etc
Screening	Hypertension	Numbers with blood pressure recorded in past three years
Immunisation	Immunisation rates in children	All x ray examinations in past three months
Use of investigations	x Ray examinations	No of patients over six months in chosen specialties
Outpatient referral		
Inpatient referral		
Domiciliary consultations		Total numbers
Private referral		
Referral to other than consultants		
Prescribing		Indications for prescribing given drug to individual patients
Premature death		Complete record of deaths
Avoidable morbidity		List of all new disabilities
Avoidable suffering		"Disaster board"

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Br Med J 1990;300:92-4

changes. Some data will uncover omissions on individual patients that might be corrected immediately. This incidental activity should not distract from the main purpose of audit, which is to determine whether special measures are required for improvements—in time, resources, or education. To decide this we can compare our results either with previous identical audits in the same practice or with audits in other practices, in which case the comparison is valid only if the data are defined identically, which is best achieved by using identical protocols. Variations among practices such as in age and sex distribution should be taken account of in the protocol, but when social deprivation exists or levels of community resources differ it may have to be accepted that no comparison is possible and separate protocols are required.

Population denominators

A complete population denominator is essential for providing accurate data for audit, whether this is the entire age and sex register or individual cohorts. Computers have now the potential to provide the most accurate register of the population. New contractual arrangements may provide a solution to the problem of "ghost" patients, for if a patient who has not been seen for three years cannot be contacted for a three year assessment then the general practitioner is obliged to notify the family practitioner committee and, presumably, the patient will be removed from the doctor's list. In any case this patient cannot be part of an audit denominator. Another problem arises with newly registered patients for whom it is impossible to meet an audit criterion if the previous general practitioner has just met the criterion, or if the notes are slow to arrive, or if the patient has been living in the practice area for several years without registering. A solution is to exclude such patients from the audit population for the audit period, although they would of course be part of the population to which the service is provided. Thus a general practitioner looking at his or her screening for blood pressure in the past three years should not include patients newly registered within that time. This may become increasingly necessary if patients change doctors more frequently with the change in regulations. With computers any figures based on sex and age may be converted into those that apply to the standard national population, but for most practices the difference is probably not large enough to matter. If we can define social class or occupation in the computer register it may be possible to audit the uptake of services among social classes.

Similarly, a complete cohort of patients is essential for audit of chronic diseases. Thus unless an audit is of diabetics who attend only the practice clinic or it specifically excludes diabetics attending outpatient clinics it should include all identified diabetics in the practice and not omit those who are seen infrequently. Manual disease registers or, preferably, disease indexes in computers can provide a more complete list and a statistical calculation may be made about the completeness of the list. If there are too few diabetics there may be a basic flaw in the audit. Obtaining a complete audit of acute illnesses is more difficult because there are less presentations to record and they may easily be omitted. The increasing use of computers in consultation allows presentations to be identified, provided that doctors use agreed codes for recording.

Data for audit may be a complete descriptive analysis or based on random sampling. Total descriptive audits are possible with computers, even when large numbers are concerned. Computer protocols have now been developed that search the electronic record for areas of preventive care or chronic disease

management that are due for review and prompt the doctor about the missing data and provide an easy means of updating the computer record. The same protocols may be audited automatically by the computer. While most practices, however, still regard computers as only helping the manual record, the data held on them are commonly incomplete, and sampling of the manual record may be more reliable. Computers provide a ready method of random sampling and are able to carry out necessary statistical calculations as data are produced. Some argue that computers will remove the need for sampling, but there will always be aspects of audit that need a closer look than computer technology makes possible, and we will want to do this on a sample. How, for instance, do you decide that treatment has been reviewed?

The duration of data analysis required for valid results needs consideration in those studies which audit events, such as the use of x rays and referrals. Within the average practice quite large variations occur and make it misleading to look at a set of three months' figures. Referral figures are best considered by looking at individual specialties, but in some specialties the small numbers concerned may mean taking several years together before any conclusions may be drawn. In contrast, when numerous events may be involved, such as laboratory investigations, a random sample over a longer period may give a truer picture than every test over a few weeks. Once again, these figures are becoming readily available with computers. In particular it is possible to obtain a report on all prescribing of a particular drug or group of drugs over a chosen period and then refer to all the individual records for the reasons for prescribing.

External sources of data

Data for audit are also available from outside the practice. Thus family practitioner committees may analyse claim forms—for example, numbers of patients receiving contraceptive care, number of visits between 11 pm and 7 am, and numbers of ancillary staff employed. For the most part these types of data result in audit on the completion of claim forms rather than the provision of a service, but numbers of staff employed is a useful audit of structure in the practice. District health authorities have a well defined set of performance indicators that contrast sharply with the variety of data for audit in general practice suggested here and elsewhere. But these indicators are concerned mainly with large scale finance and administration and have little relevance to the individualism of doctor and patient in the community. We have something similar in the prescribing analysis and cost data and proposed "indicative" drug budgets, in which most of the analysis is in terms of costs. The term "indicator" implies that there is not a target and that

TABLE II—Example of computer audit of cervical cytology in this general practice, 17 May 1984-16 November 1989

