LEADING ARTICLE

Drug Safety 1998 Oct: 19 (4): 243-250
0114-5916/98/0010-0243/$04.00/0

Drug Therapy and the Older Person

Role of the Pharmacist

Michael J. Denham[1] and *Nina L. Barnett*[2]

1 Northwick Park Hospital, Harrow, Middlesex, England
2 North Thames Drug Information, Northwick Park Hospital, Harrow, Middlesex, England

Abstract

Older people in the UK receive a disproportionate amount of medication. They comprise 18% of the population but receive 45% of all prescription items. Not surprisingly they experience drug-related illnesses – in 1980, 1 in 10 admissions to acute geriatric units were wholly or partly due to adverse drug reactions. Drugs which should be used with particular care or even avoided in older people include benzodiazepines, warfarin, digoxin, aminoglycosides, tricylic antidepressants, antipsychotics and long-acting oral hypoglycaemic agents.

Pharmacists can promote safer prescribing practices by advising both patients and doctors. The community pharmacist can assist in drug compliance by providing patients with additional information about individual drugs, identifying potential adverse drug reactions and interactions, supplying appropriate drug containers or compliance aids, and even arranging home visits for patients unable to visit the pharmacist. Some community pharmacists provide pharmaceutical advice and services to residential and nursing homes. Pharmacists' advice to doctors can include one to one discussions in either primary or secondary care, assisting in medication review, providing information to prescribing committees, compiling drug formularies, assisting in auditing of prescribing practices and organising disposal of unwanted medicines and poisons campaigns.

The advent of modern drug therapy has brought benefit to patients of all ages, including older people,[1] whose life expectancy and quality of life has been much improved. Frail older people are prescribed a disproportionate amount of drug therapy in relation to younger people because they are more likely to experience multiple acute and/or chronic diseases.[1,2] Not surprisingly therefore, they are also more likely to experience drug-related illnesses. Causes include incorrect diagnosis, inadequate review of medication, polypharmacy, problems of compliance, inappropriate treatment, and lack of awareness of how pharmacokinetics and pharmacodynamics alter with age. The situation is potentially compounded by the increasing range of

1 The term 'older people' is broadly used to indicate people aged 65 years and over. Prescribing statistics obtained from the UK Department of Health are for England only, and refer to women aged 60 and over and men aged 65 years and over. The term 'elderly' has been used in relation to these data.

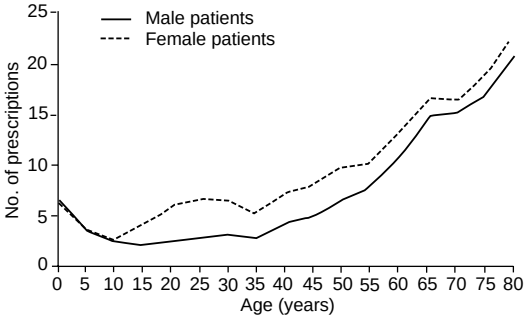

Fig. 1. Number of prescriptions per person issued by UK general practitioners in 1989 by age (reproduced from Royal College of Physicians,[3] with permission).

over-the-counter (OTC) medication now available in the UK. These factors are elaborated in section 1 so that the role of the pharmacist in improving prescribing and compliance can be put in context.

1. An Overview of Prescribing and the Older Person

1.1 Prescribing Volume and Costs

The average number of prescriptions per patient per year issued by UK practitioners increases with age from 40 years onwards (fig. 1). UK data show that in 1985, 39% of all prescription items were dispensed to elderly people, which increased to 45% in 1995. The average number of prescription items dispensed per person of the elderly population increased from 14.6 in 1985 to 21.8 in 1995. The cost of the prescriptions [National Health Service (NHS) basic prices] to elderly people rose from £4.10 in 1985 to £7.55 in 1995, accounting for 45% of the increase in Health Authorities' drug bills for this period. Thus, the number of prescription items for elderly people is not only rising but is taking an increasing proportion of the amount spent on drugs.[4]

