

Practice Research

Prospective study of drug reporting by general practitioners for an elderly population referred to a geriatric service

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Abstract

A prospective study was carried out in which the drug history of patients which was provided by general practitioners was compared with the drugs found by geriatricians in patients' homes in 700 referrals to geriatricians. Drug compliance was not assessed. The drug history appeared to be accurate in one third of referrals. Underreporting of medication was common and increased as the number of prescribed drugs increased. Roughly one fifth of patients had at least one potential drug interaction. Keeping careful prescription records, regular review, and accurate reporting of medication should reduce drug associated morbidity in elderly patients.

Introduction

The drug history reported by the general practitioner is valuable for the hospital doctor who deals with elderly patients, as the patients may be unable to give a reliable account. The medication that the general practitioner declares that the patient is taking is often continued when patients are admitted to hospital, so accurate information is of considerable importance in managing patients in hospital. Previous studies that compared the prescribing habits of general practitioners and hospital specialists relied on the accuracy of the drug history obtained from the general practitioner.¹⁻⁴ A prospective study was carried out of patients who were referred to a geriatric service which compared the concordance of the drug history from the general practitioner with what the patient actually seemed to have been prescribed or to be taking. Potential hazards in the drug combinations were also identified.

Patients and methods

The study population comprised patients referred by 164 general practitioners for home assessment by the West of Glasgow Geriatric Medical Service over one year. Seven hundred visits were completed for 675 patients (479 (71%) women, 196 (29%) men; age range 63-101 years, mean age 81 years). Nearly all (94%) referrals were made by the general practitioner by telephone and the remainder by the general practitioner's receptionist or by letter. Most patients had been seen by the general practitioner in the 48 hours before referral.

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General practitioners were not informed about the survey until afterwards when the results were submitted to 46 of them for comment. The results were also discussed with 24 general practitioner trainees. The comments were helpful to us in preparing this paper.

A drug history was requested at the time of referral by a secretary or member of the senior medical staff. Details were recorded on a form. During the home visit the geriatrician asked the patient or carer to show the medication that the patient was taking. The drug containers were examined for legible labelling and appropriate instruction. "As directed," "as required," or "as before" were regarded as inappropriate labelling unless qualified. This was recorded along with details of what action was taken after the visit. Patient compliance was not assessed.

Drugs were grouped into 25 categories, as before, and the data were processed on a microcomputer.⁵ Potential drug interactions were identified manually and classified with reference to the "Drug Interaction Alert 1985"⁶ into three categories: (i) no interaction; (ii) moderate or minor interaction (including interactions of unclassified importance); and (iii) major or potentially serious interaction.

Regression analyses were carried out on sets of data and important relations identified.

Results

Roughly three-quarters of the patients who were referred were said to be receiving medication but nearly all (91%) appeared to be taking prescribed drugs. Self medication was rare. A mean of 1.9 drugs per patient (range 0-9) was declared but a mean of 3.0 drugs (range 0-12) appeared to have been prescribed. There was no appreciable variation in the number of drugs prescribed across the age range. Table I shows the frequency distribution of numbers of drugs found.

TABLE I—Frequency distribution of numbers of drugs found

No of drugs	No of patients
0	64
1	111
2	133
3	150
4	106
5	60
Over 5	76

Table II lists drugs in the order of frequency in which they were found. Diuretics were most commonly prescribed (51% of patients) and were unreported for 84 patients. For 15 of 83 patients on digoxin the drug was unreported. Drugs in the psychotropic, antiparkinsonian, and hypotensive groups were not reported at the time of referral for over one third of patients. Overreporting of drugs also occurred. In 28 cases diuretics were reported but the drugs were not found in the home.

