

Use of hypnotic medicines by elderly people in residential homes

PETER B. WEEDLE, BPharm, PhD, MPS

JEFFREY W. POSTON, BPharm, PhD, MPS

PETER A. PARISH, MD, MFCM, FRCGP

SUMMARY. *Data relating to the use of hypnotic medicines from a descriptive epidemiological study of drug use in 55 residential homes for elderly people were analysed. Of the 1888 residents included in the study, 435 (23.0%) were receiving a total of 448 hypnotic medicines. There was preferential prescribing of short-acting benzodiazepines but long-acting benzodiazepines represented 31.7% of all hypnotic drugs prescribed. The median duration of treatment with temazepam was 0.8 years and with nitrazepam 2.5 years. The proportion of residents receiving hypnotic medicines in each home varied from 3.6% to 60.0% with a median of 24.1%. This study indicates a need for general practitioners to review their prescribing of hypnotic medicines for elderly people, paying particular attention to the duration of treatment.*

Introduction

THE use of medicines by elderly people (those aged 60 years or older) has been receiving increasing attention in recent years because of concern about both the cost and the safety of medicines used by this group of patients.¹ Research has shown that elderly people are at risk from drug treatment through a reduced ability to handle drugs and an increased sensitivity to pharmacological effects.²⁻⁴ Adverse drug reactions have been reported as less than 3% in persons aged 20 to 29 years but as high as 21% in those over 70 years of age.^{5,6} As a group, elderly people are the largest users of medicines — prescriptions for elderly people in England and Wales for 1985 were estimated to represent 53% of all prescriptions and 58% of total net ingredient costs (DHSS. Report from prescription analysis unit, 1987).

The use of hypnotic medicines by elderly people has received considerable attention⁷⁻¹¹ because the incidence of adverse reactions to hypnotic drugs increases with age, and the dose related effects are also qualitatively different in the elderly. These include falls,⁸ nocturnal restlessness,⁹ paradoxical excitement and delirium.¹²

Many published papers have drawn attention to the depressive effect of the long-acting benzodiazepines on the central nervous system, especially in the elderly.¹³⁻¹⁶ It is now generally accepted that if a hypnotic medicine must be prescribed then it should be a short-acting compound in the smallest effective dose for the shortest possible duration.

The majority of the elderly live in the community in their own homes and only approximately 5% live in residential homes. However, from the point of view of medicine taking, the latter

form a unique population as they are a 'captive' group in which compliance with drug treatment is usually ensured by staff in the home who order, collect and administer their medicines.

Against this background, however, there is a lack of detailed studies of drug use by elderly people in residential homes.¹⁷⁻²¹ The present study, part of a general survey of drug use in such homes, was designed to provide information on the use of hypnotic drugs by the elderly. Variables studied were the age and sex of residents and the type and dosage of medicines received — where possible, these were linked with the medical records to provide data on duration of treatment.

Method

Fifty-five residential homes in two local authorities were visited over a six-month period in 1983-84. Data were obtained from the officers-in-charge, the drug administration records and the stock of medicines held in the home. Officers-in-charge were also interviewed about the supply, recording, storage and use of medicines within the residential home. The medicinal treatments for each resident were listed on a form which was sent to the residents' general practitioner who was requested to add information on diagnoses and to indicate when treatments were started. The data were analysed using the Statistical Package for the Social Sciences.²²

Results

Of the 1888 residents studied, 1617 (85.6%) were receiving medicines daily. The term medicine refers to a single proprietary or generic preparation prescribed for an individual. These residents received a total of 5535 medicines each day (a median of three medicines per patient per day, range one to 13 medicines) from a total of 615 different medicinal preparations.

Of the 1617 residents who received medicines, 435 (26.9%) were receiving hypnotic medicines (23.0% of all residents). These 435 residents received a total of 1800 medicines of which 448 (24.9%) were hypnotic drugs. The proportion of residents receiving hypnotic medicines within each of the 55 residential homes varied from 3.6% to 60.0% (median 24.1%). The size of a home and the number of general practitioners attending did not appear to be associated with this variation and no clear explanation was found.

