

Self-audit of prescribing habits and clinical care in general practice

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SUMMARY. General practitioners' prescribing habits were studied using encounter forms during a period of three years. Analysis of the first year's forms revealed examples of inappropriate prescribing, so an audit was undertaken on the treatment of fungal skin infections and coughs and colds in children. Data collection was continued for a further year to measure any changes in prescribing. Analysis after audit showed that more appropriate prescribing had reduced the number of drugs prescribed as well as the number of repeat consultations needed before resolution of the problem. These findings suggest that the continuous use of encounter forms can accurately reveal the prescribing habits of general practitioners. Self-audit can then be performed on a continuing basis with little disruption of the general practitioner's normal routine.

Introduction

THE use of medical audit to improve clinical care has been widely advocated (McWhinney, 1972; Williamson, 1973; Barber, 1976). Many studies have been undertaken to study the range of drugs prescribed by general practitioners and the reasons for their use (Wilson, 1971; Patterson, 1972; Berkeley and Richardson, 1973; Parish and Austin, 1976), but little work has been done to examine the effect of such prescribing on the course of illnesses treated. Audit is of value only if it leads to improved clinical care (*British Medical Journal*, 1976a).

Aims

This study was designed to discover bad prescribing habits, to formulate plans for their correction, and to

monitor subsequent changes in patient management. Our aim has been to provide the best possible care in general practice. Such care may be defined as that standard of care which is most acceptable to the patient, the doctor, the community and the Department of Health and Social Security (DHSS). The patient's requirement is to be restored to his previous level of health (if this is possible) as quickly, safely, and painlessly as possible. The doctor requires that this is done in as few consultations as possible, and the community requires that the process of care and the patient's return to work is as rapid as possible. Finally, the Government (through the DHSS) requires that the method of treatment should be the most cost-effective available.

Method

Parish has argued that prescribing should be appropriate, economic, effective, and safe (Parish, 1973). We have collected and analysed data on our prescribing habits so that they may be evaluated by Parish's criteria in some clinical conditions. This study was started in conjunction with the Oxford Drug Monitoring Study (Skegg *et al.*, 1977).

The practice is rural but covers the town of Banbury and its surrounding villages. At the beginning of the study it was a single-handed practice with 1,350 patients but grew to 2,090 patients in the second year and 2,520 in the third year when a second partner was engaged. As Banbury has been a developing town, the practice mainly recruited the new families moving into the area, so the age/sex and social class profile shows a marked increase in young families in social classes 2 and 3.

For the three-year period from March 1975 to February 1978 a carbon copy was taken of each prescription issued by the practice, and the disease or problem for which each drug was given was added to the form (Figure 1). All doctor/patient contacts were recorded as were prescriptions issued after telephone consultations and repeat prescriptions.

Diagnoses and problems were coded using the Oxmis system (Perry, 1977 and 1978) and drugs were coded by

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the method developed for the Oxford Drug Monitoring Study.

Throughout the study details of all prescriptions issued were tabulated using the computer facilities of the Oxford Community Health Project. From these tabulations we were able to study the drug treatment of any problem or condition and also check the number of prescriptions given to each patient. For three months in each year we obtained photocopies of prescriptions dispensed for random months from the Prescription Pricing Authority (PPA) without previous knowledge as to which months would be selected. These were used to check the accuracy of our recording methods.

Results

Accuracy of data collected

Throughout the study we received photocopies of each prescription dispensed from the PPA for three out of the 12 months. For each of these months we were able to match the majority of duplicate forms with the original prescription but there were always some prescriptions and some forms for which matching documents could not be found.

During the course of the first year, the number of unmatched prescriptions fell, indicating the increased thoroughness with which carbon copies were taken. A carbon copy was not made by the doctor for five per cent of prescriptions. For one month in each year the PPA analysed our prescriptions for its annual review of prescribing costs. When all the prescriptions and encounter forms were matched during these months we noted that less than three per cent of forms were not matched with a prescription, indicating that the number of prescriptions issued, but not taken to the chemist for dispensing, was under three per cent of the total.

Analysis of prescribing habits

During the first 12-month period a total of 7,748 prescriptions were entered on the computer file. Assuming that five per cent of all prescriptions were not included because a carbon copy was not taken, the estimated total of prescriptions issued during the year was 8,135. This did not include prescriptions for dressings and appliances, which were not included in the Oxford Drug Monitoring Study. Assuming that the average patient list was 1,550 (as it rose at a constant rate from 1,350 at the beginning to 1,750 at the end of

Figure 1. Encounter form used in the study. A carbon copy of the prescription issued is made on the right hand side of the form and the doctor adds the indication for each drug on the left. Both drug and diagnosis are then coded and the information entered on the patient's file.

