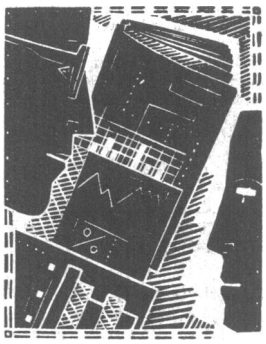

THIS WEEK . . .

- *In the first article Gabbay et al describe the successes and failures of a year's audit of patient care, the reactions of the participants, and the lessons learnt.*
- *A survey by Hopkins et al covering 48 hospitals in six regions in England and Wales shows, contrary to belief, that contacting duty junior staff responsible for acute medical admissions by telephone is fairly easy.*
- *In the commissioned article Dr Bunker analyses the variations in medical and surgical care in the United States and Britain.*

What did audit achieve? Lessons from preliminary evaluation of a year's medical audit

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Abstract

***Objective*—To evaluate the experience of a year's audit of care of medical inpatients.**

***Design*—Audit of physicians by monthly review of two randomly selected sets of patients' notes by 12 reviewers using a detailed questionnaire dedicated to standards of medical records and to clinical management. Data were entered into a database and summary statistics presented quarterly at audit meetings. Assessment by improvement in questionnaire scores and by interviewing physicians.**

***Setting*—1 District general hospital.**

***Participants*—About 40 consultant physicians, senior registrars, and junior staff dealing with 140 inpatient records.**

***Main outcome measures*—Median scores (range 1 to 9) for each item in the questionnaire; two sets of notes were discussed monthly at "general" audit meetings and clinical management of selected common conditions at separate monthly meetings.**

***Results*—A significant overall increase in median scores for questions on record keeping occurred after the start of the audit ($p<0{\cdot}01$), but interobserver variation was high. The parallel audit meetings on clinical management proved to be more successful than the general audits in auditing medical care and were also considered to be more useful by junior staff.**

***Conclusions and action*—Medical audit apparently resulted in appreciable improvements in aspects of care such as clerking and record keeping. Analysis of the scores of the general audits has led to the introduction of agreed standards that can be objectively measured and are being used in a further audit, and from the results of the audits of clinical management have been developed explicit guidelines, which are being further developed for criterion based audit.**

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Introduction

In 1988 audit among physicians was still rare in the NHS. The Royal College of Physicians' report on medical audit[1] and the NHS review[2] had yet to provide the present impetus. At that time we began designing a peer review audit for the physicians at Central Middlesex Hospital, a 580 bed acute general hospital, one of three in Parkside District Health Authority. We aimed at developing a semiquantified method for reviewing inpatients' clinical notes, which, having gained local acceptance, would lead to setting explicit standards of care so that we could monitor any resulting improvements. We describe here our experience, how the doctors reacted, the results, the lessons to be learnt, and the further work needed.

Methods and results

DESIGNING THE AUDIT STRUCTURE

The initial drive to set up the audit came from an enthusiastic hospital physician committed to audit but unsure of how to establish it, a regional public health physician looking for sites in which to pilot methods of audit, and a district public health physician with a remit to develop clinical evaluation. The help was enlisted of a senior physician whose influence was judged to be crucial to the success of the initiative and whose reservations were soon dispelled by the argument that, in view of the inevitability of the advance of audit, it was better to be in the vanguard. He agreed to chair a small steering group consisting of consultants from each of the main medical specialties.