For 264 (38%) patients, the total number of preparations reported by the general practitioner matched exactly the number apparently being taken. For 373 (53%) patients, the general practitioner's number was an under-

TABLE II—Classification and frequency of drugs reported and found

Drug group	Drugs reported: No of patients	Drugs found: No (%) of patients
Diuretics	272	356 (51)
Analgesics and antipyretics	125	229 (33)
Minerals, vitamins	107	167 (24)
Hypnotics	93	157 (22)
Non-steroidal anti-inflammatory	78	120 (17)
Antimicrobials	53	101 (14)
Laxatives	49	99 (14)
Digoxin	68	83 (12)
Bronchodilators	43	71 (10)
Sedatives and tranquillisers	42	67 (10)
Antacids and H ₂ antagonists	36	67 (10)
Rigidity and tremor controllers	41	64
Antihypertensives	36	60
Antiemetics	32	57
Potassium supplements	34	48
Antianginal drugs	28	47
Thyroid hormone	26	35
Antidepressants	23	30
Urinary antispasmodics	14	30
Antidiarrhoeals	8	28
Hypoglycaemics	16	22
Anticoagulants and antithrombotics	6	10
Anticonvulsants	3	10
Topical preparations	10	28
Other	58	110

estimate (three or more errors for 127 patients) and in 9%, an overestimate (up to three errors).

Drug concordance was analysed (table III). In one third of referrals the drugs declared matched the drugs found. Nine per cent of all patients were taking no drugs. An exponential relation was observed between the number of mistakes and number of drugs apparently being taken by the patient ($p < 0.001$; $r = 0.98$).

TABLE III—Errors made in reporting drugs prescribed

No of errors	No of patients
1	152
2	127
3	81
4	56
5	24
Over 6	32

A fifth of patients had at least one potential drug interaction, although no attempt was made to verify this clinically. Of the patients who were taking two or more drugs, this rate rose to just over a quarter. A few (7%) patients had a potentially major or serious interaction and one fifth a moderate or minor interaction. Interaction rate showed an exponential relation to the number of drugs found in the patient's home ($p < 0.001$; $r = 0.86$). No clear relation was shown between concordance and interaction rate.

Drug containers were appropriately and legibly labelled for roughly three quarters of patients. In all, 2096 drug containers were examined. Two patients had 12 prescribed medicines and all containers were clearly labelled with appropriate instructions. Just under one half of patients studied were admitted to the geriatric unit and a third were referred to a day hospital or outpatient clinic.

Discussion

The drug history provided by general practitioners when referring patients to a geriatric unit appeared to be inaccurate in two thirds of cases in this study. Surveys on drug interactions and prescribing

habits in elderly patients that have been carried out in hospital^{1,2} have relied on the accuracy of such information from general practitioners or from patients for their comparisons.^{3,4} Patients, however, often do not bring all their medication to the hospital, even when they are specifically requested to do so.

Underreporting occurred for all groups of drugs. Diuretics, digoxin, and thyroid hormone were not reported for a quarter of the patients who had apparently been prescribed these drugs. Psychotropic, antiparkinsonian, and hypotensive drugs are associated with the highest incidence of unwanted side effects in elderly people¹ and were not reported for one third of patients.

The apparent underreporting of drugs may be influenced by incomplete drug records, use of deputising services, and patients hoarding medicines. Many general practitioners may think that reporting creams, laxatives, antacids and vitamin preparations is not important.

Adverse effects and drug interactions occur often in elderly patients,^{7,8} and they are frequently admitted to hospital as a result of the effects of prescribed drugs.¹⁹ There was a high potential interaction rate (19%) in the study group, and our results establish that a rise in the potential drug interaction rate was related exponentially to the number of drugs prescribed. No attempt was made to assess the clinical importance of such interactions, but the identification of 7% of patients with a major or potentially serious interaction gives cause for concern.

Labelled instructions for most patients were of a high standard. Legibility may reflect the introduction of microcomputers in chemists to label containers.

Increasing the number of drugs appears not only to increase the chance of drug interaction but to increase the likelihood of the general practitioner making an error in reporting the drug history. We endorse the recommendations of the Royal College of Physicians of London in its report on medication for the elderly.¹⁰ In particular, we emphasise the importance of both undergraduate and post-graduate training in prescribing for elderly patients. Efficient record keeping, regular drug surveillance, rationalisation of treatment, and removing out of date or inappropriate medication from patients' homes should be a routine part of management by the general practitioner. This approach need not increase the workload of the practitioner, as it can be carried out on a normal visit for a repeat prescription, when the patient is seen at home, or when any change in drug treatment is considered.

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