	Code	No*	%
Women:			
Aged 25-64 years now		2221	
With hysterectomy		195	9
Cervical smear result	.4K2	1580	77.99
Cervical smear result	4K2.	102	
Inadequate specimen	4K21	20	
Negative	4K22	1479	
Mild dyskaryosis	4K23	29	
Severe dyskaryosis	4K24	22	
Severe dyskaryosis ? invasive cancer	4K25	11	
? Gland neoplasia	4K26	1	
Atrophic change	4K27	1	
Borderline changes	4K29	8	
Not otherwise specified	4K2Z	1	

*Each patient may have an entry in more than one category.

underprescribing could be occurring as well as overprescribing. In due course the district health authorities will be able to produce the referral, admission, and investigation rates for individual general practitioners, which again will be indicators rather than targets. As already seen in prescribing analysis and cost data interpretation of these figures is reliable only at the practice level and may be unreliable for individual doctors because of recording errors and variations in workload and case mix. We do now have a defined target for cervical cytology (table II) as well as the long established target of 90% for childhood immunisation.

These indicators and targets comprise a contractual audit. Unfortunately general practitioners may be so occupied meeting their obligations under this audit that they will not appreciate the difference between it and audit led by the profession, the most important part of which is considering the results and learning how to improve, and this is best done in an educational setting. Recording data should be part of routine care provision and gathering data for analysis delegated whenever possible, leaving interpretation to general practitioners. The dramatic increase in the use of computers for clinical recording makes this the most valuable tool for future audit.

Contribution of regional specialty subcommittees to organising audit

C D Collins

Hospital medical staff are now prepared to talk about, discuss, and criticise audit, but as yet little has been achieved, except by individual enthusiasts. For audit to be properly conducted and effective a considerable change is needed in attitudes of consultants. Such change requires guidance and encouragement; the royal colleges and faculties have offered general guidelines and the government has provided a timetable, requiring all consultants to be involved in medical audit by 1991.¹ It is, however, a big step from the receipt of such guidelines to detailed implementation of audit by individual consultants. Most district specialties lack an enthusiast to offer leadership in audit, and many specialties have too few members to permit a meaningful comparison of activity. Audit within specialties is therefore probably most effectively coordinated, if not organised, on a regional basis, as has been shown over the past few years by the Lothian surgical audit.

Regional specialist advisory committees can bridge the gap between college guidelines and individual district or specialist audit activities. To be effective such committees must assume and be given by their colleagues responsibility as the peer group from whom guidance and leadership may be obtained in the setting up, conduct, and practice of audit. The organisation of such committees is important, with regard to their membership and their relation with each other, regional management, and individual consultants. One example of how this might be achieved is currently in practice in the South Western region.

The South Western regional hospital medical advisory committee is composed of a consultant nominated by each of the 11 districts and selected, as far as possible, from different specialties, the post-graduate dean, and a university representative, currently the professor of community medicine. The regional medical officer and his senior medical assistant attend regularly, and the regional manager attends when possible. The committee has called on skill from the King's Fund to assist it and its subcommittees in developing medical audit; it assumed this responsibility in the region almost a year before the white paper was published and acts as the regional audit committee. It circulated its guidelines *The Regional Approach to Medical Audit* in June 1989. Through the participation of the regional manager, and access, therefore, to the management network, it is possible to bring pressure on district and unit managements to provide facilities and support necessary for the proper conduct of audit.

In the south west the regional primary health care committee links general practitioners in the district into a regional audit framework and provides guidance and coordination to the district audit committees. It also has an important role in promoting dialogue between both sides of the hospital-primary care interface and fostering an understanding by each of the perceptions and priorities of the other; these are not always obvious and may stimulate the identification of certain useful outcome indicators. The regional hospital medical advisory committee has been concerned with (a) development of software for audit; (b) establishing the extent of support of administrative and clerical staff for the clinical teams; (c) arranging for consultants to have sufficient sessional time to carry out audit; (d) organising training for doctors concerned with setting up and initiating audit; and (e) setting up regional arrangements for medical audit in specialties with only a few consultants in each district, through appropriate subcommittees. The role of regional specialty subcommittees varies with the number of consultants in each specialty. Those of the larger clinical specialties, such as general surgery, medicine, and trauma and orthopaedics, monitor, encourage, and coordinate the district audit activities. The smaller subcommittees either act as specialist audit committees in their own right or coordinate the activities of two or three subregional groups of consultants.

Audit in general surgery

In general surgery there are already several enthusiastic auditors whose skill may be harnessed and who might act as leaders in the organisation and practice of audit in their districts. For maximum effect the membership of a regional general surgical subcommittee should include a member from each district, preferably with management, educational, or audit responsibilities or experience, an expert audit adviser, a health care evaluator, a representative of the post-graduate dean or university, and a senior member of regional management plus secretarial support. A committee so constituted might then be able to gain the confidence of all the consultants in the specialty and offer guidance and specific proposals on the conduct of audit, both of the process and of the outcome of surgery. Such a committee must deal with several problems.

Attitude of consultants—Consultants' attitudes towards audit might be encouraged and developed by a combination of carrot and stick; for surgeons the stick

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Br Med J 1990;300:94-5