even one's own patients is to run the risk of forgetting vital information.

Because this is a training practice there was a need for good records for teaching. Furthermore, the practice has occasionally engaged in research and has compiled over the past four years a disease index and follow-up registers, which it is impossible to do without decent records. The huge discrepancy with the standard of our records was crystallised in 1974 when Dr Ian Tait of Aldersburgh asked us to take part in a trial sponsored by the Carlew-Stanning Foundation of problem orientation of general practitioners notes. This system used (a) patient questionnaires, (b) summary cards, (c) social history cards, and (d) prescription cards.

All continuation notes were classified using the SOAP system (S, subjective impression; O, objective impression; A, assessment; P, plan).¹ At the end of six months the system was evaluated and we concluded that although the SOAP system was not a practical proposition in general practice some aspects of the whole package—namely summary, social history, and prescription cards—were definitely valuable. We found that patient questionnaires (Fig 1) (detailing important social, medical, and family history) were most useful when given to patients when registering. As a spin-off from the project we found that when these cards were used it was a logical development to sort all record envelope contents into chronological order and treasury tag them. Sorting through the FP7/8s, hospital correspondence, and investigations, we realised that much of the contents of the folders were either totally irrelevant or illegible, and such cards or sheets were discarded.

Before that some records had been sorted and stapled in chronological order; some outdated and unwanted items had been discarded; and some patients had "bounced" significant diagnoses and, especially for new patients, had made summaries. But there had been no systematic approach to sort out all the prevailing muddle. After discussions with all six partners the following protocol was drawn up:

- (1) All correspondence and investigation results should be chronologically sorted and treasury tagged.
- (2) All duplicated or worthless sheets should be discarded.
- (3) Put all FP7/8s in chronological order, discarding those with illegible information on them, and treasury tag.
- (4) Compile a summary card for all patients, particularly those with bulky or gaudy records (PC2/6a).
- (5) Include a social history card for selected patients.
- (6) Record all long-term medication on a separate prescription card and also record on this card any drug allergies and sensitivities.
- (7) Initiate the use of flow sheets where appropriate—for example, managing hypertension.

How we did it

Having decided that these were fair requirements for good general practice records, the next problem was how the change should come about. All partners were asked to systematically sort through as many notes as they could, concentrating particularly on patients with bulky notes. The practice manager was briefed on these aims and asked to incorporate new requirements into the procedure he used to sort records received from the family practitioner committee. He was already making up age/sex cards and collating with the records temporary notes produced while waiting for the originals to arrive from the family practitioner committee. He was asked to place all FP7/8s in date order and add to them medical summary, family and personal history, and drug treatment cards (Fig 2). For newborn infants he also added the vaccination and vaccination card (FP7A/8A). He was asked to treasury tag all the cards through the top left corner. Next, he was asked to place all previous letters, reports, and other documents in chronological order and he was asked to place a paper binder, also in the top left corner, is more suitable than a treasury tag for this purpose. (There are many types on the market, but for our purpose the 9.75" x 5.5" base is the most suitable.) As a further practical point our practice manager has found that in adopting the standard size of 5.75" x 8.25" all enclosures fall once into a medical envelope and are easily read. Larger A4 sheets are fastened at the top right corner and folded once.

The penultimate step in this procedure is done because records are kept at each of the four surgeries: the envelope is colour-coded in the lower address column and the age/sex register is annotated accordingly. Finally the medical records are passed to the appropriate partner to bring cards up to date and discard irrelevant material as previously described.

New patients registering with the practice are asked to bring their completed patient questionnaire with them to an initial consultation—they are encouraged to meet their new general practitioner even if they have no particular problems. Using the questionnaire at this consultation, the summary card and, if relevant, social history and prescription cards can be constructed. The practice manager also

FIG 2—Record cards held together by a treasury tag.

writes into the records in red ink selected results of investigations as decided by individual doctors and less often selected extracts from hospital letters, allowing the original report or letter to be discarded and reduce record bulk.