Of the 435 residents receiving hypnotic medicines 326 were women and 109 men (sex ratio 3:1). Their median age was 83.2 years with a range of 57.2 to 109.2 years. There was no significant difference between the sex ratio of residents receiving hypnotic drugs and that for all residents receiving medicines. Neither was there a significant difference between residents receiving hypnotic medicines and those receiving other drugs with respect to age. However, when analysed by sex, female residents receiving hypnotics were significantly younger than those receiving other medicines ($P < 0.03$) and the converse was true for male residents ($P < 0.05$).

The most frequently prescribed hypnotic medicines were temazepam and nitrazepam (Table 1). Prescription details of the most frequently used hypnotic medicines are shown in Table 2. While the median doses were acceptable, the ranges were wide, though none exceeded the upper limit for normal adults. The data on duration of treatment indicated that these medicines

Peter B. Weedle, Research Associate, Jeffrey W. Poston, Lecturer, and Peter A. Parish, Professor Emeritus, Welsh School of Pharmacy, UWIST.

© *Journal of the Royal College of General Practitioners*, 1988, 38, 156-158.

Table 1. Hypnotic medicines received by 435 elderly residents.

	Number (%) of prescriptions	
Temazepam	151	(33.7)
Nitrazepam	136	(30.4)
Chlormethiazole	87	(19.4)
Triazolam	21	(4.7)
Flurazepam	19	(4.2)
Lormetazepam	11	(2.5)
Dichloralphenazone	10	(2.2)
Others ^a	13	(2.9)
Total	448	(100.0)

^aSeven other hypnotic medicines.

had been prescribed for prolonged periods of time for most patients.

Of the 448 hypnotic medicines prescribed 344 (76.8%) were benzodiazepines. Of these 202 (58.7%, 45.1% of all hypnotics) were short-acting preparations while 142 (41.3%, 31.7% of all hypnotics) were long-acting. Two patients were receiving barbiturates as hypnotic medicines despite the fact that the *British national formulary* does not recommend their use in the elderly.

Drugs which interact were found on 17 (3.8%) of the 448 prescriptions for hypnotic drugs. On nine occasions hypnotics were administered with cimetidine, which may have impaired their elimination and increased their absorption leading to potentiation of the hypnotic effects. On eight occasions it was the hypnotics which may have affected another drug — five times with levodopa, twice with antiepileptic drugs and once with digoxin. Many other drugs which have sedative effects were being administered concurrently, such as tricyclic antidepressants (61), benzodiazepines in the day-time (24) and phenothiazines (17), thus increasing the risk of adverse drug reactions on the central nervous system.

Discussion

Sleep patterns change with increasing age and an elderly person is likely to have trouble in falling asleep, to sleep lightly and wake up during the night, resulting in fragmented sleep. The total amount of sleep obtained over 24 hours increases soon after retirement as more time is spent in daytime naps, but the duration of sleep falls again after the age of 70 years.²³ An alteration in sleep pattern is a normal consequence of ageing and yet the use of hypnotic drugs is found to be higher in elderly patients than in younger adults.²⁴ This may be due to a misguided attempt to achieve a quantity of sleep that is regarded as normal in the general adult population, but which may not be necessary in the elderly.^{23,25} An event such as bereavement or admission to a residential home usually triggers off the first prescription, but the system of allowing repeat prescriptions to be collected for months or years without the patient seeing the general practitioner may contribute to their continued use in such

large numbers of elderly people. In the present study 23.0% of all residents were taking hypnotic medicines, which is lower than the 33% and 34% found by Morgan and Gilleard in a study of 1154 residents in 1980⁷ and 1981.¹⁷

If hypnotic medicines must be prescribed to elderly people, short-acting benzodiazepines should be used in order to avoid hangover effects of daytime sedation. Yet over 40% of the benzodiazepines prescribed to the elderly in this study were long-acting. However, although the extent of use of nitrazepam (30.4%) and chlormethiazole (19.4%) is similar to that found by Morgan and Gilleard in 1980,⁷ the use of temazepam in the present study is dramatically higher — 33.7% compared with 8.0%. This shift towards the use of temazepam between 1980 and 1984 may reflect the influence of official recommendations on the use of short-acting benzodiazepines for night sedation.

The extent and duration of nitrazepam use among the patients studied give cause for concern. Evans and Jarvis²⁷ have described a syndrome of disability which occurred only in elderly patients receiving nitrazepam. The symptoms included inattention, immobility and incontinence and these can appear in a patient who has been taking nitrazepam without ill effect for some time. One 5 mg daily dose can produce the syndrome, although a 2.5 mg dose at night did not appear to. They suggested that nitrazepam should not be prescribed for the elderly except in carefully selected circumstances and then only in doses less than 5 mg. In this study nitrazepam was being taken by 136 patients. The minimum daily dose was 5 mg and the maximum 15 mg and therefore over 7% of residents were at risk of adverse effects.

