Prescribing of psychoactive drugs for chronically ill elderly patients

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The prescribing of psychoactive drugs for 1431 chronically ill elderly patients being assessed for long-term institutional or community care was surveyed. Psychoactive drugs had been prescribed for about one quarter of the patients; benzodiazepines were the most frequently prescribed group. Judging from the extensive prescribing of flurazepam and chloral hydrate, commonly used hypnotics, the main reason psychoactive drugs were prescribed was to provide night-time sedation. Antidepressants and drugs promoted as useful in improving cognitive function were infrequently prescribed. Commendable prescribing practices included the infrequent use of "cerebral vasodilators" and barbiturates. Questionable prescribing practices included the infrequent use of tricyclic antidepressants in severely depressed patients and the use of tranquillizers in patients described by their attending physician as markedly or extremely withdrawn.

On a étudié la prescription des médicaments psychoactifs chez 1431 patients âgés souffrant de maladies chroniques subissant une évaluation en vue de soins de longue durée en institution ou de soins à domicile. Environ un quart des patients recevaient des médicaments psychoactifs; les benzodiazépines étaient les médicaments les plus souvent prescrits pour ce groupe. Si l'on en juge par la fréquence de prescription du flurazépam et de l'hydrate de chloral, deux hypnotiques d'utilisation courante, la prescription de médicaments psychoactifs avait pour raison principale la création d'une sédation nocturne. Les antidépresseurs et les médicaments dont la publicité vante l'utilité pour améliorer la fonction cognitive étaient rarement prescrits. L'emploi peu fréquent des "vasodilatateurs cérébraux" et des barbituriques compte parmi les habitudes de prescrire qu'il faut louer. Les habitudes de prescrire douteuses comprennent l'emploi peu fréquent des antidépreseurs tricycliques chez des patients sévèrement déprimés et l'utilisation de tranquillisants chez des patients décrits par leurs médecins traitants comme étant extrêmement repliés sur eux-mêmes.

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Critical evaluation of drug prescribing for elderly patients is of major importance for several reasons. First, in most economically developed countries about 8% to 12% of the population are more than 65 years of age, and the proportion is steadily increasing. In the 1971 Canadian census 8% of the population were found to be more than 65 years old,[1] and it is anticipated that the proportion of people in this age group will double by the turn of the century. Second, multiple organ dysfunction and chronic illness are prevalent in the elderly, so prescribing of many drugs simultaneously is common.[2-4] Third, the frequency of adverse drug effects is greatest in elderly patients.[5,6]

Psychoactive drugs are among the drugs most frequently prescribed for the elderly, yet the indications for treatment are said to be often dubious,[7-9] and these drugs are reported to cause adverse effects in an excessive proportion of patients.[10] In this report we describe the use of psychoactive drugs in a large group of elderly patients being assessed for long-term care because of chronic mentally and physically disabling illnesses. The aims of our survey were to identify local practices in the prescribing of psychoactive drugs for such patients and to assess the extent to which the therapy correlated with the mental state of the patient as described by the attending physician.

Methods

The survey included all the patients over 65 years of age referred to the assessment and placement service of the Hamilton-Wentworth District Health Council in 1976. This service was developed in 1971 to promote accurate assessment of the needs of patients with long-term disabilities and to identify what extended-care treatment or support services were needed for individual patients.[11] The service is available to a population of about 500 000 in Hamilton-Wentworth county and the city of Burlington. It receives referrals for patients of any age and with any mental or physical disability, but over three quarters of the referrals are for elderly patients. Information on all patients was collected for computer analysis on precoded assessment forms (available from J.R.D.B.

on request); one section of the form is completed by the attending physician, and another section is completed by a public health nurse if the patient is at home or a social worker if the patient is in hospital.

All drugs being prescribed for the patients at the time of their referral were recorded by the attending physician on the assessment form. The most frequently prescribed psychoactive drugs were classified as follows:

1. *Hypnotic – sedative – anxiolytic agents*
   - Benzodiazepines (diazepam, chlordiazepoxide, flurazepam)
   - Chloral hydrate
   - Barbiturates (amobarbital, pentobarbital, phenobarbital, secobarbital)
2. *Major tranquillizers*
   - Phenothiazines (chlorpromazine, thioridazine, trifluoperazine)
   - Haloperidol
3. *Antidepressants*
   - Amitriptyline
4. *Miscellaneous*
   - Psychoactive drugs prescribed in numbers too small for analysis

The treating physician provided an interpretation of the patient's mental state according to the grades defined on the assessment form, as set forth in Table I.

