

General practitioners and learning by audit

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SUMMARY. The ways in which 'medical audit' can be used in the continuing education of general practitioners are examined, and certain rules for the conduct of such education in small groups of peers are put forward. However, it proved impossible to evaluate the outcome of the educational exercise because those taking part refused to audit twice any single aspect of their daily work.

Introduction

GENERAL practitioners are now encouraged by their political and academic leaders to use concepts grouped under the label 'medical audit' (Alment, 1976). The aims of doing so include improving the quality of medical care in general practice and ensuring that audit is an internal professional responsibility and not one imposed from the outside (Royal College of General Practitioners, 1981). The use of small groups of peers as a method both of audit and of continuing education is recommended (*British Medical Journal*, 1980; Scottish Council for Postgraduate Medical Education, 1981).

The notion of continuing education by auditing one's own work in a small group of peers is attractive for a number of reasons. The function of education is to promote learning (Miller *et al.*, 1962). Continuing education builds on the learning acquired in university and postgraduate courses during which "a student has undertaken to accept a rigorous intellectual discipline and to be more than a passive receptacle for information. . . . He fortifies his ability to think for himself, he refuses to accept orthodoxies simply because they are orthodox and when he dissents, he does so not on the basis of prejudice but of reason" (Mountford, 1966).

Audit of one's own work permits the display of these

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abilities. Continuing education also builds on the learner's experience in his or her discipline. Audit permits the systematic examination of this experience and the identification of any need for change. Continuing education is the promotion of continuing learning, and all learning results in a change of behaviour (Royal College of General Practitioners, 1972). Repeat of an audit procedure should make it possible to evaluate the results of learning. Audit of everyday work can be used, therefore, both to identify what needs to be changed and to assess the outcome of attempts to achieve these changes.

There are two prerequisites for identifying items of care needing change: firstly, methods of recording care and, secondly, criteria against which the care can be measured. Instruments for recording care can be of general use (for example the standard general practitioner or health visitor record, problem-oriented or not) or purpose-designed (for example the antenatal co-operation card or a hypertensive record card). The criteria and evaluation of adherence to the criteria can be determined by an external expert body, by a small group of peers or by the individual whose work is to be audited (Mourin, 1976). The achievement of any changes identified as necessary can be through sanctions or education. Sanctions can be external (for example the imposition of fines) or internal (social pressure within a group of peers or the conscience of the practitioner). It is possible that recognition within a peer group of deviations from their consensus criteria, or from those of an external authority but agreed in the groups, can act as the stimulus to change and an indication of its desirable direction. Audit in a small group of peers could therefore be an educational technique complete in itself; alternatively, the small group work might need to be extended by importing knowledge either through a visiting expert or by members' reading outside the group.

There are obvious attractions in using a group of peers to select items for audit, to determine the instru-

ments to be used for recording, to accept, if not create, the criteria, to provide social pressure towards conforming with the criteria, to conduct the evaluation and to be the strategy (Davies, 1971) for educating its members. The use of a small group of peers as a learning strategy also accords with certain principles governing learning in adults. Stated briefly, these are that adults prefer to be self-directing, to use a problem-orientated, patient-centred approach and to be able to apply their new knowledge and skills immediately. Adults respond best to a non-threatening environment where there is a good teacher-learner relationship: they want to know how they are progressing and to contribute to the learning of others. These principles are well established in teaching general practice trainees (Fabb, 1976). It has been suggested that they also apply to the continuing education of general practitioners (Irvine, 1979).

Aims

The notion of improving the clinical care of patients in general practice by medical audit in groups of peers poses a number of questions which include:

1. Will general practitioners undertake medical audit in groups of peers?
2. What methods are most effective in agreeing instruments for recording, and which are most likely to result in recording taking place?
3. Is there a difference in effect between creating and applying one's own instruments and applying instruments designed by others?
4. Is a led group more effective than an unled one?
5. What are the most effective ways of using experts external to the group?
6. For which type of item of care are which instruments most helpful?
7. Can a group of peers determine the criteria for auditing an item of care?
8. To what extent is the clinical care of patients changed by creating and applying audit instruments and evaluating the findings?

We aimed to answer these questions.

Methods

In 1977 a course in clinical care to be conducted by the Unit of General Practice at St George's Hospital Medical School was advertised by circulating all 350 general practitioners in the area. The letter of invitation stipulated that attenders would audit their day-to-day work by peer review during two-hour meetings, to be held over lunch on the same day on alternate weeks. Some refreshment was provided.