1.2 Polypharmacy and Inappropriate Prescribing

Older people are likely to have multiple medical problems and doctors may be tempted to treat each and every one of the patient's physical and/or mental problems. As a result, a lengthy list of drugs may be prescribed to the patient. This is seen particularly in continuing care, where as many as 85% of patients have been shown to be taking up to 13 different medications.[5]

Clinical assessment may be inadequate because there is insufficient time to take a complete history and examine the elderly person. The older patient's symptoms are often nonspecific and physical signs may be muted. Consequently, there is a temptation to treat the symptom rather than the disease. This may result in inappropriate prescribing, e.g. phenothiazines being given for dizziness presumed to be due to Meniere's disease, but which could be due to postural hypotension. Sometimes a patient's symptoms, which are due to an adverse drug reaction (ADR), are interpreted as a disease of old age and another drug added to the patient's therapy.[6]

1.3 Long Term Review of Medication

Drugs prescribed for an acute illness may no longer be required once the condition is cured or controlled. A study of older patients admitted to hospital showed that about one-third of their prescriptions could be stopped without detriment to the patient. The study demonstrated clearly the problem of polypharmacy,[7] where drug therapy can be stopped either because the drugs were unnecessary or were absolutely contraindicated.[8] Drug therapy in hospital may be continued unnecessarily if junior doctors do not feel they have the authority or knowledge to stop drugs prescribed by colleagues. In the community, GPs may be reluctant to discontinue therapy initiated by other doctors – a situation compounded if more than 1 doctor is prescribing for the same patient.

1.4 Compliance

Compliance can be a major problem for older patients. Undercompliance (especially intentional) is more common than overcompliance.[9]

Patients may decide not to take the medicine because they feel well, fail to improve or experience adverse reactions. Others may fail to comply because they do not understand how, when and why

the medicine should be taken, or are unable to open the container. Doctors may give inadequate instructions either to the patient or to the pharmacist. Even in hospital, where compliance may be thought to be well maintained, 10% of regularly prescribed medicines are not administered.[10]

1.5 Pharmacokinetics and Pharmacodynamics: Changes with Age

A number of significant pharmacokinetic changes occur with age, of which the most important relates to the kidneys and liver. Glomerular filtration rate declines by approximately one-third between the ages of 20 and 90 years which reduces the rate of renal excretion for many drugs, e.g. digoxin and gentamicin.[11] Hepatic mass and liver blood flow decrease with age.[12] Liver metabolism of drugs via phase 1 reactions, e.g. oxidation, falls with age, leading to age-related reduction in clearance for drugs such as diazepam, chlordiazepoxide, quinidine, theophylline, propranolol and nortriptyline.[13]

Phase 2 reactions, e.g. conjugation, show little or no age-related change. However, normal liver function tests do not imply normal metabolism of drugs.[13]

Changes in body composition with age, with a relative increase in body fat and reduction in lean body mass alter the distribution of many lipid soluble drugs increasing their half-life, e.g. diazepam[13] and thiopental sodium (thiopentone).[14] Water soluble drugs, such as digoxin, have a higher initial plasma concentration in older people for any given dose based on bodyweight.[15] Other age-related changes are of less clinical significance. Thus, although there is a reduction in jejunal mucosal surface area and there is a slowing of gastric emptying, the rate of absorption of drugs undergoing passive absorption changes little with age.[16] Plasma albumin levels are often reduced in ill, older people, which can effect plasma drug binding, but steady-state drug concentrations are not significantly affected.[3]

Pharmacodynamic changes with age have not been studied as much, but it is evident that some systems in the body become increasingly sensitive to drugs which act on them, e.g. nitrazepam,[17] warfarin[18] and halothane.[19]

Care is therefore required when prescribing certain drugs to older people because of altered pharmacokinetics and/or pharmacodynamics, e.g. digoxin, benzodiazepines, warfarin, aminoglycosides, propranolol, tricyclic antidepressants and some anaesthetic agents.

