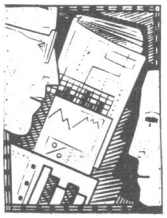

on the audit, and this amounted to 110 hours but excluded the time spent by the general practitioners and the subsequent discussion meetings in the practice.

Discussion

This audit reports the finding that many of the standards set were not achieved. Audited high standards of care across the breadth and depth of general practice are difficult to achieve.[12] The original protocol had been successful in changing the general process of care in the practice but had been unsuccessful in achieving the standards set for diabetes care. It contained a monitoring system to check that patients had attended but no system to check on the outcome of their attendance. Discussion within the practice had suggested changes in the protocol and its monitoring to improve future performance. These suggestions included a simpler examination of the patients; an increased coordination of the use of dieticians, diabetic specialist nurses, opticians, practice nurses, and educational material, particularly for patients with newly diagnosed diabetes or those who are new to the practice; and a regular annual meeting of doctors and nurses to review the protocol with a simpler system of continuous audit (see below).

By April 1991 a medical audit advisory group will be established by each family health services authority in England and Wales. By April 1992 institution of regular, systematic medical audit by all practitioners in every family health services authority is expected.[13] The predominant purpose of this educational audit is to improve patient care by achieving the optimum outcome in the most efficient way.[14] General goals and five year targets have been set for diabetes care and research in Europe, but these will be difficult to audit in general practice.[15] Large data sets of diabetes care[16] are difficult to audit in general practice. We suggest a simple audit of diabetes linked to the documentation used for health promotion clinics and practice annual reports. This audit is in three parts. Firstly, an audit of the process of care, which comprises a register of all the diabetic patients in the practice to determine the prevalence of diabetes, which can then be compared with other practices or areas. Such a register is needed if some form of regular review is being offered to all diabetic patients. Secondly, an audit of the process of care, which comprises an attendance register of the diabetic patients who attend for review of their diabetes care or who are offered review. The percentage of patients who attend for review can be compared year by year or with other practices. An attendance register and a protocol for diabetes care are essential if remuneration for health promotion clinics is being sought. Thirdly, a measure of the outcome of diabetes care is recorded on the attendance register. For example, an intermediate or surrogate outcome measure such as serum fructosamine concentration in patients aged under 70 may be collected and compared with an agreed standard. The outcome measure or measures could be compared year by year or with other practices.

This simple audit will improve the efficiency of diabetes health promotion clinics, so improving the care of diabetes. It should also encourage further effective audits in general practice. Thus it will help to achieve the main aims of medical audit—that is, improved patient care and clearer understanding among the carers.

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(Accepted 7 January 1991)

Audit in Person

The role of the audit analyst

Christina Fielding

In February 1990 I was appointed to a post subsequently entitled audit analyst within the clinical audit department in North Derbyshire Health Authority. With no previous experience in NHS administration I found preparing for the interview difficult. The short job description had mentioned responsibility for data collection and input in two specific projects—in anaesthetics and psychiatry; further information was difficult to locate.

My previous training included nursing and information technology, the second proving to be the most valuable for audit work. I came to realise that the most apt part of the job description was the statement: "... and any other duties appropriate to the position." This reflected the early stages of people's understanding of audit. There are no precedents in this job, and initiative is important; already, methods adopted in February are being changed and updated.

The consultant audit coordinator, Dr McConnachie, has been involved in developing audit in North Derbyshire since 1987. By the time I was appointed funding had been arranged and consultants were showing interest and expressing a need for help with projects. At that time we worked for the district and there were possibilities for audit in many different hospitals. Now a separate community audit team has been formed, and we have been devolved to unit level.

An audit secretary was appointed soon after me and our first days were spent training in the medical records department. The aim was to ease the workload of that department and of the medical secretaries. We now collect all patients' notes ourselves, and any doctor who asks the medical records department for notes for audit is referred to us. The secretary attends the audit meetings for most specialties, takes minutes, collates figures, and distributes agendas, thereby ensuring that

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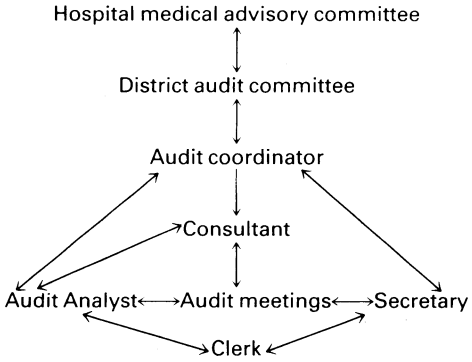

Working of clinical audit team

this extra work does not fall on the medical secretaries.