The steering group first met in September 1988 and soon included the medical senior registrars representing the views of the junior staff. The dilemma was to design an audit method innocuous enough to attract busy and, possibly, reluctant colleagues, yet stringent enough to improve medical practice. None of the models in the United Kingdom for conducting audit among physicians[3-9] was suitable, and a local model needed to be fashioned. Over the subsequent four months the steering group developed and piloted a questionnaire designed by one of us (JG). The questionnaire was designed, firstly, to delineate the important aspects of clinical management and recordkeeping; secondly, to structure the peer review so that all these aspects were systematically reviewed; thirdly, to monitor quantitatively how well management and recordkeeping were being carried out and so deal with any emerging weaknesses; and, fourthly, to help define standards that would permit more efficient audit in future. One half of the questionnaire, about 30 questions (first box), was based on Bennett and Shaw's detailed standards for inpatient medical records[10]; the other half (second box) was an attempt to permit systematic judgment of clinical management, including the appropriateness of the investigations, treatment, paramedical involvement, and discharge procedure. Rating scales were used rather than closed (yes/no) questions[1] so that the full range of subjective

judgments could be analysed before agreeing to the explicit standards needed for closed questions.

Every month 12 of the consultant physicians and senior registrars were each to be sent two randomly selected sets of notes to review using the questionnaire. All the results were to be entered into a cumulative database, whose summary statistics would be presented quarterly; only two of the 20 to 25 sets of notes for each month were to be discussed at a "general" audit meeting. Audit meetings were arranged twice a month, the general audit meetings alternating with "topic" audit meetings, at which three sets of notes of recently discharged patients with a specified common condition would be reviewed by a generalist and a specialist. The specialist would be asked, in the light of the discussion, to produce brief guidelines to be agreed and distributed among the medical staff. The meetings were to be confidential and no names of individual patients and their physicians disclosed. All medical staff, including students, were to be invited.

We agreed to evaluate the audit process in three ways: by monitoring the questionnaire scores, participant observation, and a semistructured interview of a stratified random sample of over 20 physicians of all grades, attending and not attending audit meetings, some nine months after the audit had begun.

Examples of questions on record keeping in initial questionnaire

	Strongly disagree			(Please circle)				Strongly agree	
4 Notes are generally legible and easy to follow	1	2	3	4	5	6	7	8	9
Comments:									
7 History of the presenting complaint is well recorded	1	2	3	4	5	6	7	8	9
Comments:									
9 Social history is well recorded	1	2	3	4	5	6	7	8	9
Comments:									
14 Progress notes were made every three days and more frequently whenever there was a major change in management or any major clinical event	1	2	3	4	5	6	7	8	9
Comments:									

Examples of questions on clinical management in initial questionnaire

	Strongly disagree			(Please circle)				Strongly agree	
32 Initial management was appropriate	1	2	3	4	5	6	7	8	9
Comments:									
35a Too few urgent biochemistry investigations	1	2	3	4	5	6	7	8	9
Comments:									
35b Too many urgent biochemistry investigations	1	2	3	4	5	6	7	8	9
Comments:									
45 All drugs were appropriate	1	2	3	4	5	6	7	8	9
Comments:									
52 Follow up was adequately arranged	1	2	3	4	5	6	7	8	9
Comments:									

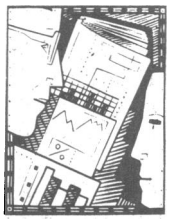
PROCESS

At the end of the design phase the steering group were committed to the proposed format for the audit but apprehensive about how their colleagues would respond. On 27 February 1989 the inaugural general audit meeting took place. Over 40 doctors came, including 17 out of a potential 19 consultants; eight consultants were from the clinical support services. After an explanation of the design the audit findings from the pilot phase were presented: the state of the filing in the hospital notes was appalling; recording of, for example, the patient's history, review of systems, social history, drugs taken and allergies, and the information given to patients and their relatives scored consistently badly. By contrast, the patients' clinical management as reviewed in the second half of the questionnaire generally scored well. Those at the meeting responded well to these findings and asked that all medical staff should receive copies of the questionnaire. They agreed to support its further development towards setting minimum standards for the key low scoring questions.