There is no doubt that sorting a bulky record envelope is a time-consuming process and may take anything up to half an hour. Fortunately the great majority of records can be sorted in minutes. It is possible to delegate much of this work to ancillary staff, and although our practice manager does this it could of course be done by any trained person.

It is difficult to cost this process accurately. As a rough estimate, if one assumes that a practice has not filled its quota of ancillary staff and therefore is entitled to the 70% reimbursement of wages, the following calculations may give some idea of cost. About 20 record envelopes can be processed in one hour: for a practice with 10,000 patients this would take 500 hours. At a net figure of perhaps 50p an hour, the total cost would be £250. This of course would be spread over as long a period as desired. The other expenses are the cost of treasury tags, which can be bought for 7.62p per thousand and paper binders at £2.00 per thousand. We use Carlew-Stanning Foundation cards supplied at £14.95 per thousand. It is perfectly reasonable, however, to use FP9A/9B, which are supplied free of charge. If the words "ad treatment" are struck out then a summary card has been made. Overprinting is an alternative.

Keeping records up to date requires regular review and demands a major effort in itself if it is done when seeing the patient this will take only a short time.

What it's like now

Over the past six years we have attempted to process our patient records in this way and have managed to cover 60%-70% of all records, especially the "bulky" ones. With the help of our practice manager the notes of all new patients over the past six years have been sorted. The greatest difficulty now lies with patients who have been in the practice for many years. Because a general practitioner knows a patient so well he (or she) is tempted not to bother with sorting the notes, and it is often a partner faced with one of these bulky records and an unknown patient who is goaded to do the drudgery work.

There is definitely a place for "partial" processing of notes. We have found, for example, that for the majority of patients the social history card has not been completed—it is reserved for problem families and the like. A prescription card may similarly be omitted if the patient is not on long-term medication. It is common practice to enter short courses of treatment on this card. But summary cards and the chronological sorting and fixing of FP7/8s and correspondence seem mandatory.

From the point of view of the partners there is no doubt that the exercise has been worth while and we think it has improved our standards of medicine. What critics note is it is not uncommon to discover information of which one was unaware. It is our firm conviction that using processed notes makes consultation quicker, less frustrating, more efficient and safer. We are all relieved when confronting a patient with a long and complicated medical history to find well-organized notes with an up-to-date summary and prescription card.

References

- 1 If we were considering setting up a similar operation again I think, in essence, we would do things very much as we did. In place

Audit at Work

In Lincolnshire

ROBIN C FRASER

In 1974 the four local medical committees (LMCs) in Lincolnshire amalgamated to form the Lincolnshire Local Medical Committee. This LMC was thus able to approach the problems of primary care throughout Lincolnshire without having preconceived ideas, or being bound by local traditions in any of its component parts.

In preparing its submission to the General Medical Services Committee (GMS) working party on the "new contracts" for general practitioners in 1978 the Lincolnshire LMC set up its own working party to examine all aspects of primary care in Lincolnshire. As part of this it looked at medical audit and reported: "The profession must provide a high standard of care and devise ascertained means of proving that this is being delivered." The local working party report was "accepted unreservedly" by the Lincolnshire LMC, and a further working party was set up with the Lincolnshire Division of the Royal

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of the prescription card, however, we would probably substitute a flow sheet. This has many advantages over the treatment card in that changes in medication and dosage, or both, can be clearly displayed without confusing alterations, which may mar the usefulness of the present treatment cards. In addition, the flow sheet may be used to display key features relevant to the long-term follow-up of many conditions. It might also be feasible to employ someone specifically to sort notes.

Conclusion

Improving general practice records is probably one of the most pressing remaining needs for the improvement of primary care in Britain. It is linked inevitably with audit, for without adequate notes audit becomes impossible. We have found that in a moderate size group practice it is possible to improve records, but that this is a continuing process that is never completed. We think it has been worth while and we are convinced that any system such as this would apply to the majority of general practices in Britain.