1.6 Over-the-Counter Medications

The range of OTC drugs in the UK has expanded considerably to include the following: topical corticosteroids; nonsedating histamine H_1 receptor antagonists (antihistamines); nonsteroidal anti-inflammatory drugs (NSAIDs); nicotine patches; and, histamine H_2 receptor antagonists (H_2 antagonists). However, many such drugs are available in lower strengths compared with those prescribed.

The UK public spent approximately £1.26 billion in 1994 on OTC drugs. The use of these products is likely to contribute to problems of polypharmacy. One study showed that nearly three-quarters of older patients did not discuss their OTC medication with their GP.[20] A quarter of OTC purchases were for conditions for which the patient had already been prescribed medication by their own doctor. The reasons for taking OTC drugs included: the patients considering the conditions not being severe enough to merit consulting the doctor; convenience; the drug had been used successfully on an earlier occasion; the medicine was recommended by a friend or pharmacist; or, the patients not wanting to bother their own doctor. Elderly people use more OTC NSAIDs and H_2 antagonists than younger people.[21]

1.7 Adverse Drug Reactions

ADRs increase with age with a 3-fold greater incidence in patients over the age of 60 years compared with those under 30 years.[22] ADRs were solely or partly the cause of 10 to 16% of admissions

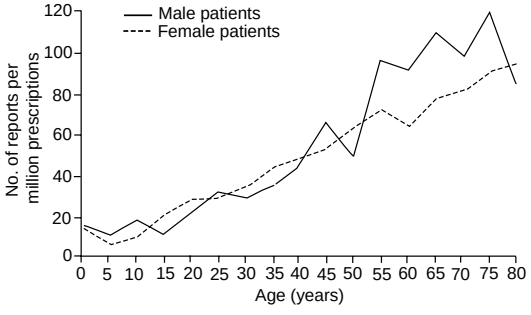

Fig. 2. Number of serious adverse drug reactions reported per million first prescriptions in 1989 by age (reproduced from Royal College of Physicians,[3] with permission).

of elderly people to acute geriatric wards.[23,24] The ADR ('yellow card') reporting system in the UK shows that the number of reports of serious reactions increases with age, especially when expressed per million first prescriptions (fig. 2). Risk factors in older patients associated with increased chance of an ADR include multiple drug therapy, female gender, small body size, hepatic or renal insufficiency and previous ADRs.[3] Examples of drugs which should, in general, be avoided in older people because of the high risk of adverse effects include longer-acting oral hypoglycaemic agents, anticholinergics for Parkinson's disease and benzodiazepines, especially those with long half-lives.

2. The Role of the Pharmacist

While the ultimate responsibility for prescribing lies with the clinician, the pharmacist has a major role in providing pharmaceutical care to patients, i.e. optimising the use of medications to achieve specific outcomes that improve quality of life.[25] Pharmacists contribute to patient care in many ways including advising doctors, compiling community and hospital formularies, providing an information source about drugs, initiating audit and organising disposal of unwanted medicines and poisons (DUMP) or return of unwanted medicines (RUM) campaigns.

2.1 Advisory Role for Patient

Over 12 500 registered pharmacies exist in the UK to which 6 million visits are made each day by members of the public. One million of these visits relate to medication enquiries. Only about one-third of patients comply adequately with their medication, while one-third comply more or less and the remainder are noncompliant.[26] The potential role for pharmacists in advising patients about the use and adverse effects of drugs is considerable, and this can contribute to improving patient compliance. The pharmacist can achieve this by providing additional information about treatment, providing a clear written list of medication(s) with dose schedules, checking for possible ADRs or interactions, and increasing patient motivation.[26] Encouragement, help with practical problems such as demonstrating how to use inhaler devices, suggestions of possible modifications to drug schedules, or referring the patient for additional help such as social services can benefit patient compliance.[26]