The meetings subsequently continued to be well attended, attracting also geriatricians and paediatricians. Participants later reported that the audit meetings provided a new forum for discussions and hence improved communication on general clinical matters. Many of our interviewees felt subjectively that the standard of case notes had improved noticeably as a result of the general audit. Three points for action, often concerning clinical policy, were taken forward from each meeting. Several changes resulted, such as improvements to the systems for pathology and radiology reports and agreement on the patterns of emergency haematology requests. Even when simple actions had been agreed, however, they were not always easy to carry out. One example was the early demand for a simple change in the way notes are bound, which the clinical staff thought would solve the overwhelming problem of the filing of clinical notes and results, but which was not implemented until early 1990 because of administrative delays.

Dissatisfactions gradually emerged about the general audits. The junior doctors found it repetitive to hear continual restatements about defects in the records that nearly everyone had agreed needed to be improved. They did not believe that they were learning much and felt unfairly criticised. To combat this alienation registrars and senior house officers were invited to review some notes themselves (and their audits were equally critical (table I)). Even so, the doubts continued about the usefulness of the general audits. Discussion still focused on the performance of junior doctors rather than that of the consultants, and there was a feeling that the consultants were not being audited as rigorously as the juniors for whom they were ultimately responsible. There was unease that the meetings were failing to move beyond questions of record keeping to tackle substantial clinical issues despite the fact that virtually every meeting touched on important questions of clinical management. The questions in the second half of the questionnaire were too blunt to disclose any general trends about, for example, the appropriateness of investigations and treatment, although the open questions sometimes elicited strong disapproval of clinical decisions. Finally, the self imposed anonymity was seen by some to be thwarting questions about individual clinical decisions.

The audits of specific topics were more popular. Month by month reviews of recent inpatient management of, for example, pulmonary embolus, gastrointestinal bleeding, acute asthma, hyperglycaemia, stroke, myocardial infarction, and overdose were presented. Sometimes there were vigorous differences about the optimal management. The interviews



confirmed that the junior doctors, though reticent at the meetings, found such audits educationally valuable. Gradually, clinical guidelines emerged for each topic, but not without difficulty. There proved to be a fine balance between reiterating textbooks and producing "cookbooks" that discourage clinical thinking. Gaining acceptance of the guidelines in the hospital as a whole was not always easy given the inevitable differences of opinion about correct clinical management. Finally, we later found that a series of logistical problems meant that the guidelines had not been adequately distributed. It was therefore not possible to assess the degree to which doctors were adhering to the guidelines until after the guidelines were reissued.

Aggregrate median scores for first part of questionnaire on notes of patients admitted before and after the introduction of audit (maximum score=9)

Question	Notes of patients admitted: Before March 1989 (n=60)	After March 1989 (n=59)	After March 1989 (audit by junior doctors) (n=14)
1 Clear diagnosis recorded	8	8	8
2 Clear dates and times when doctor saw the patient	8	8	8
3 Can identify doctors' signatures	4	6	8
4 Notes are legible	7·5	8	8
5 Notes show clearly any allergies or drug reactions	4	7	7·5
6 Allergies or drug reactions on cover of notes	1	2	1
7 History of presenting complaint well recorded	7	7**	6·5
8 Review of systems well recorded	3	5**	5
9 Social history well recorded	5	7***	7
10 Ethnic origin recorded	1	1*	1
11 Drugs on admission recorded fully	8	9	9
12 Physical examination well recorded	5·5	7***	7·5
13 Progress notes give clear and chronological account	7	8	8
14 Progress notes written every three days	9	8	9
15 Doctors' notes explain decisions	7	8	8
16 Cross referrals are helpful	8·5	9	9
17 Investigation requests are clearly recorded	7	8	7
18 Abnormal results recorded	6	7*	8
19 Investigation results are filed	6	6	6
20 Procedures recorded	8	8	8
21 Information given to patient recorded	1	2***	2·5
22 Discharge arrangements stated clearly	6	8	5
23 Drugs to take home stated clearly	2	5	6
24 Discharge summary contains all relevant information	7	8	8
25 No of weeks after discharge the summary was typed	3	3	3

Significant differences between median scores for notes of patients admitted before and after March 1989. *p<0·05, **p<0·02, ***p<0·002.