The nurse or social worker assessed the ability of the patient to administer independently his or her medication according to the following grades:

1. Completely responsible; no assistance required.
2. Capable if dose prepared in advance.
3. Physically unable to administer medication.
4. Mentally unable to administer medication.
5. Physically and mentally unable to administer medication.

Results

Patterns of prescription of psychoactive drugs

In 1976 the assessment and placement service received 2197 referrals for 1842 patients, 1431 (77.7%) of whom were more than 65 years of age. The age and sex distribution and the extent of psychoactive drug prescribing for the elderly patients are shown in Table II. At least one psychoactive drug had been prescribed for 357 (24.9%) of the 1431 patients, and two or three psychoactive drugs had been prescribed simultaneously for 95 (26.6%); never had more than three psychoactive drugs been prescribed simultaneously. Psychoactive drugs had been prescribed for 25.5% and 24.6% of the male and female patients respectively.

An age effect was apparent: at least one psychoactive drug had been prescribed for 31.3% of the patients 65 to 74 years of age, 23.9% of those 75 to 84 years of age and 21.7% of those 85 years of age or older; the difference in proportions was significant ($\chi^2 = 15.04$, with 2 degrees of freedom [df]; $P < 0.001$). In the youngest group not only were psychoactive drugs more likely to have been prescribed, but also the simultaneous prescription of several psychoactive drugs was more frequent. Of the patients for whom psychoactive drugs were prescribed 35.2% of those 65 to 74 years of age and 23.0% of each of the two older groups had two or more psychoactive drugs prescribed simultaneously ($\chi^2 = 8.30$, with 2 df; $P < 0.02$).

No remarkable age effect was noted in the distribution of specific psychoactive drugs prescribed for these patients (Table III). Hypnotic–sedative–anxiolytic agents were prescribed for 272 (76.2%) of the elderly patients receiving psychoactive drugs. The most frequently prescribed psychoactive drugs were benzodiazepines. Two members of particular groups of psychoactive drugs were prescribed simultaneously for some patients — benzodiazepines for 16, phenothiazines for 2 and barbiturates for 1. Of the 34 patients for whom barbiturates were prescribed 14 received either phenobarbital or secobarbital, and 3 received either amobarbital or pentobarbital. Major tranquillizers were prescribed for 106 (29.7%) of the patients receiving psychoactive drugs. Amitriptyline was the only antidepressant prescribed to

Table I—Assessment of mental state

Feature	Grade 1	2	3	4	5
Memory and orientation	Normal	Brief periods of forgetfulness	Brief periods of confusion and disorientation	Periods of marked confusion and disorientation	No recall
Depression	None	Mild	Moderate	Severe	Extreme
Anxiety	None	Mild	Moderate	Severe	Extreme
Participation	Not withdrawn	Mildly withdrawn	Moderately withdrawn	Markedly withdrawn	Extremely withdrawn or stuporous

Table II—Extent of psychoactive drug prescribing for elderly patients, by age and sex

No. of drugs prescribed	Age (yr); sex; no. (and %*) of patients: 65-74 M	65-74 F	75-84 M	75-84 F	≥85 M	≥85 F	Total group M	Total group F
0	112 (67.1)	119 (70.4)	165 (78.2)	318 (75.0)	108 (77.7)	252 (78.5)	385 (74.5)	689 (75.4)
1	35 (21.0)	33 (19.5)	35 (16.6)	82 (19.3)	25 (18.0)	52 (16.2)	95 (18.4)	167 (18.3)
2	18 (10.8)	14 (8.3)	11 (5.2)	21 (5.0)	5 (3.6)	16 (5.0)	34 (6.6)	51 (5.6)
3	2 (1.2)	3 (1.8)	0 (0)	3 (0.7)	1 (0.7)	1 (0.3)	3 (0.6)	7 (0.8)
Total no. of patients	167 (100.0)	169 (100.0)	211 (100.0)	424 (100.0)	139 (100.0)	321 (100.0)	517 (100.0)	914 (100.0)

*Percentages of the male (M) and female (F) patients in each age group.