Elderly patients who take hypnotic drugs regularly rate the quality of their sleep as worse than those who do not.²⁸ This suggests that those elderly people with long-standing complaints of insomnia may continue to receive hypnotic medicines without benefit while running the risk of harmful effects. In this study the median duration of treatment varied from 0.8 to 2.5 years for different benzodiazepines with maximum durations of treatment of 9.7 years and 11.8 years for temazepam and nitrazepam, respectively.

The large variation between homes in the proportion of residents receiving hypnotic drugs is similar to that found previously.⁷ As the number of residents in the homes and the number of general practitioners attending the homes were not associated with the proportion of hypnotic medicines received there is a need for further study in this area.

Compared with previous studies of the use of hypnotic medicines by the elderly this study has shown a shift towards the preferential prescribing of the short-acting drugs, but the extent and duration of their use and the use of long-acting benzodiazepines are matters of serious concern.

References

1. A report of the Royal College of Physicians. Medication for the elderly. *J R Coll Physicians Lond* 1984; **18**: 7-17.
2. Triggs EJ, Nation RL, Long A, Ashley JJ. Pharmacokinetics in the elderly. *Eur J Clin Pharmacol* 1975; **8**: 55-62.
3. Crooks J, O'Malley K, Stevenson IH. Pharmacokinetics in the elderly. *Clin Pharmacokinet* 1976; **1**: 280-296.

Table 2. Prescription details for the most frequently used hypnotic medicines.

	Number of prescriptions	Duration of treatment						
		Each dose (mg)		Daily dose (mg)		Number of prescriptions analysed	Median (years)	Range (years)
		Median	Range	Minimum	Maximum			
Temazepam	151	10	10-60	10	60	45	0.8	<0.1- 9.7
Nitrazepam	136	5	5-10	5	15	44	2.5	0.3-11.8
Chlormethiazole	87	500	250-1000	250	2000	33	1.0	<0.1- 5.8

4. Bender AD. Pharmacodynamic principles of drug therapy in the aged. *J Am Geriatr Soc* 1974; **22**: 296-303.
5. Hurwitz N, Wade OL. Intensive hospital monitoring of adverse reactions to drugs. *Br Med J* 1969; **1**: 531-536.
6. Seidl LG, Thornton GF, Smith JW, Cluff LE. Studies on the epidemiology of adverse drug reactions. III. Reactions in patients on a general medical service. *Bull John Hopkins Hospital* 1966; **119**: 299-315.
7. Morgan K, Gilleard CJ. Patterns of hypnotic prescribing and usage in residential homes for the elderly. *Neuropharmacology* 1980; **20**: 1355-1356.
8. MacDonald JB, MacDonald ET. Nocturnal femoral fracture and continuing widespread use of barbiturate hypnotics. *Br Med J* 1977; **2**: 483-485.
9. Exton-Smith AN. Controlled comparison of four sedative drugs in elderly patients. *Br Med J* 1967; **2**: 1037-1040.
10. Boston Collaborative Drug Surveillance Program. Clinical depression of the central nervous system due to diazepam and chlordiazepoxide in relation to cigarette smoking and age. *N Engl J Med* 1973; **288**: 277-280.
11. Harenko A. A comparison between chlormethiazole and nitrazepam as hypnotics in psycho-geriatric patients. *Curr Med Res Opin* 1975; **2**: 657-663.
12. Gibson IE. Barbiturate delirium. *Practitioner* 1966; **197**: 345-347.
13. Dordain G, Puech AJ, Simon P. Triazolam compared with nitrazepam and with oxazepam in insomnia: two double-blind, crossover studies analysed sequentially. *Br J Clin Pharmacol* 1981; **11**: 43s-49s.
14. Greenblatt DL, Allen MD. Toxicity of nitrazepam in the elderly: a report from the Boston Collaborative Drug Surveillance Program. *Br J Clin Pharmacol* 1978; **5**: 407-413.
15. Murphy P, Hindmarch I, Hyland CM. Aspects of short-term use of two benzodiazepine hypnotics in the elderly. *Age Ageing* 1982; **11**: 222-228.
16. Nicholson AN. The use of short- and long-acting hypnotics in clinical medicine. *Br J Clin Pharmacol* 1981; **11**: 61s-69s.
17. Morgan K, Gilleard CJ, Reive A. Hypnotic usage in residential homes for the elderly: a prevalence and longitudinal analysis. *Age Ageing* 1982; **11**: 229-234.
18. Bruce SA. Regular prescribing in a residential home for elderly women. *Br Med J* 1982; **284**: 1235-1237.
19. Burns C. Geriatric care in a welfare home. *Ulster Med J* 1972; **41**: 149-154.
20. Clarke MG, Williams AJ, Jones PA. A psychogeriatric survey of old people's homes. *Br Med J* 1981; **283**: 1307-1310.
21. Knox JDE, Melvin M. Prescribed medicines in a residential home for the elderly. *Nursing Times* 1980; **76**: 1934-1936.
22. Nie NH. *Statistical Package for the Social Services, SPSS-X user's guide*. New York: McGraw-Hill, 1983.
23. Tune GS. The influence of age and temperament on the adult human sleep-wakefulness pattern. *Br J Psychol* 1969; **60**: 431-441.
24. Parish PA. The prescribing of psychotropic drugs in general practice. *J R Coll Gen Pract* 1971; **21**: suppl. no. 4.
25. McGhie A, Russell SM. The subjective assessment of normal sleep patterns. *J Ment Sci* 1962; **108**: 642-654.
26. Anderson RM. The use of repeatedly prescribed medicines. *J R Coll Gen Pract* 1980; **30**: 609-613.
27. Evans LG, Jarvis EH. Nitrazepam and the elderly. *Br Med J* 1972; **4**: 487.
28. Ciullo JJ, Shepherd MD. Drug discard patterns in long term care facilities. *J Am Pharm Assoc* 1977; **17**: 739-740, 743.