Working practice

Since February the clinical audit team, comprising the consultant audit coordinator, the secretary, and myself, has developed a system for audit (figure). The coordinator reads relevant articles and presents his ideas at meetings with consultants in each specialty. He stimulates, motivates, and supervises audit in all specialty groups in the acute unit, paying special attention to those not already active in audit. He sends photocopies of particularly interesting articles to the relevant specialties with comments suggesting possible improvements in practice. Some consultants are enthusiastic but have much to learn about the purpose of the clinical audit team and how it can work for them; many have been collecting and storing information for years, and we are now analysing some of this retrospectively. If the team expands we hope to implement our own ideas for audit studies, but presently we respond to consultants' requests for help with particular projects and have a rapidly increasing workload.

When an idea for audit has been identified by a consultant or specialty the consultant(s) and the analyst meet to work out a method of conducting the audit. The objective and the desired improvements are discussed and questions identified for extracting appropriate information. The consultant first describes the present treatment—methods, alternatives, advantages, and disadvantages—to provide background knowledge for the study. For the audit analyst unfamiliarity with medical terms is a hurdle to overcome. With thorough research before starting the study it need not affect the outcome, and this is one of the most satisfying aspects of the job.

Setting up a project

THE METHOTREXATE STUDY

An initial meeting was held with a new consultant who wished to obtain more information about patients attending the psoriasis clinic, specifically those being treated with methotrexate, a potentially dangerous drug that requires careful monitoring. He requested an update on their treatment so far, and he had itemised each piece of information he needed to be extracted from the notes (an unusual but extremely helpful step).

After initial discussion about the drug and its effects I asked some fairly standard questions.

(1) What are the alternatives?
(2) How often is the drug administered?
(3) What is an average dose and the outside limits prescribed?
(4) How many patients are receiving this treatment—Do you have a list of them or where can I get one from?
(5) How big is the sample to be used? (In this case it included all of the patients, amounting to 73.)
(6) In which section of the notes may each piece of information be found?

I always seek explanations of any possible abbreviations that may be used in notes. They are often so familiar to the medical staff that they don't mention them, but being unaware of their meaning or ignoring them can lead to inaccuracy in the results.

After the meeting a form was drawn up, incorporating all the information required that could be put on to a database and the form was later retained by the consultant as a record. At this stage a pilot study with about five sets of notes was performed to check that the information on the form could be retrieved. Once the consultant had checked the suitability of the form a database record format was created. The form and the database are often altered and updated during the study as information collected alters the recording requirements of a project.

Current workload

At any one time there are between five and 15 projects underway. High priority is given to a project during its initial stages, but once the form, database, and pilot phase have been completed it joins the others in a routine process. Time allotted to projects amounts to one day or half a day per project per week. This may seem a fragmented way of working, but it makes the work more interesting and means that all studies progress similarly.

For most studies the patient's notes are used to look at past treatment or a form to monitor current treatment is created for the medical staff to complete as they see each patient. The information from the completed forms is entered on to a database, either in the audit offices or in the specialty department concerned, depending on who wants to analyse the information. In some cases, such as in the outpatient glaucoma clinic, the forms are used within the department to update and edit the information on the database after each outpatient visit; current details on each patient are then always available for reference by consultants. In others the forms are collected by the audit staff and the information is analysed quarterly, six monthly, or yearly and presented in report and graph form for discussion at audit meetings. The data are analysed but not interpreted. Any obvious improvements are discussed by the audit coordinator and the consultant concerned. The coordinator sees all reports before they are distributed. The audit department has recently started evaluating improvements made six months after the project has finished, thereby recording progress and ensuring that our own work is worthwhile.

Some audit meetings are attended by the audit analyst (with consultants' permission), sufficient to maintain an update of progress within a specialty. Information from meetings not attended may be obtained from the audit secretary or from the minutes of the meetings. The meetings are an excellent way of meeting the medical staff and discussing their views on audit and the methods they prefer to use. Virtually all specialties now hold regular meetings but their content varies tremendously—from peer review to general management and the role of the clinical director within audit.

Experience in creating databases to suit various needs is essential to the audit analyst, and the ability to use a word processor is particularly useful. Possible areas in which more training would be appreciated include design of computerised forms, advanced graphics, and statistical analysis.

Projects that involve the clinical audit team include:

- A computerised audit of anaesthetics in all operations performed

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- A study of admissions and discharges in psychiatry
- Three studies for the genitourinary clinic, relating to genital warts, their treatment, and relation with cervical cancer in women, and a project determining incidence of chlamydia in cases of termination of pregnancy and the incidence of testing
- Helping the haematology department to create a database of diagnoses in all outpatients and a study of the relation between anticoagulation and atrial fibrillation
- Analysis of records of all patients kept by the orthodontic department since 1984 according to waiting time, diagnosis, type and length of treatment, rate of non-attendance, and outcome
- Analysis of the treatment and outcome of all major trauma patients over the past year
- An audit of the activity in the observation ward
- A study of the use of methotrexate treatment in patients with psoriasis and review of investigations in patients with leg ulcers
- Standardisation of patient care in the coronary care unit by checking procedures relating to diagnosis for all patients in one month and repeating the process during the same month next year. Improvement of information given on echocardiograms to create more meaningful reports
- A study of all resuscitation attempts, their outcome, times of occurrence, and attendance and training of staff
- A quarterly report of epidurals showing the total number of epidurals, the time of day performed, the grade of doctor, the indication, and any complications
- An ongoing database study for the glaucoma clinic to monitor deterioration of vision and effectiveness of treatment.