Community pharmacists can advise patients with physical disabilities about appropriate drug containers which are simple to open. Child-resistant containers, while successful in reducing accidental overdose in children, can be very difficult for older people to open, especially those with arthritis. Even blister packs can present difficulties. It may therefore be preferable for the older person to be given drugs in non–child-proof containers. Pharmacists can help patients with self-medication programmes and provide information about the appropriate use of compliance aids, such as the Dosett box, which divides weekly amounts of a drug into separate timed daily dosages. The UK National Pharmaceutical Association provides a useful information leaflet,[27] which is available to pharmacists and includes a list of compliance aids and stockists.

Home visits by community pharmacists to house-bound patients with suspected medication problems have proved valuable. In a study by Schneider and Barber,[28] the potential benefits of home visits by community pharmacists to housebound people with medication difficulties were ex-

amined. 16 community pharmacist volunteers made initial home visits to 39 patients referred by 14 general practitioners. Patients received a full explanation of the medication and developed an understanding of possible adverse effects, thus improving their compliance. GPs were made aware of the patients' specific problems. In 35 of the 39 visits, there were discrepancies between the medicine in the patient's possession, those which they were currently taking and those listed in the patient's medication records. Home visits to older people by community pharmacists in conjunction with home care assistants have also been beneficial for similar reasons.[29] However, the problem of most interventional studies is that compliance does tend to fall off once intervention has ceased, especially when the condition is asymptomatic.[30]

Some community pharmacists provide advice and services to residents of residential and nursing homes. This extends the potential for collaboration with primary care physicians, particularly in the management of repeat prescriptions and the monitoring of treatment.

The recent significant changes in OTC medication have already been mentioned. Pharmacists can advise about these medicines in general, and ensure that patients are not already taking similar medication from their own doctor. Since patients are not always sure what drugs they are taking, it would be helpful if community pharmacists had on-line links with GP and hospital medication records which could also help monitoring long term drug therapy.[31] In the UK, NHS patients are registered with a GP but there is no mechanism for similar registration with a specific community pharmacist, hence direct communication between the two practitioners is limited.

2.2 Advisory Role for Doctor

Pharmacists have an advisory role with doctors. Much of the advice will relate to patients of all ages, but in view of the prescribing volumes for older people there is an obvious relevance to this age group. In the UK, Family Health Services Authority pharmaceutical advisors, in collaboration with GPs, can have a major impact on primary care prescribing.[32] This was given further impetus when the UK Department of Health required health authorities to develop agreed strategies for improving cost-effectiveness of prescribing across the primary/secondary care interface, by establishing prescribing committees which all include a pharmaceutical advisor. Such committees, which are seen as independent, can provide advice in less familiar areas of clinical/pharmaceutical practice.[33] However some may not have sufficient expertise to resolve more complex issues such as the introduction of new and expensive drugs, e.g. those for Alzheimer's disease.[34] Pharmaceutical committees may offer advice about drug treatment based on clinical outcomes and quality of life.[35] Many have produced local drug formularies and guidelines to rationalise prescribing[36] which gain greater acceptance when there is local ownership.[37,38]

In the US, pharmacy services have specific mandates to undertake monthly medication reviews and give appropriate advice to the physician. Pharmacists are expected to manage labelling and ensure proper administration and storage of drugs. One particular aim, in continuing care homes, is to reduce the use of antipsychotic drugs – a target resulting from the Omnibus Budget Reconciliation Act 1987.