At the initial meeting the course organizer instructed all the attenders about the three aspects of medical audit (Donabedian, 1966): *structure*, which refers to the set-

ting in which care is provided and the resources available; *process*, which describes the methods by which decisions are made and actions taken; and *outcome*, which refers to achievement of the objectives of care. The problems of stating criteria were also described (Lembcke, 1956). A handout to reinforce this instruction was issued. Since not all doctors would attend all meetings, a newsletter was produced after each meeting and posted to all course participants whether they had attended the meeting or not. It was agreed that no material in the way of journal or other papers would be provided which was not specifically requested by the group. Any such material would be circulated with the newsletter.

Participants were divided into two sub-groups. The composition of the sub-groups depended upon the aspects of care selected by individuals; membership of the sub-groups thus varied from topic to topic but remained constant for each topic covered. One group was led by the course organizer (P.F.); the other was unled, but contained a general practitioner (R.B.) as a participant observer who was not identified as such to those attending. All sessions of both groups were recorded on audio-cassettes.

Selection of topics

The sub-groups were set the task of producing outcome criteria and/or a description of the process of care for a topic they had selected in order to present it to a combined session of both groups. The plenary discussion might result in modification of what had been produced, but, after acceptance, the sub-groups went on to the task of devising a recording instrument, to be presented at another plenary session with the intention that the whole group accept it and use it.

An initial list of topics was derived in a brainstorming session (Davies, 1971) which opened the second meeting in which all attenders took part. This plenary group was presented with the results of a questionnaire circulated to all the consultants in the Area telling them about the course and asking them to suggest up to three topics, diseases or symptom presentations which should be covered.

We sought the views of consultants because we expected them to reflect the opinions upon which courses are normally based but which have been so often criticized, not only for method but also for content. We assumed that these views would be based, in part at least, upon the referrals the consultants received. We also hoped to create a list of specialists whose knowledge could be imported into the group when needed.

One hundred and twenty-seven replies were received from 21 psychiatrists, 20 physicians (including geriatricians), 18 surgeons, 16 laboratory specialists (including radiologists), nine paediatricians, nine specialists in orthopaedics or rheumatology, eight gynaecologists, eight ENT specialists, five dermatologists, four anaesthetists, two radiotherapists, two oral surgeons, one

Topics covered during the course.

Topic	Aspect selected	Type of group	Type of instrument	Audit agreed	Audit conducted
Depression	Process & outcome	Led	Flow chart/ <i>aide-mémoire</i>	Yes	Yes
Hypertension	Process	Unled	<i>Aide-mémoire</i>	Yes	Yes*
Headache	Process	Unled	None	—	—
Bereavement	Process & outcome	Unled	Standard-setting statement	—	—
Terminal care	Structure, process & outcome	Led	Standard-setting statement	—	—
Vaginal discharge	Process & outcome	Led	Flow chart	Yes	Yes
Low back pain	Process & outcome	Led	None	—	—
Neck pain	Process & outcome	Unled	None	—	—
URTI in childhood	Process & structure	Led	<i>Aide-mémoire</i>	Yes	No
Analgesia	Process	Led	Standard-setting statement	Yes	Yes
Dyspepsia	Process	Unled	None	—	—

*Very few returns.

venereologist and one specialist in occupational health. Fifty-seven topics were mentioned more than once: low back pain was mentioned 12 times, depression nine times, hypertension and ischaemic heart disease nine times, 'stuffy nose' seven times, asthma seven times and vaginal discharge five times. This group of consultants seemed to share many general practitioners' views about areas in which the quality of clinical care might need improvement. Some of the consultants' replies were disturbing. A gynaecologist, for example, suggested "Diagnosis of uterine and ovarian cancer by a proper appreciation of clinical symptoms and signs in women over the age of 40. The commonest mistake one still sees in gynaecology referral clinics is that of a woman in her forties being treated for a menstrual irregularity with various forms of hormone therapy."

After topics had been selected to form the first two sub-groups, there was no problem in generating future topics from within the course.

After 11 meetings, during which five topics were covered, we changed in response to the members' wishes. Sub-groups were formed only when the large group decided it would be advantageous. Fourteen meetings were held in this way, during which seven topics were covered (see Table).