I am grateful to Dr Hugh Ford MVO, for help in preparing this paper; for the valuable advice given by Mr Brian Kendall, our practice manager; and for secretarial assistance from Miss Clare Richards.

References

- 1 Tait IG. The clinical record in British general practice. *Br Med J* 1977; ii:863-8.
- 2 Wood LL. The problem orientated record as a basic tool in medical education, patient care and clinical research. *Ann Clin Res* 1977; iii:131-4.

College of General Practitioners (RCGP) to examine medical audit in general practice. This group concluded that audit is not necessarily research although there are areas of overlap between audit and research; that audit cannot be imposed; that there was "a need for the involvement of a university department of general practice."

In May 1979 the Department of Community Health at the University of Leicester (the linked university for Lincolnshire) was invited to collaborate. A series of meetings took place between Dr Aitken (chairman of Lincolnshire LMC) and also a representative of Lincolnshire RCGP, Professor Marinker, and myself. In November 1979 Professor Marinker addressed a full meeting of the Lincolnshire LMC on audit in general practice. Two meetings, to which all general practitioners in Lincolnshire were invited, were arranged for October 1980 in Boston and Lincoln under the title, "What's going on in your practice, doctor?" Six doctors (including two trainees) agreed to report at each meeting on their personal audit activities. These reports would be subject to comments and criticism by Professor Marinker and myself before being discussed at the meeting. In July 1980 a notice of these meetings was sent out. The joint sponsorship of the meetings was stated in the programme (MM

and I were described as "friendly academicians", and although the covering letter did make it clear that "imposed audit" was not acceptable, it stressed the need for doctors to be prepared to examine their clinical performance critically.

At the meetings 10 minutes were allocated to each presentation, followed by a five-minute discussion period and a half-hour session for general discussion. Ten minutes were also allocated to introductory and concluding sessions by Professor Marinker and myself respectively.

Bulky files

Dr A was concerned at the accumulation of paper (hospital letters, laboratory reports, etc) in his practice medical record envelopes, which was causing acute storage problems and a profusion of "fat folders." A pilot study had shown that an extra 10 1/2 inches of filing space per 1000 patients per annum was required if all reports were filed. In his practice, therefore, 7 feet 2 inches of extra filing space would be filled each year and a new filing cabinet would be required every three and a quarter years, which the practice storage capacity could not accommodate.

The practice agreed on a policy of discarding all unnecessary letters and reports—for example, only one hospital letter was retained for problems completed five years earlier; only the latest cervical smear report was retained; and laboratory and x-ray reports were summarised in the notes. This policy resulted in a 30% reduction in the amount of space the files occupied.

Comments

This was a good example of a single practice activity with widespread application. The practice had identified the problem, identified it by sampling, and agreed on criteria for a course of action, which was then implemented and subsequently evaluated to confirm the benefit. The problems in applying these lessons could be reaching agreement as to what to retain and accepting the initial work load.

Outpatient referrals

Dr B presented an analysis of hospital outpatient referrals over an eight-year period from a three-man partnership. The aims were to identify the referral pattern of each doctor and to compare the referrals made to the two hospitals that serve the practice.

The referrals were identified by the practice secretary, who made a record of each referral when typing the dictated letter. The results were collated annually by Dr B and expressed as rates per 1000 consultations. (One partner lost interest and

	All referrals		Referrals to rheumatology department	
	Dr A	Dr B	Dr A	Dr B
1972	32	19	3	0
1973	43	25	10	2

withdrew from the study). Both doctors' referral rates increased with time, but one referred almost twice as often as the other. The most striking difference was in the number of referrals to the rheumatology department. In comparison with previously published work they noted that all referral rates had wide variability. They also noted a reduction in referrals to the ophthalmology department when no consultant was in post and a major increase in referrals to the rheumatology and gynaecology referrals to two new consultant gynaecologists.

(1) Only patients with proved pernicious anaemia should be given vitamin B₁₂ injections.