The continued reports of polypharmacy and inappropriate prescribing of medication in the elderly, particularly those in continuing care, point strongly to the need for a more rational approach to drug prescribing. This is important because of evidence of differing prescribing patterns between primary care physicians themselves and between primary and secondary care doctors. Studies have shown that pharmaceutical interventions can have a major financial and clinical impact.[39-41] Assessment of elderly inpatients by a multidisciplinary team, which includes a pharmacist, can be of value.[42,43] Such interventions should be assessed according to cost-effectiveness and long term outcomes such as readmission rates.[44]

Doctors in secondary care are also faced with increasing prescribing for older people and again

pharmacists are a valuable information source. This may be provided by daily visits from the ward pharmacists, who can advise on current therapy and assist in organising 'take home' medication.[45] Hospital drug information centres and the formularies are both valuable sources of advice. Pharmacists can provide drug evaluations to assist drug and therapeutic committees in their deliberations and thus ensure rational and appropriate introduction of new drugs in the hospital setting. Some hospitals provide a pharmacist for the drug monitoring advisory service, especially for drugs with a narrow therapeutic range such as digoxin, anticonvulsants and gentamicin. The success of community anticoagulant clinics, hospital based seizure and clozapine clinics managed by pharmacists has been reported.[46-48]

2.3 Auditing Prescribing Practice

Again, while this is relevant to patients of all ages, it is particularly pertinent to the older population. Pharmacists can play a major role in auditing prescribing practice. This is much better developed in primary care in the UK, compared with the hospital setting. Analysis of prescribing patterns of general practices and health authorities is possible through the prescribing analysis of cost (PACT) data provided by the Prescribing Pricing Authority. Information is collected from all NHS prescriptions and PACT data is sent out quarterly to all GPs. On each occasion, one particular therapeutic area is highlighted. However, PACT data contains no information relating to the individual patient, changes in prescription, dose or its duration, and it is therefore not possible to assess prescribing appropriateness. A pharmacist employed by the health authority can have a major advisory role within primary care[49,50] especially in interpreting PACT data.[51] However, when intervention studies aimed at improving prescribing patterns are withdrawn, beneficial effects tend to fall away.[52]

Audit of prescribing in hospitals in the UK is much less formalised and there is no equivalent of PACT data. Such a system could monitor for drug errors, adverse reactions and show what patients are actually taking, as opposed to what they are prescribed.

2.4 Disposal of Unwanted Medicines and Poisons or Return of Unwanted Medicines

Pharmacists are frequently the initiators of DUMP or RUM campaigns. The frequent reports of enormous quantities of drugs returned and the scale of wasted medication is unfortunately a continuing testimony to the fact that rational prescribing and full patient compliance has yet to be achieved. The results should be a spur to both doctors and pharmacists to keep on trying to reduce such wastage, perhaps by targeting those on multiple or frequent drug therapies, such as older people, with improved prescribing practice and advice.

3. Conclusion

The majority of older people are well and healthy, but for those with disease, modern drug therapy has brought much benefit, with improvements in both expectation and quality of life. However ADRs do increase with age and therefore prescribing needs to be well thought out by, for example, avoiding unnecessary and/or inappropriate medication, regularly reviewing long term drug therapy, improving compliance, taking account of altered pharmacokinetics and pharmacodynamics with age, and being aware of the increasing role of OTC medication when taking a patient's drug history. The value of audit in establishing sensible prescribing patterns is considerable.

While the primary prescribing role belongs to the doctor, the pharmacist can have a major impact on prescribing by advising doctors via prescribing committees, producing medication guidelines, providing an information source and initiating audit. Pharmacists can also advise patients, provide compliance aids, make home visits and provide a service to those elderly persons unable to visit the pharmacy. Prescribing for older people can be improved further by creating better communication between doctor and pharmacist in primary and secondary care and encouraging more multidisciplinary working practices.