Table III—Types of psychoactive drugs prescribed, by age

Drug group	Age (yr); no. (and %*) of patients 65-74	75-84	≥ 85	Total group
Hypnotic–sedative–anxiolytic agents	82 (78.1)	118 (77.6)	72 (72.0)	272 (76.2)
Flurazepam	28	43	27	98
Diazepam	19	25	12	56
Chlordiazepoxide	3	6	2	11
Chloral hydrate	19	30	24	73
Barbiturates	13	14	7	34
Major tranquillizers	31 (29.5)	42 (27.6)	33 (33.0)	106 (29.7)
Chlorpromazine	14	20	17	51
Thioridazine	8	15	6	29
Trifluoperazine	4	1	3	8
Haloperidol	5	6	7	18
Antidepressants				
Amitriptyline	5 (4.8)	6 (3.9)	4 (4.0)	15 (4.2)
Miscellaneous	28 (26.7)	23 (15.1)	18 (18.0)	69 (19.3)

*Percentages of the patients for whom psychoactive drugs were prescribed; percentages add up to more than 100 because of simultaneous prescription of several drugs.

Table IV—Patients' ability to administer their medication

Grade of ability	No. (and %*) of patients
1. Completely responsible; no assistance required	189 (14.0)
2. Capable if dose prepared in advance	268 (19.9)
3. Physically unable to administer medication	203 (15.1)
4. Mentally unable to administer medication	370 (27.5)
5. Physically and mentally unable to administer medication	317 (23.5)

*Percentages of the 1347 patients for whom this information was recorded.

Table V—Types of psychoactive drugs prescribed in relation to patients' ability to administer their medication

Drug group	Grade of ability; no. (and %*) of patients 1-2	3-5	Significance of difference in proportions (χ^2)†
Hypnotic–sedative–anxiolytic agents	73 (16.0)	168 (18.9)	1.73, NS
Major tranquillizers	6 (1.3)	97 (10.9)	39.29, $P < 0.001$
Antidepressants	7 (1.5)	8 (0.9)	1.09, NS
Miscellaneous	23 (5.0)	44 (4.9)	0.005, NS
All psychoactive drugs	109 (23.9)	317 (35.6)	26.76, $P < 0.001$

*Percentages of the 457 patients in grades 1 and 2 and the 890 patients in grades 3 to 5.
†With 1 degree of freedom; NS = not significant, $P > 0.1$.

Table VI—Types of psychoactive drugs prescribed in relation to patients' mental state

Grade of mental state*	No. of patients (and % of total no. for whom grade was recorded†)	Drug group; no. of patients: Hypnotic–sedative–anxiolytic agents	Major tranquillizers	Antidepressants	Miscellaneous
Depression					
1	391 (30.4)	45	23	1	19
2	463 (36.0)	93	38	5	23
3	349 (27.2)	77	35	8	20
4	74 (5.8)	14	8	1	5
5	8 (0.6)	0	0	0	0
Anxiety					
1	240 (26.6)	48	17	3	14
2	374 (41.4)	105	35	4	31
3	225 (24.9)	68	31	8	14
4	55 (6.1)	13	10	0	5
5	9 (1.0)	2	3	0	0
Participation					
1	372 (28.9)	65	18	2	19
2	398 (30.9)	70	33	4	22
3	322 (25.0)	65	32	6	19
4	168 (13.1)	34	15	2	6
5	27 (2.1)	4	2	0	1

*For depression and anxiety: 1 = none; 2 = mild; 3 = moderate; 4 = severe; 5 = extreme. For participation: 1 = not withdrawn; 2 = mildly withdrawn; 3 = moderately withdrawn; 4 = markedly withdrawn; 5 = extremely withdrawn or stuporous.
†Grades of depression, anxiety and participation were not recorded for 146, 528 and 144 patients respectively.

any extent, and it was prescribed for only 15 (4.2%) of the patients receiving psychoactive drugs.

Prescription of psychoactive drugs and mental state

Of the 1347 patients for whom the attending nurse or social worker's assessment of the patient's ability to administer his or her medication was recorded 890 (66.1%) were unable to administer their medication because of physical or mental disability or both (Table IV). Psychoactive drugs were prescribed for a significantly larger proportion ($P < 0.001$) of patients unable to administer their medication than of patients able to do so; this difference was due mostly to the more extensive prescription of major tranquillizers for the former (Table V).

The types of psychoactive drugs prescribed in relation to the attending physician's assessment of the patient's mental state are shown in Table VI. Of the 82 patients described as being markedly or extremely depressed at the time of referral 14 received prescriptions for hypnotic–sedative–anxiolytic agents, 8 received prescriptions for major tranquillizers and only 1 received a prescription for an antidepressant. The proportion of patients for whom anxiolytic drugs were prescribed did not increase as the grade of anxiety increased: of the 614 patients described as being not anxious or only mildly anxious 153 (24.9%) received prescriptions for a hynotic–sedative–anxiolytic agent, and of the 64 patients described as being markedly or extremely anxious 15 (23.4%) were given a prescription for a drug of this type. Major tranquillizers were prescribed for 52 (8.5%) of the patients with grade 1

or 2 anxiety and for 13 (20.3%) of those with grades 3 to 5 anxiety. Of the 195 patients described as being markedly or extremely withdrawn at the time of referral 17 (8.7%) were given prescriptions for major tranquillizers, while 38 (19.5%) were given prescriptions for hypnotic–sedative–anxiolytic agents.