(2) For a diagnosis of pernicious anaemia to be confirmed patients must show macrocytosis, low serum B₁₂, and a reticulocyte response to B₁₂ injections.

(3) Injections of B₁₂ should be given at intervals of at least two months.

Forty patients were identified by asking the practice nurses and doctors to make lists of patients receiving B₁₂ injections over several weeks. This showed that 35 patients had been labelled at one time or another as having pernicious anaemia and five as having Crohn's disease, multiple sclerosis, etc. Of the 35, 22 had some supporting evidence of pernicious anaemia, three none at all, seven had mixed anaemias, alcoholism, or small cell disease, and there were three others. Only 12 of the 35 satisfied all his diagnostic criteria of pernicious anaemia. Many patients were receiving injections at weekly or fortnightly intervals. Depending on the severity of the criteria selected, he showed that 200-400 injections of vitamin B₁₂ were being given unnecessarily.

Comments

Dr D was congratulated on his excellent piece of work. His criteria may not receive universal acceptance, especially for patients already receiving B₁₂ injections, because of the problems of trying to stop what for many patients would be longstanding—and reassuring—treatment. Again, although the notes did not contain confirmation of pernicious anaemia, an unknown number of patients may have originally had pernicious anaemia. Hydroxycobalamin could be used instead of cobalamin because of its superior effectiveness at no increased cost.

It would, however, be advantageous to have some collectively agreed criteria for starting B₁₂ injections in the future. So far he had been too difficult to press the point, which again illustrates a problem with audit. Quantifying problem areas with numerical data is the first step, but implementing and evaluating policy and behaviour changes leading to more effective and efficient use of medical resources and consequent improvement in patient care must be the ultimate aim.

Prescribing psychotropic drugs

Dr E described "practice activity analysis—a practical approach to audit" (PAA) developed by the Birmingham RCGP research unit and gave details of a group project carried out in Lincolnshire using this technique to audit the prescribing of psychotropic drugs. The essential feature of PAA is that it provides a facility whereby a general practitioner can measure commonly occurring events in his practice and relate the results to those obtained by colleagues. The PAA unit provides a series of audit packages on various topics—for example, repeat prescriptions, referrals, and visiting profiles. The results are analysed centrally and returned to the individuals. Only for discussion at group meetings led by a "resource person." These group meetings allow doctors to compare their performance with their peers, which enables them to identify, seek reasons for, and, hopefully, rectify major anomalies in their clinical practice by a process of peer review. The package can then be repeated to evaluate this change in behaviour.

The results of the Lincolnshire study predictably showed wide variations in psychotropic drug prescribing.

Comments

The major advantage of the PAA scheme is that it relieves individual doctors of the need to design an appropriate recording and analysis procedure for themselves, as the various pro-

Comments

The major design problem was the absence of a checking procedure to ensure that all referrals were included in the study. This was particularly important in view of the length of the study and the fact that not all the partners were enthusiastic about it. These factors could cast doubt on the validity of the results. It was suggested that a shorter period of initial data collection, say two years, would have provided sufficient information about referral rates and patterns. This could have been followed up by programmes to provide more specific information on the detailed clinical processes involved in each doctor's decision to refer. Recent information suggests that referral rates are most influenced by the attitude of the doctor rather than by patient variables or practice location. No reasons were established for the disproportionate rheumatology referral rates.

This was a potentially valuable intrapractice audit that could achieve more if the reasons for the differences noted were studied.

Patients on the pill

Dr C (trainee) presented a personal audit of patients taking oral contraceptives. She devised a list of minimally acceptable criteria for starting oral contraceptives and for the clinical supervision of pill-takers. The medical records of 23 patients on the pill were then examined to determine whether their selection and subsequent pill changes were sometimes difficult to justify. Thirteen patients—including the only two patients over the age of 40—took a pill containing 50 µg oestrogen. Little information was recorded about patients' smoking habits.