In other projects help is provided merely by obtaining patients' notes, so clerical help is essential to cover this and other time consuming duties—for example, photocopying—to facilitate the work of the audit team.

Correction

Audit of a new appointment system in a hospital outpatient clinic

An author's error occurred in this paper by Dr M Jennings (19 January, p 148). The total number of patients in the study mentioned in the abstract was 181 and not 436 as published.

News and Information

No difference was found in levels of disability or use of drugs in patients with rheumatic diseases from four practices in the west of Scotland according to access to specialist hospital care (*Annals of the Rheumatic Diseases* 1990;**49**:983-5). Before rheumatologists start complaining, the authors acknowledge that their numbers may have been too small to show a difference; and the practice furthest away from a hospital had a partner with a special interest in rheumatic disease.

Routine hospital activity data on surgical mortality show wide variations among specialties and among health districts, an inverse relation between workload and deaths, and several anomalies probably related to coding (*British Journal of Surgery* 1990;**77**:1399-402). But fortunately death is rare and without detailed information is of little use as an outcome measure. An agreed standard classification of health status (not just "alive" or "dead") and its measurement before and after operation would allow evaluation of outcome in most surgical patients.

Lot quality assurance, a method of quality control in which small batches of products are sampled, has been successfully used to evaluate immunisation programmes in the mountains of Peru (*International Journal of Epidemiology* 1990;**19**:1086-90). Acceptable and unacceptable uptake of immunisation and the number of children (from 13 to 27) to be randomly sampled have to be calculated in advance. Besides their obvious application to small and isolated communities, such surveys may be repeated while immunisation is in progress and operational problems can be quickly identified and remedied.

A questionnaire to users of the microbiology service at Newcastle's Royal Victoria Infirmary brought the usual crop of complaints about poor quality and slowness of reports; difficulty in obtaining reports by telephone; and resistance (because of expense) to out of hours requests (*Journal of Clinical Pathology* 1991;**44**:6-9). On the positive side, respondents wanted more visits to the wards by microbiologists; many believed that fewer specimens could be sent to the laboratory; and there was almost universal opposition to the threatened loss of on site facilities.

Should congenital pyloric stenosis be treated in district general hospitals? In 44 out of 46 babies operated on in a special care baby unit by general surgeons the condition was diagnosed without difficulty, there were no deaths, and the median postoperative stay was four days (*Archives of Disease in Childhood* 1991;**66**:130-3). The duodenal mucosa was breached in 11 patients, and seven had wound infections. Commenting on the findings, an expert questions the validity of such a retrospective study and is not convinced that the complication rate was acceptable.

The large amount of information obtained by anaesthetists monitoring physiological functions during operation could be useful for evaluating outcome. For example, a fall in mean arterial pressure of 20 mm Hg or more lasting over 60 minutes in a series of elderly patients with diabetes and hypertension was associated with a risk of postoperative cardiac and renal complications (*Annals of Surgery* 1990;**212**:567-80). Predictable perhaps, and What about the many other variables? Can remedial action be taken, thus closing the feedback loop?

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Precise clinical summaries: guidelines for clinicians—The Information and Statistics Division of the Scottish Home and Health Service has issued guidelines for clinicians that suggest ways in which good clinical summaries of episodes of health care can lead to precise and detailed coding of morbidity. The aim is to produce information that properly reflects the clinicians' perception of the pathology, treatment, and use of resources for each episode.

Information and Statistics Division, Trinity Park House, Edinburgh, EH5 3SQ (tel 031 552 6255 ext 2185).

Annual reports on hospital medical audit—The Department of Health has instructed health boards and trusts to produce an annual report on the process and progress of medical audit in hospital and community health services and to outline aggregated results, problems encountered, and actions taken or proposed. Many audit committees are aiming at combining the report with plans for 1991-2.

Reports are to be addressed to unit general managers; medical staff; and other health authorities. They may be required to inform the contracting process between purchasers and providers. In England, as the 1991-2 allocation of new money to regions is unlikely to be released before May, most reports are expected in April.

The following headings are a composite of prescribed requirements, contents of reports already published, and items otherwise likely to be useful.

- General organisation—Definition of audit; adoption or adaptation of regional guidelines (if any) for specification of audit.

—Audit committee: list composition, especially for primary health care and education; terms of reference (maybe as

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