References

1. Williamson J, Stokoe JH, Gray S, et al. Old people at home: their unreported needs. Lancet 1964; I: 1117-20
2. Jeangros C, Hausser D, Martin J. Ambulatory medical care for the elderly in Switzerland. Soc Sci Med 1990; 31: 1085-192
3. Royal College of Physicians. Medication for older people: a report of a working party of the Royal College of Physicians, London. London: Royal College of Physicians, 1997
4. Statistics of prescriptions dispensed in the Family Health Service Authorities: England 1984-1994. Statistical Bulletin Publication No. 15. London: Department of Health, 1995
5. Weedle PB, Poston JW, Parish PA. Drug prescribing in residential homes for elderly people in the United Kingdom. DICP 1990; 24: 533-6
6. Rochon PA, Gurwitz JH. Geriatrics septet: drug therapy. Lancet 1995; 346: 32-6
7. Coppel A, Law J. Avoiding the increasing problem of polypharmacy. Prescriber 1997; 8 (7): 88-90
8. Lindley CM, Tully MP, Paranusothy V, et al. Inappropriate medication is a major cause of adverse drug reactions in elderly patients. Age Ageing 1992; 21: 294-300
9. Cooper JK, Love DW, Raffoul PR. Intentional prescription non adherence (non compliance) by the elderly. J Am Geriatr Soc 1982; 30: 329-33
10. Pare NJ. 'Missed' regularly prescribed medication in a busy general hospital: a clinical audit. J Assoc Qual Healthcare 1995; 2: 121-30
11. Rowe JW, Andres R, Roban JD, et al. The effect of age on creatinine clearance in man: a cross sectional and longitudinal study. J Gerontol 1976; 31: 155-63
12. Woodhouse KW, James OFW. Hepatic drug metabolism and ageing. Br Med Bull 1990; 46: 22-35
13. Greenblatt DJ, Sellers EM, Shader RI. Drug disposition in old age. New Engl J Med 1982; 306: 1081-8
14. Christensen JH, Andreason S, Jansein JA. Pharmacokinetics and pharmacodynamics of thiopentone. Anaesthesia 1982; 37: 398–404
15. Cusack B, Kelly J, O'Malley K, et al. Digoxin in the elderly: pharmacokinetic consequences of old age. Clin Pharmacol Ther 1979; 25: 772-6
16. Iber FI, Murphy PA, Connor ES. Age related changes in the gastrointestinal system: effect on drug therapy. Drugs Aging 1994; 5: 34-8
17. Castleden CM, George CF, Marcer D, et al. Increased sensitivity to nitrazepam in old age. BMJ 1977; 1: 10-2
18. Shepherd AMM, Hewick DS, Moreland TA, et al. Age as a determination of sensitivity to warfarin. Br J Clin Pharmacol 1977; 4: 315-20
19. Feeley J, Coakley D. Altered pharmacodynamics in the elderly. Clin Geriatric Med 1990; 6 (2): 269-83
20. McElnay JC, Dickson FC. Purchases from community pharmacies of OTC medicine by elderly patients. Pharm J 1994; 253 Suppl.: R15
21. Smith FJ, Martin C. Reclassification from prescription only to pharmacy medicines: an investigation of patterns of use. Pharm J 1997; 259 Suppl.: R11-12
22. Nolan L, O'Malley K. Prescribing for the elderly. Pt I. Sensitivity of the elderly to adverse drug reactions. J Am Geriatr Soc 1988; 36: 142-9
23. Williamson J, Chopin JM. Adverse reactions to prescribed drugs in the elderly: multi centre investigation. Age Ageing 1980; 9: 73-80
24. Col N, Fanale JE, Kronholm P. The role of medication non compliance and adverse drug reactions in hospitalisations of the elderly. Arch Int Med 1990; 150: 841-5
25. American Society for Hospital Pharmacists Council on Professional Affairs. Draft statement on pharmaceutical care. Am J Hosp Pharm 1993; 50: 126-8
26. Wright EC. Non compliance – or how many aunts has Matilda? Lancet 1993; 342: 909-13