Discussion

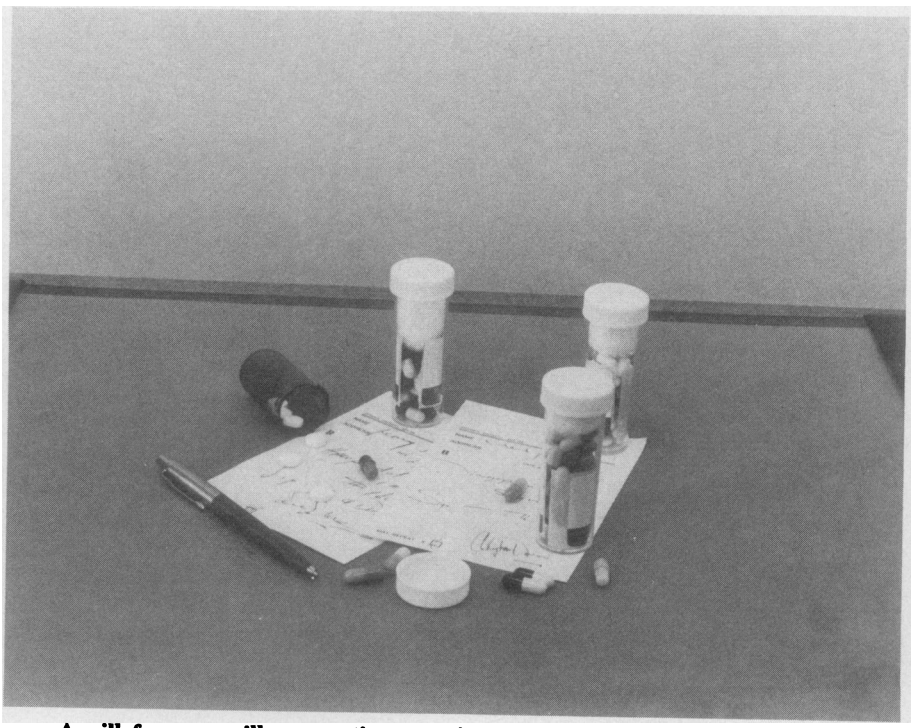
Assessing the need for psychoactive drug therapy is difficult because of variations between physicians in the use of diagnostic labels and in the interpretation of the severity of symptoms. We attempted to obviate these difficulties by relating the prescribing of psychoactive drugs to the attending physician's assessment of the patient's mental state. No particular description of a patient's mental state favoured earlier placement in an institution providing long-term care, so there should have been no physician bias expressed on the referral form. However, our data must be interpreted with the following factors in mind:

1. The mental state was supposed to have been evaluated when the patient was not taking medication; nevertheless, the patient's mental state at the time of referral may have reflected benefits from the drugs prescribed. For example, the fact that about one quarter of the patients described as suffering from mild or no anxiety were taking hypnotic–sedative–anxiolytic drugs could indicate a beneficial response to anxiolytic therapy in a group of patients who were initially extremely anxious.

2. Only the drugs being prescribed at the time of referral were recorded. It is possible that the psychoactive drug therapy at that time was influenced by the patient's response or lack thereof to previous drug therapy.

3. Most drugs have more than one pharmacologic effect contributing to their therapeutic usefulness. For example, the use of a sedative–hypnotic–anxiolytic agent in a patient described as being not anxious could be explained by its value as a hypnotic. With these limitations, we cannot make clear-cut decisions about the appropriateness of therapy. A possibly inappropriate underuse of psychoactive drugs is suggested by the prescription of tricyclic antidepressants for only 1 of 82 patients described as being markedly or extremely depressed. The dilemma for the prescribing physician may have been in deciding whether the depression was a transient reaction to a particular situation or whether it was prolonged and more likely to be associated with disabling illness and to carry a risk of suicide. Tricyclic antidepressants have been reported to increase the frequency of episodes of confusion in the elderly;[12] also, these drugs may produce orthostatic hypotension, cardiac arrhythmias, glaucoma, urinary retention and constipation.[13] These factors may have contributed to the infrequent use of antidepressants in the patients we surveyed. On the other hand, our data suggest that there was an overuse of major tranquillizers in some patients; it is difficult to envisage the need for major tranquillizers in 17 of the 195 patients described as markedly or extremely withdrawn. It is impossible to say if the drug therapy contributed to the patients' mental state, since we made no attempt to assess the frequency of adverse drug effects, many of which are subtle and may become apparent only after the drug is discontinued.[10] The beneficial effect of drug withdrawal in the elderly has prompted the definition of geriatrics as "the art of taking the elderly off drugs".[14]