Examples of questions in revised questionnaire

1 Does history of presenting complaint include:

(a) Some indication of duration?	Yes	1
	No	2
(b) Some indication of severity?	Yes	1
	No	2
(c) Some indication of how well the patient could function before this episode?	Yes	1
	No	2

2 Does the social history include a note on each on the following?

(a) Occupation	Yes	1
	No	2
(b) With whom the patient lives? (or some other clear indication of potential need for home or social services)	Yes	1
	No	2
(c) Alcohol intake		
Yes, with amount and frequency OR states "none"	1	
Includes some note but no details	2	
No notes included	3	
(d) Smoking		
Yes, with amount and frequency OR states "none"	1	
Includes some note but no details	2	
No notes included	3	

3 How many of the first 25 and last 25 words of the entire notes for this admission are NOT legible?

Number illegible .....

4 Is the patient's medication on admission clearly recorded?
(Note: "Fully" = with dose and frequency OR states "no medication")

Yes fully	1
Yes but not fully	2
Nothing recorded	3

OUTCOME

The table shows the median scores for some of the main questions about the adequacy of the notes from the initial questionnaire. The maximum score for each question was 9; many of the answers were bimodally distributed. For notes of patients admitted before the audit began 12 of the questions scored a median of 7 or more, suggesting little room for improvement. For notes of patients admitted after that time seven of the remaining questions scored significantly better ($p<0·05$ Mann-Whitney U test). The overall increase in median scores for all the questions after the start of the audit was significant at $p<0·01$. Interobserver variation, however, was high; comparisons of 44 sets of notes audited independently by two of the physicians showed appreciable agreement between the auditors in only eight of the questions listed in the table. The apparent improvement should therefore be interpreted cautiously.

The time taken for physicians to complete the questionnaires, which had been a frequently voiced concern, was recorded by the auditors at the end of each questionnaire. The median time fell significantly from 25 minutes per set of notes in the first phase of the audit, before 1 March 1989, to 20 minutes afterwards ($p=0·023$).

LESSONS AND FURTHER WORK

We overestimated the likely resistance to audit, and the continued support for the audit probably reflects the major shift of attitude now occurring in Britain. After a year our most notable success was in rigorously analysing a year's results of general audit to produce a closely defined set of minimum standards for clinical notes that had the full support of the medical staff. These are in a form that may be monitored fairly quickly with a new questionnaire (box), in which unambiguous closed questions replace the earlier subjective judgments. This should not only reduce interobserver variation but also be usable by an audit nurse as well as by the physicians, which is a valuable development for any future quality assurance programme in the hospital. Also there was a generally acknowledged improvement in standards. A controlled, blinded study of medical records with the new questionnaire is currently under way to test whether this is a justifiable claim and whether the improvement may be attributed to the audit process.

Improved record keeping undoubtedly benefits continuity of care and serves an important medicolegal requirement, as well as being a prerequisite for other forms of audit. We must still assume, however, that better notes reflect better clinical care. For auditing clinical management the questionnaire based general audit of randomly selected notes was less helpful than the audit of specific topics. To define and improve standards of clinical care we found it better to select series of patients with particular diagnoses, so that the discussion was well focused and directed towards establishing agreed clinical guidelines. From these guidelines we are beginning to develop simple checklists, along the lines of monitoring criteria,[11 13] for identifying easily whether the key items in the guidelines have been adhered to.

It is clear that the classic elegance of the audit cycle[1 3]—observing practice, setting standards, improving practice, and observing practice again—is far more muddled in the real world. The stages of the audit cycle

interact in complex and subtle ways. For example, we inevitably used implicit standards in making observations; the very act of observation seemed to improve practice; and agreed standards were tempered by the feasibility of improvements.