Results

Forty-six out of the 350 general practitioners originally circulated responded; half said they would attend at the suggested time and half if the time was changed. Twenty-two general practitioners attended the introductory meeting and 16 made a firm undertaking to attend in future. The average attendance was 14; the average time since qualifying was 25 years.

Members divided their clinical work into three broad categories: dealing with the presentation of a symptom (the symptoms could be acute non-recurring, acute recurring, acute or chronic); the care of established

conditions causing disability or handicap, the natural history of which would be a steady state; and the care of established conditions, the natural history of which tend to be downhill.

Recording instruments

Eleven topics were covered, and nine recording instruments were produced for eight of them (see Table). Algorithms, which have been recommended as a way of recording and controlling clinical process (Essex, 1980), seemed unacceptable to members. Much preferred were two types of instrument based on the flow sheet described by Stevens (1977) as "a system of tabular or graphic recording of data which enables a rapid monitoring of a particular parameter or cluster of related parameters or relationships". The first type of instrument in this system permits all likely actions to be recorded but does not specify intervals or require the actions to be undertaken. This type of instrument came to be called a 'flowchart' and was used for the topics vaginal discharge and depression. That for vaginal discharge allowed up to 12 patients to be recorded on an A4-sized sheet and permitted the following to be recorded for each patient: age, five items of history (pregnant, 'pill', IUD, itchy, sore); 12 items of examination (manual examination normal or abnormal; speculum examination normal, *Candida*, *Trichomonas vaginalis* or non-specific; high vaginal swab normal, *Candida*, *Trichomonas vaginalis*, leucocytes; cervical cytology normal or abnormal); five items of treatment (nystatin or equivalent to patient, nystatin or equivalent to partner, metronidazole or equivalent to partner, or a non-specific vaginal treatment such as acetic acid 0.92% in jelly); and three options under 'disposal' (patient to re-attend, patient to gynaecologist, patient to venereologist). There was also space for unstructured comments.

The second type of instrument required a certain action to be taken at specified intervals and came to be called an *aide-mémoire*. It was used for three topics;

depression, hypertension and the treatment of infections of the upper respiratory tract in childhood. The *aide-mémoire* for hypertension specified the following: a record of age, weight, smoking habits and three systolic and diastolic readings (with the diastolic measured to the 5th Korotkoff sound); examination of the fundi, of the femoral pulses, of urine albumin and sugar (with albumin necessitating an IVP) and of blood for haemoglobin, sodium, potassium and urea; and a chest x-ray. If good control was not established in six weeks, then a 24-hour specimen of urine was collected for estimation of VMA excretion. Otherwise monitoring was to continue at specified intervals. It was agreed to measure the blood pressure of all patients over 20 who attended the surgery and had no blood pressure recorded in the notes in the previous three years. Audit was agreed on for all three topics for which *aide-mémoires* were produced. For upper respiratory tract infections in childhood the audit did not take place.

A third category of instrument came to be called a 'standard setting statement'. It was produced for three topics: bereavement, terminal care and analgesia. For analgesia, the third in chronological order, the groups suggested that a standard-setting statement could not be binding on all participants for all patients, and agreed that what should be recorded and discussed were deviations from the standard. This led to audit taking place. The standard-setting statement had a long preamble which divided analgesic drugs into the following four groups: 'mild'; 'mild' plus small quantities of codeine phosphate; 'moderate' analgesics without the mixture of milder analgesics such as paracetamol; and 'major', arranged as a sequence from dextromoramide through pethidine to diamorphine. It was agreed to define the four categories of analgesia as follows: mild analgesia was limited to paracetamol or paracetamol plus orphenadrine citrate; mixed mild analgesia was limited to a soluble proprietary mixture of paracetamol 500 mg with codeine phosphate 8 mg; moderate analgesia stopped at dihydrocodeine tartrate; analgesia for major pain was selected by the nature of the origin of the pain (for example diamorphine for myocardial infarction, pethidine for renal colic). Anti-inflammatory non-steroid drugs (other than aspirin) were considered separately.

Process

Process was studied for all 11 topics; structure was studied for two and outcome for six. Of the four topics which produced no recording instruments, all dealt with a symptom entry.

Audit

Agreement to conduct an audit was reached for five topics. For two other topics a recording instrument was produced but no audit was agreed. In both these instances the instrument was a standard-setting statement.

It was found that outside experts were best used by

defining carefully in the group the questions to be answered, and submitting the questions to the experts in writing before bringing them to the course. The other effective way of using an expert was to refer for comment the finished protocol of an agreed audit. Little was gained when experts were invited to an earlier stage of the groups' discussion of a topic.