These results were discussed in the practice and it was agreed that changes were needed. The intention was to repeat the audit in one year to determine whether the agreed criteria were being met.

Comments

The rationale of this audit was that by determining and implementing certain aspects of structure and process a more satisfactory outcome could be assumed. Two major lessons concerning data collection in practice were illustrated by this presentation:

- (1) Practice medical records are unreliable as a source of accurate data—for example, the fact that the blood pressure was not recorded in 60% of instances could mean that either it was not taken or it was taken and not recorded.
- (2) The opinions and impressions of what doctors think they are doing are often at variance with what they are actually doing.

The doctors in this study were shocked at the results. The follow-up study would require a list of criteria agreed by all the doctors after a review of the evidence of minimally acceptable criteria and the institution of an agreed pattern of structured recording. Advice on determining the total practice population of women taking the pill was given with a view to identifying a representative sample.

The trainee was congratulated for her initiative in identifying shortcomings in the practice and in stimulating the partners to discuss possible changes.

Vitamin B₁₂ injections

Dr D (trainee) had conducted an audit of patients receiving vitamin B₁₂ injections in two practices. The trainee in D. He defined the following acceptable criteria of standards:

grammes have all been tested by the PAA unit. This helps to standardise procedure and compare results between doctors and practices. It also enables us to monitor more closely and meticulously recorded, but there were crucial flaws in the design and method. The need for a clear statement of the aims was stressed, and it was important to ask questions that could produce meaningful results. Precise definitions of terminology were required—for example, what is meant by hypertension, was the fourth or fifth phase used to determine diastolic blood pressure?

Advice on sampling techniques and the problems associated with inadequate sample sizes were outlined. These factors would tend to introduce bias and therefore diminish the credibility of the results on which plans for subsequent management were based. For example, in this study 16% of the sample were under 40 years of age and a prominent symptom was headache—a finding which is not supported by large-scale studies on hypertension. The need to guard against the temptation to make statements and plans that are not supported by the data was also emphasised.

Patients with hypertension

Dr F reported on the presentation, diagnosis, investigation, and management of patients with hypertension, using a cohort of 25 patients and comparing his performance with that of a neighbouring colleague who identified 15 patients for study.

Comments

It was obvious that much time and effort had been expended on this project, which was well-motivated and meticulously recorded, but there were crucial flaws in the design and method. The need for a clear statement of the aims was stressed, and it was important to ask questions that could produce meaningful results. Precise definitions of terminology were required—for example, what is meant by hypertension, was the fourth or fifth phase used to determine diastolic blood pressure?

Advice on sampling techniques and the problems associated with inadequate sample sizes were outlined. These factors would tend to introduce bias and therefore diminish the credibility of the results on which plans for subsequent management were based. For example, in this study 16% of the sample were under 40 years of age and a prominent symptom was headache—a finding which is not supported by large-scale studies on hypertension. The need to guard against the temptation to make statements and plans that are not supported by the data was also emphasised.

Conclusions

After these meetings the sponsoring groups came to the following conclusions:

- (1) The co-operation of the three organising bodies achieved a "turn-out" greater than could achieve on its own. (Over 40 doctors attended each meeting.)
- (2) The personally signed letter of invitation sent to every Lincolnshire general practitioner from the chairman of the LMC also contributed to the high attendance rate.
- (3) There is an increasing desire among Lincolnshire general practitioners to assess their standards of care and service with a view to effecting improvement.
- (4) Collaboration between the three bodies should continue with a view to early implementation of active audit programmes in Lincolnshire.
- (5) An audit advisory and support service is required and should be based at the University of Leicester.

On behalf of the Lincolnshire LMC, the Lincolnshire Division of the RCGP, and the Department of Community Health, University of Leicester, I thank the following doctors for presenting reports of their audit activities: Dr Sydney Bell, Dr Stuart Evans, Dr Chris Hubbard, Dr Margaret Magan, Dr Jonathan Selvey, and Dr Michael Townsend.

This is the first of two articles.