27. National Pharmaceutical Association. Aids to patient compliance. St Albans, England: National Pharmaceutical Association, 1995
28. Schneider J, Barber N. Provision of a domiciliary service by community pharmacists. Int J Pharm Pract 1996; 4: 19-24
29. Report. Pharmacists and care attendants work together. Pharm J 1996; 256: 221
30. Haynes RB, Wang E, Gomes M. A critical review of interventions to improve compliance with prescribed medicine. Patient Education and Counselling 1987; 10: 155-66
31. Hudson SA, Bowter AC. Pharmaceutical care of the elderly. (2) The pharmacists approach to medication in the older patient. Pharm J 1997; 259: 689-90
32. Braybrook S, Walker R. Influencing prescribing: a comparison of two different prescribing feedback methods. J Clin Pharm Ther 1996; 21: 247-54
33. Clark W, Ball J. MTRAC: unbiased advice for GP drug prescribing. Prescriber 1996; 7 (21): 77-81
34. Wakeman A, Leach R. Joint prescribing committees: characteristics, progress and effectiveness. Health Trends 1997; 29: 52-4
35. Wade WE, Spruill WJ, Taylor AT, et al. The expanding role of pharmacy and therapeutic committees. PharmacoEconomics 1996; 10: 123–8
36. Dowell JS, Snadden D, Dunbar JA. Changing to generic prescribing: how one fundholding practice reduced prescribing costs. BMJ 1995; 310: 505-8
37. Jenkins A. Formulary development by community pharmacists. Pharm J 1996; 256: 861-3
38. Ferrow L, Hickey EM, Jappy B, et al. The Grampian joint general practice/hospital formulary – an update. Pharm J 1997; 257: 124-5
39. Ray WA, Taylor JA, Meador KG, et al. Reducing anti psychotic drug use in nursing homes. Arch Int Med 1993; 153: 713-21
40. Mason JD, Colley CA. Effectiveness of an ambulatory care clinical pharmacist; a controlled trial. Ann Pharmacother 1993; 27: 555-9
41. Bellingan M, Wiseman IC. Pharmacist intervention in an elderly care facility. Int J Pharm Pract 1996; 4: 25-9
42. Owens NJ, Sherburne NJ, Silliman RA, et al. The senior care study: the optimal use of medications in acutely ill older patients. J Am Geriatr Soc 1990; 38: 1082-7
43. LoGuidice DC, Smith RA, Flicker LA. Specialist multidisciplinary clinics for older people: fulfilling a need? Med J Aust 1998; 168 (2): 72-3
44. Tett SE, Higgins GP, Armour CL. Impact of pharmacist interventions on mediation management by the elderly: a review of the literature. Ann Pharmacother 1993; 27: 80-5
45. Milliken B. A clinical pharmacist's contribution to discharge planning and patient counselling. In: Wills C, editor. Proceedings of the UK Drug Information Conference: 1996 Sep 18-20: Jordanstown. Portsmouth: Drug Information Pharmacy Department; 3: 92-4
46. Macgregor SH, Hamley JG, Dunbar JA, et al. Evaluation of a primary care anticoagulant clinic managed by a pharmacist. BMJ 1996; 312: 56

47. Kootsikas ME, Hayes G, Thompson JF, et al. Role of a pharmacist in a seizure clinic. Am J Hosp Pharm 1990; 47: 2478-82
48. Baigent B. Organising a clozapine clinic. Pharm Manage 1997; 13 (14): 43-6
49. Beech E, Brackley K. Domiciliary based medication review for the elderly. Pharm J 1996; 256: 620-2
50. Corbett J. Provision of prescribing advice for nursing and residential home patients. Pharm J 1997; 259: 422-4
51. Bevan B. PACT data – avoiding the pitfalls. Pharm J 1996; 257: 25-30
52. Harris CM, Fry J, Jarman B, et al. Prescribing – a case for prolonged treatment. J R Coll Gen Pract 1985; 35: 284-7

Correspondence and reprints: Dr *Michael J. Denham*, Northwick Park Hospital, Watford Road, Harrow, Middlesex HA1 3UJ, England.