The problems encountered in assessing the appropriateness of therapy for different mental states do not detract from three noteworthy and commendable prescribing practices documented in this survey: only about 25% of this group of chronically ill elderly patients were receiving psychoactive drugs, only about 25% of the patients receiving psychoactive drugs were taking two or more simultaneously, and the frequency of prescription of psychoactive drugs was lower for the patients 75 years of age and older than for those 65 to 74 years of age. These practices are commendable because they reflect an important principle of the treatment of elderly patients: the number of drugs prescribed should be kept to a minimum and the treatment schedules should be kept as simple as possible.[15-19] Physicians may unwittingly adopt a "pill for every ill" approach, so that numerous drugs are prescribed simultaneously for the elderly, with their many symptoms. This has several disadvantages. The elderly person with failing vision and decreased mental awareness is particularly prone to errors in self-medication when drugs of various sizes, shapes, colours and forms are prescribed.[20] Prescribing several drugs simultaneously also increases the risk of interactions between drugs[21] and decreases the likelihood that the patient will take the medication as prescribed.[22] In our survey about two thirds of the elderly patients referred



A pill for every ill: a practice especially to be avoided with the elderly

for long-term institutional care were unable to administer their medication because of physical or mental disability or both. A possible reflection of the greater mental disability of the patients assessed as being unable to administer their medication was the more frequent prescription of major tranquillizers for them.

The widespread popularity of benzodiazepines[23,24] was also noted in the group of elderly patients we surveyed. Although these drugs are reputed to be relatively safe, several reports suggest an increased risk of adverse effects of benzodiazepine therapy with increasing age.[25-28] These adverse effects may be confusion and agitation — events that could be attributed to the patient's mental state rather than to the drug. The increased susceptibility of the elderly to adverse effects of benzodiazepine therapy may be due to age-related changes in the distribution[29] and elimination[30] of benzodiazepines or to increased sensitivity of the ageing brain to these drugs.[31] A benzodiazepine such as oxazepam with a shorter elimination half-life and with pharmacologically inactive metabolites may prove to be safer than the commonly prescribed benzodiazepines such as diazepam, chlordiazepoxide and flurazepam.[32]

Judging from the extensive prescription of commonly used hypnotics — flurazepam and chloral hydrate — the main reasons psychoactive drugs were prescribed for the patients surveyed was to provide night-time sedation. The efficacy of hypnotics after several weeks of regular use has been questioned recently. From examination of the effects of hypnotics on all-night electroencephalograms Kales and colleagues[33] reported that most of these drugs become ineffective when taken repeatedly over 2 weeks. Flurazepam was the only hypnotic found to be effective when taken continually for up to 4 weeks;[34] this may be related to the accumulation of N-desalkylflurazepam, an active metabolite of flurazepam that is slowly eliminated from the body.[35]

Overall, barbiturates were prescribed for fewer than 10% of the patients receiving psychoactive drugs. The 14 patients for whom phenobarbital was prescribed were probably receiving that drug for the control of convulsions; the other 20 patients were most likely receiving barbitu-

rates for their sedative–anxiolytic effect. Barbiturates have a long-standing reputation[36,37] for inducing confusion, restlessness, agitation and delirium in the elderly. Barbiturate-induced mental confusion and motor incoordination have been linked to the occurrence of hip fractures in one group of elderly patients.[38] Some authors[39,40] have suggested that these adverse effects of barbiturates were more a result of excessive dosage and prolonged use than of inherent toxicity of the drugs. The implication is that lower doses of barbiturates would prove to be safer. There seems little doubt, however, that benzodiazepines are far safer than barbiturates.[41] In our survey the infrequent prescription of barbiturates was in keeping with the consensus that the use of barbiturates by the elderly should be avoided. Drugs used in attempts to improve cognitive function were also infrequently prescribed for this group of elderly patients. We think that this is appropriate since the efficacy of these compounds in elderly patients has not been clearly established.[42]

This survey investigated commendable and questionable prescribing of psychoactive drugs for the elderly. We hope that by focusing attention on the appropriate use of psychoactive drugs this report will encourage the continuation of the commendable practices and the prompt correction of the questionable practices identified.

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