Discussion

The study provided little hard evidence about the value of audit as a method of improving the clinical care of patients, but it did provide some information about running an audit group for educational purposes. Firstly, some general practitioners will undertake medical audit in a group of peers. Secondly, the most effective method for general practitioners who attended this course was a led group which started from considering the process of care; recording was most likely to take place if it followed discussion but preceded any change in process or structure. Thirdly, there was no obvious difference between the frequency of recording on self-designed instruments and on those designed by another sub-group. On the other hand, there was a marked reluctance to use forms of recording designed outside the course. It may be that the plenary sessions which contributed to final designs gave all the members a proprietary interest in all the instruments produced. Fourthly, a led sub-group was more likely to have success in the tasks set: indeed, members became reluctant to divide themselves into sub-groups at all, doing so only after a very precise definition of their task had been agreed in the led larger group. Fifthly, members found that little was gained from the presence of an outside expert in the early stages of discussion of a topic. All experts so briefed at a later stage by post commented on the high quality of the exchanges which followed and liked the method.

Sixthly, no relationship between types of instrument and topics of care was found. What was revealed, however, was a preferred sequence of activities. Members would alternate between abstract topic discussion and specific case discussion. They would then define a model of process and apply it; later, if a recording form was produced, they would go on to consensus case study. Where changes in structure were indicated, they would make recommendations. If an *aide-mémoire* was produced it would be recorded on only if it arose from this sequence of discussion, model of process and review of process. The flow chart acted as a way of recording process so that it could be reviewed.

Seventhly, this group of peers determined criteria for audit. What they could not do was adhere to them. It may be for this reason that they produced the definition that standard-setting statements demand explanations of non-compliance rather than absolute adherence.

The preference shown for a led group, the fact that recording was most likely to take place if it followed

discussion but preceded changes in the habits of members, and the value of formulating specific questions which were answered before expert advice or information was sought, probably reflect the known behaviour of small peer groups and the psychological implications of the tasks undertaken by members of an audit group. Members arrived with the intention of improving their clinical care. Each member found that, for each topic, they differed from some general practitioners in their clinical beliefs and their knowledge base. There were frequent occasions in the led group when members failed to use their higher intellectual skills (Freeling, 1976) and joined in a kind of false consensus in order, apparently, to avoid disagreements in the group. The leader pointed out those occasions on which prejudice appeared to have over-ridden logic, and he consistently refused to allow discussion to move on either until a true consensus had been reached or until members had recognized that there was unresolved disagreement. It was not possible to determine whether this style of leadership was the source of the course's preference for audit before agreed change. It was clear from the transcripts that the unled group, which devised the *aide-mémoire* for the audit of hypertension into which very few cases were entered, had not challenged each other's statements and seemed not to have reached true consensus on many of the points apparently agreed, including the structural alterations of case finding for

all patients over 20 consulting the doctors. The transcripts revealed a group eager to complete its task and to present it to the other sub-group of the course. No individual was already carrying out all the actions required, let alone at the intervals specified. Some of the actions required were being conducted by none of the individuals. The decisions taken by the hypertension sub-group seemed related more to the papers they had asked for (Hart, 1975) than to their experience.

It did not prove possible to answer the eighth question, about alterations in the quality of clinical care. Members proved reluctant to return to recording an item of care months after they had left the topic. This conforms to the principle that adults prefer to be self-directed and to be able to apply their new knowledge and skills immediately. Nevertheless, this means that the course evaluation was unable to produce objective evidence about the long-term aim of improving the clinical care of patients. It would seem, however, that this small group of established general practitioners enjoyed studying their own work under the guise of audit and that, whilst this study has been unable to quantify those gains, our observations may help others wishing to use this approach to the continuing education of working general practitioners.

The recording instruments devised were proved to be feasible (the doctors filled them in) but they could not be tested for validity (did they record what the doctors


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really did as opposed to what they said they did?). It is unlikely that any of the members lied systematically. Nevertheless, an important point is underlined by this comment. Audit of the nature we have described, the main purpose of which is education, should not be interpreted as research. Research ideas may originate from an audit, or an audit may attempt to apply in the field the results of research, but it seems unlikely that general practitioners wishing only to improve their clinical care would persist in recording and monitoring long enough for that stringency to be applied which is necessary for good clinical research.

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