Another lesson is that a great deal of work is needed to run and evaluate such an audit, not only to perform the audit itself but to arrange and service the meetings; select random notes and distribute them with the questionnaires; chase the responses, enter the results on to computer and analyse them; develop and distribute the guidelines and standards; ensure that suggestions for improved practices are followed through; and, above all, to maintain momentum and combat flagging morale when the auditors and audited alike begin to wonder whether it is all worth while. After a year of working our way around the audit cycle, however, we are convinced of its value. We have come a long way, and we gladly accept the need to go much further.

We thank Ms Jane Wadsworth for statistical advice, Ms Jackie Glossop for her invaluable administrative efforts, and the other members of the steering committee including Drs D Bell, C Cayley, M Dancy, H Davies, D Loft, S McHardy-Young, F Mathey, G Misiewicz, S Roach, P Sharp, and D Wood.

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How easy is it to contact the duty medical doctor responsible for acute admissions?

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Abstract

***Objective*—To ascertain ease or difficulty of contacting duty junior doctors responsible for acute medical admissions by telephone.**

***Design*—Telephone survey of hospitals in six health regions in England and Wales.**

***Setting*—70 Randomly selected hospitals, 15 of which were excluded because of non-acceptance of acute medical admissions.**

***Participants*—71 Duty doctors (duty house physicians, senior house officers, or registrars responsible for acute medical admissions) in 48 hospitals; seven duty doctors in seven hospitals were excluded (four declined to participate and three required a written explanation of the survey). 67 Doctors gave full information to all questions.**

***Main outcome measures*—Time taken for hospital switchboards and duty doctors to reply to telephone call, diagnoses of patients recently admitted, and on call rotas and hours of sleep of duty doctors.**

***Results*—Hospital switchboards responded within 30 seconds in 87 (74%) calls, and in 76 calls (64%) the duty doctor requested was contacted within a further two minutes. Chest pain, possibly due to myocardial infarction, was the most common reason for acute medical admissions. Nearly half (48%) of the duty doctors in larger hospitals reported having 4·5 hours sleep or less on their nights on call. Most (30) were on a one in three rota; two were on a one in two rota.**

***Conclusions*—Despite impressions to the contrary contacting the duty medical team by telephone seemed fairly easy. Although most junior doctors were on a rota of one in three or better, insufficient recognition may be given to their deprivation of sleep during nights on duty.**

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Introduction

Family doctors attempting to arrange the admission of a patient with a medical illness as an acute admission often state that it is difficult to contact the admitting house physician, senior house officer, or registrar responsible for receiving the patient and allocating a bed. We decided to find out just how difficult this was, by means of a telephone survey. We also obtained information about the numbers of acute medical admissions and the associated diagnoses and inquired about the duty rota of the admitting doctors and the amount of sleep they had had in the previous 24 hours.

Methods

Six of the NHS regions in England and Wales were chosen at random (North West Thames, South East Thames, Trent, West Midlands, North Western, and South Western). According to the *Medical Directory*, hospitals within each region were graded as large and small hospitals with reference to the median number of beds within each region. From this list 35 large hospitals and 35 small hospitals were chosen randomly. Fifteen hospitals were then excluded as they had never accepted or no longer accepted acute medical admissions. Telephone calls were made by the student authors to the remaining 55 hospitals over two weeks.

The interval between the first set of ringing tones and the time taken for the hospital switchboard to reply and the interval between requesting the switchboard operator to connect the caller with the duty house physician, senior house officer, or registrar responsible for acute medical admissions (the duty doctor) were recorded. When the duty doctors answered, the callers briefly explained the inquiry and requested them to record the age, sex, and provisional diagnosis of all patients admitted during their current 24 hour on call period and of those who could not be admitted, even though duty doctors thought that admission would have been advisable. The callers also explained their interest in how undisturbed was the duty doctors' sleep during the night on duty and sought information about