<u>INDICATION(S) FOR EACH DRUG</u>	<u>CARBON COPY OF E.C.10.</u>																		
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the first year), the prescription rate for medicines was 5.25 items per patient per year.

The number of different drug preparations used during this first year was 472 (excluding dressings and appliances), but this included prescriptions from one full-time doctor, an assistant, and three locum doctors.

During the third 12-month period, when all prescriptions were again monitored, a total of 10,110 items were prescribed. The average list size for this year was 2,213. Again assuming that five per cent of prescriptions were not included, this gives a prescription rate of 4.79 items per patient per year. (This figures does include dressings and appliances.)

Audit of clinical care

The main purpose of the study was to use information obtained about our prescribing habits to audit the care given in certain clinical situations. This was done for several conditions commonly encountered in general practice and a brief description of the audit of two of these is presented here. Fungal skin infections were chosen because we felt they were difficult to treat effectively in general practice and were often referred by us for consultant dermatological advice. Coughs and colds in children were chosen because we seemed to spend an excessive amount of time in the winter dealing with these minor complaints and we felt there was a case for reducing the number of prescriptions issued.

Treatment protocols for these conditions were drawn up for the practice (Appendix) and they are regularly updated in the light of our experience and the published findings of other doctors.

Fungal skin infections

We listed all the drugs used in fungal skin infections during the first year (Table 1) and found that no prescriptions had been issued for Whitfield's ointment (which is the standard treatment for fungal skin infections and is relatively cheap) but there were a large

number of prescriptions for 'Tri-Adcortyl' cream, which is a combination, proprietary preparation with no specific activity against ringworm.

Treatment protocols were produced for all the common fungal skin conditions and during the third year of the study we monitored the changes which occurred in our prescribing habits as a result of the auditing process. Table 1 shows that in 1977 after the audit, we stopped prescribing 'Tri-Adcortyl' cream and started prescribing Whitfield's ointment. We also noted that many fewer prescriptions for griseofulvin tablets were needed. Comparing the findings for 1975 and 1977 we found that although exactly the same number of illness episodes were treated in both years, the total number of items prescribed fell by a third from 60 to 39 and the number of consultations required also fell from 44 to 31 following the audit of our prescribing habits.

Table 1. Comparison of the number of consultations and items prescribed for fungal skin infections before and after audit.

	1975	1977
Patients treated	29	33
Illness episodes	33	33
Consultations	44	31
Repeated prescriptions	9	6
Items prescribed	60	39
<i>Number of prescriptions for each agent</i>		
'Tri-Adcortyl' cream	29	0
Griseofulvin tablets	12	5
'Tineafax' preparations	6	4
'Mycil' preparations	6	5
'Jadit' preparations	3	0
'Canesten' cream (clotrimazole)	2	14
Whitfield's ointment	0	7
Others	2	4
	60	39

Table 2. Comparison between the illness episodes and number of items prescribed for colds and cough/bronchitis/chest infection in children under 15 years of age.

Age group	Colds				Cough/bronchitis/chest infection			
	1975	1977	1975	1977	1975	1977	1975	1977
	Illness episodes	Number of items prescribed	Illness episodes	Number of items prescribed	Illness episodes	Number of items prescribed	Illness episodes	Number of items prescribed
Under 1	31	41	28	24	25	35	16	14
1 to 4	33	44	48	38	90	116	49	44
5 to 9	6	6	14	8	27	45	55	55
10 to 14	0	0	9	5	8	11	25	27
Totals	70	91	99	75	150	207	145	140

Table 3. Number and percentage of prescriptions issued before and after audit for cough and bronchitis/chest infection in children under 15 years of age.

	1975		1977	
	Number of items	Percentage of items	Number of items	Percentage of items
Cough				
'Actifed' compound linctus	58	34	77	66
'Ventolin' (salbutamol)	43	25	19	16
Antibiotics	14	8	8	7
Others	55	32	13	11
	170		117	
Bronchitis/chest infection				
'Actifed' compound linctus	1	3	2	9
'Ventolin' (salbutamol)	9	24	7	30
Antibiotics	16	43	12	52
Others	11	30	2	9
	37		23	

Coughs and colds in children

Upper and lower respiratory conditions in all age groups accounted for 16 per cent of the total prescriptions issued in the first year. Over one third of these prescriptions were for children under 15 years of age.

Colds occurred mostly in the under five-year-olds (Table 2) but more cases of cough and chest infections were noted in the older age groups. No attempt was made to arrive at an exact anatomical or aetiological diagnosis and so for most analyses we aggregated all patients with cough, bronchitis, or other chest infections together and considered them as one clinical syndrome.