Acknowledgements

We would like to thank the social services departments and in particular the officers-in-charge of the residential homes for their help and cooperation. We are also very grateful to the general medical practitioners who provided the data.

Address for correspondence

Dr J.W. Poston, Medicines Research Unit, Division of Clinical Pharmacy, Welsh School of Pharmacy, Redwood Building, UWIST, Cathays Park, Cardiff CF1 3XF.



The Royal College of
General Practitioners



COMPUTER APPRECIATION COURSES

The Information Technology Centre at the RCGP offers a series of Computer Appreciation Courses for General Practitioners and their Senior Practice Staff. The courses are aimed at those with little or no knowledge of computing with particular emphasis being given to the introduction and management of the new technology for General Practice.

The cost of the course for Members and their Staff starts from £175 (inclusive of Friday night accommodation) and £150 without accommodation. For non-members, the prices will be £200 with accommodation on Friday night and £175 for those not requiring accommodation. The fee includes the cost of all meals, refreshments and extensive course notes. Overnight accommodation is available if required at the appropriate College rates.

Courses are zero-rated under Section 63 and Practice Staff may be eligible for 70% reimbursement under Paragraph 52.9(b) of the Statement of Fees and Allowances. Staff should confirm eligibility for this reimbursement with their local FPC.

Course dates include 13-14 May, 17-18 June and 8-9 July 1988.

Further details and an application form are available from: The Course Administrator, Information Technology Centre, The Royal College of General Practitioners, 14 Princes Gate, London SW7 1PU. Telephone: 01-581 3232.

THE ROYAL COLLEGE OF GENERAL PRACTITIONERS



ASTHMA STUDY DAY

Wednesday 11 May 1988

The Royal College of General Practitioners, in collaboration with Duncan Flockhart and Co. Ltd, is holding a Study Day on Asthma.

The Study Day aims to raise the standard of the care of patients suffering from asthma, concentrating on early diagnosis and systematic care. The day will consist of a series of papers delivered in the morning and group work in the afternoon session.

The RCGP hopes that delegates will include general practitioners, practice nurses and other health care professionals involved in the care of patients suffering from asthma. The cost of the Study Day is £10.00 per delegate.

For further details and application forms, please contact Janet Hawkins, Conference Administrator, Services to Members and Faculties Division, The Royal College of General Practitioners, 14 Princes Gate, London SW7 1PU. Telephone: 01-581 3232.