Only eight per cent of prescriptions for patients with the diagnosis of 'cough' were for antibiotics but this rose to 43 per cent when 'bronchitis' or 'chest infection' were diagnosed. We felt that our care would be improved by providing simple health education for patients, encouraging them to purchase simple remedies over the counter so that they would be encouraged to treat their own coughs and colds. Tables 2 and 3 compare the numbers of items prescribed for coughs and chest infections in 1975 and 1977. We found that for colds we reduced the number of prescriptions per illness episode by 38 per cent and for coughs and bronchitis by 30 per cent. Although there was a comparable number of illness episodes for bronchitis and chest infections in the two years (150 in 1975 and 145 in 1977), the number of items prescribed fell from 207 to 140. This fall was fairly evenly spread across all the drugs prescribed, and

there was no decrease in the percentage of prescriptions for antibiotics (although in all chest complaints taken together only 14 per cent were given an antibiotic).

Discussion

Clinical audit in general practice usually consists of data collection and analysis followed by an evaluation of the facts discovered. We believe that protocols and standards should be set by the doctor or peer group performing the audit. Any audit should be followed by a further period of data collection to monitor possible changes in the doctor's habits. It is therefore desirable to incorporate a system of clinical auditing into the daily routine of the practice so that regular data collection and analysis may be undertaken. It is important that data collection methods should be simple and take up as little time as possible. The majority of the collection and analysis should be done by suitably trained ancillary staff.

We have used encounter forms, on which a carbon copy of the prescription is taken and the details of problems and diagnosis added by the doctor, continuously in our practice for over three years. The receptionist enters the patient identification data, consultation type and date, and the time taken by the doctor to complete the form is a few seconds. This procedure does not interfere with the consultation or disrupt work.

Collection of prescription data over a short interval may alter the doctor's habits in that the recording process concentrates his mind on his prescribing habits, but if the collection is continuous over a period of months an accurate record both of morbidity and prescription habits is more likely to be obtained. It is important to stress the role of ancillary staff in continuous data collection, as once the system has been incorporated in the routine of the practice they can maintain the impetus and ensure the completion of encounter forms. Throughout the three years of this study we have found that encounter forms were not completed on only five per cent of occasions, the majority of these being routine repeat prescriptions given outside the surgery. As we can measure our shortcomings we are satisfied that the data collected accurately reflect both the morbidity encountered and our prescribing habits.

We have found that approximately three per cent of prescriptions issued were not taken to the chemist to be dispensed. This compares with seven per cent noted in a recent study in a mining community (Waters *et al.*, 1976).

Our audit of fungal skin infections brought several shortcomings to light, the most serious of which was the prescription of an inappropriate combination cream ('Tri-Adcortyl') with no anti-fungal activity. Replacement of this therapy by more suitable preparations (clotrimazole cream and Whitfield's ointment) was followed by a reduction of the return consultation rate and of the total number of items prescribed. Because there

was no external check on the patients in whom we diagnosed fungal skin infection we cannot assume that the management of this condition was necessarily improved. However, the reduction in the return consultation rate and in the number of prescriptions issued suggests that more appropriate prescribing reduced the doctor's workload and cost of therapy. Prescriptions for all skin conditions were checked to see if more nonspecific diagnoses were made in the third year. This was not the case, and the prescription of combination steroid preparations was much reduced overall.

The preparation prescribed most often for coughs and colds was 'Actifed' compound linctus. It has been argued that such linctuses do not alter the infection's course or produce much symptomatic relief (*British Medical Journal*, 1976b) so in our treatment protocol we decided to try and reduce these prescriptions.

This policy was apparently successful as the prescription rate per illness episode fell by 30 per cent for coughs and chest infections and by 38 per cent for colds, although the percentage of antibiotics prescribed did not fall during the course of the study.

We have not made a conscious effort to reduce prescribing costs but this has happened, possibly as an effect of our policy of trying to prescribe the appropriate therapy for each condition, reducing the number of prescriptions for symptom relief in self-limiting conditions, and using approved names when possible. During the two-year period from April 1975 to March 1977 the average number of items prescribed per patient per month rose by 15 per cent in the country as a whole whilst in our practice it fell by nine per cent (PPA; personal communication).

The practice's prescribing costs during this period rose from 58 pence per patient per annum to 77 pence per patient per annum (a rise of 32 per cent) compared with a rise from 64 pence to 105 pence per patient per annum in the whole of England (a rise of 64 per cent).

Although we have not been able to obtain statistics from the hospital laboratories, we believe we may have discovered a side-effect of this audit of prescribing. We now find that 40 per cent of all surgery consultations and home visits end without a prescription. However, there is a suggestion that our hospital investigatory rates are rising and there is a possibility that we now end more consultations with an investigation rather than a prescription. We suggest that future auditing of prescribing habits should also include details of investigations, hospital referrals, and sickness absence rates, as a reduction in prescribing costs may well be offset by an increase in costs elsewhere in the Health Service.

Conclusion

We believe that it is important to encourage doctors to monitor their own performance and to discover their

own bad habits rather than impose restrictions by outside bodies which will probably not have the desired effect. Self-audit by the doctor coupled with education towards self-help by the patient will optimize clinical care by producing more appropriate therapeutic intervention.

Appendix

Treatment protocols for ringworm infection of the skin and coughs and colds in children.

Tinea corporis (Ringworm of body)

Diagnosis: typical clinical picture, sometimes with history of animal contacts; microscopy shows fungal hyphae present.

Treatment:

1. Standard therapy: Whitfield's ointment BPC (full strength for extensor surfaces, half strength for flexor surfaces).
2. If Whitfield's ointment is too irritant use 'Canesten' cream 20 g (clotrimazole).
3. If there is poor response to topical agents:
 - a) consider sending scraping to laboratory for culture
 - b) give griseofulvin 500 mg daily for three weeks (adult dose).
4. If the diagnosis is doubtful and no hyphae are seen on microscopy, treatment with a steroid cream is justified (assuming the condition is an eczema). In the case of false negatives re-examination at a later date may show hyphae on microscopy, as they are not affected by steroids.

Coughs and colds in children

1. Briefly think of unusual aetiological factors in the production of cough, for example, pertussis, allergy, inhaled foreign body, viral bronchitis.
2. Listen to the chest if indicated and explain the illness to the parents.
3. Provide printed handout on the simple remedies which may be used in future.
4. If required, provide a small quantity of a suitable linctus, encouraging parents to purchase further supplies themselves.
5. Try to avoid antibiotics whenever possible.

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Applications for university places

The main trends in student applications to the Universities Central Council on Admissions continued in 1977/78. Overall numbers rose and a greater proportion of women candidates was registered. Numbers of applicants for medicine remained virtually the same.

Of 5,770 students accepted to study 'medicine, dentistry, and health,' 3,423 were aged between 18 and 19; of 3,432 students accepted for medicine itself, 2,150 were in this age group. Of 15,986 UK applicants for medicine, dentistry, and health, 7,979 were aged between 18 and 19 and 3,379 between 19 and 20. Overseas applicants tended to apply slightly later: of 3,793 who applied for medicine, dentistry, and health, 1,709 were aged 19 to 21, and 551 were between 21 and 22. Of the UK applicants for medicine and health-allied subjects, 2,460 were accepted for subjects not of their original choice. Of 7,712 students accepted in the medicine group, 5,252 were offered places for the subject they had chosen; 336 were assigned to places within the group but not their original choice; and 1,677 were not accepted for that group and were offered places for science subjects instead.

Medicine was still the most popular subject with applicants in 1978, attracting 12,089 candidates, although this number represents a seven per cent decrease compared with 1974. Dentistry and pharmacy were as popular in 1978 as in 1977, but, while pharmacy attracted larger numbers than in 1974, dentistry decreased in popularity over the four years.

Reference

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COLLEGE ACCOMMODATION

Charges for college accommodation are reduced for members (i.e. fellows, members and associates). Members of overseas colleges are welcome when rooms are available. All charges for accommodation include breakfast and are subject to VAT. A service charge of 12½ per cent is added. Children aged 12 years and over, when accompanied by their parents, can always be accommodated; for those between the ages of six and 12 years, two rooms are being made available on a trial basis. Children under the age of six cannot be accommodated and dogs are not allowed. Residents are asked to arrive before 18.30 hours to take up their reservations.

From 1 September 1978, charges are (per night):

	Members	Others
Single room	£5	£12
Double room	£10	£20
Flat 1	£15	£25
Flat 2	£18	£30
Flat 3	£20	£35

Charges are also reduced for members hiring reception rooms compared with outside organizations which apply to hold meetings at the College. All hirings are subject to approval and VAT is added.

	Members	Others
Long room	£40	£80
Damask room	£30	£50
Common room and terrace	£30	£50
Kitchen/Dining room	£10	£20
Seminar room	£20	£30
Poc room	—	£20

Enquiries should be addressed to:

**The Accommodation Secretary,
Royal College of General Practitioners,
14 Princes Gate, Hyde Park,
London SW7 1PU.**

Tel: 01-584 6262

Whenever possible bookings should be made well in advance and in writing. Telephone bookings can be accepted only between 9.30 hours and 17.30 hours on Mondays to Fridays. Outside these hours, an Autophone service is available.