

Psychotropic Drug Prescriptions for Nursing Home Residents

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Previous work has indicated that psychotropic medications may be misused in nursing homes. Utilizing data from the National Nursing Home Study Pretest, this analysis examined the frequency, indications, and appropriateness of psychotropic drug prescriptions for a random group of 526 US nursing home residents. One third of the sample residents were receiving a psychotropic medication, and 8 percent were receiving more than one. Twenty-one percent of those without a listed mental disorder diagnosis received psychotropic medications, almost one third of which were antipsychotic medications. With no corresponding notation of a related symptom or diagnosis in the chart, 30 percent of 212 psychotropic prescriptions were judged inappropriate by a three-physician panel. Although more research should be done, these results suggest the need for better and more careful charting in nursing homes as well as better training for primary care physicians in the proper prescribing of psychotropic drugs.

The vast majority of medical care in US nursing homes is provided by primary care physicians (internists, family physicians, and general practitioners).¹ Among their patients are many recently deinstitutionalized mental hospital patients who have become residents in nursing homes.² These residents present difficult management problems because their mental disorders may be complicated by physical problems, especially in the elderly. In addition, a large proportion of nursing home residents who have not been institutionalized previously also have mental disorders.³ Previous work has indicated that psychotropic medications may be misused in nursing homes,^{4,5} but little data have been available linking individual nursing home residents' prescriptions with their diagnoses or symptoms. This study uses data from the National Nursing Home Study Pretest, conducted by the National Center for Health Statistics and supported in part by the National Institute of Mental Health, to answer the following questions:

1. What percentage of nursing home residents receive psychotropic medications?
2. What percentage of nursing home residents have mental disorder diagnoses recorded?
3. How many of the psychotropic prescriptions can be classified as appropriate for either the patient's diagnosis or symptoms?
4. Are these drugs prescribed in appropriate dosages and delivery schedules?

METHODS

The National Nursing Home Survey Pretest was conducted in 1984 in a sample of all nursing homes in four standard metropolitan areas—Atlanta, Boston, Denver, and Toledo. This random sample of 150 nursing homes was stratified by bed size and type of ownership; homes with over 300 beds were excluded.

Nursing-home administrators were sent a letter inviting them to participate in the survey; 112 administrators accepted, resulting in an overall response rate of 75 percent. A team of trained interviewers went to each home and, using structured questionnaires and interviews, collected data on a wide range of topics. Data reported in this paper come from one measure, the Current Resident Question-

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naire,⁶ which was completed on a random sample of nursing home residents (up to five, depending upon the size of the home). The interviewer obtained information on patient psychosocial symptoms and behaviors from the medical record and from the person most familiar with the medical record of the resident, usually a staff nurse. The interview and the medical record were the sources of diagnostic and drug information. Data were obtained in this fashion on all of the 526 residents in the sample.

A panel of three board-certified physicians—a general psychiatrist, a geriatric psychiatrist, and a family physician—reviewed all psychotropic drug prescriptions for appropriateness. They had the following information available for each patient: age, sex, specific ICD9-CM mental disorder diagnoses⁷ from the medical record, psychosocial symptoms recorded, and the presence of insomnia or low back pain problems.

Initially the physicians reviewed the cases independently and scored each medication as justified or not either by the patient's diagnosis or by the psychosocial symptoms recorded. Thus, an antipsychotic medication might be considered justifiable if a diagnosis of schizophrenia were listed for the patient, or if the symptoms of violent or destructive behavior or delusions and hallucinations were present. Dosages and administration regimen (that is, whether the drug was given on a discretionary or nondiscretionary basis) were ignored in the first rating.

Following these initial ratings, the physicians met as a panel and reached a consensus about which drugs were justifiable on the basis of diagnosis or psychosocial problem. They then decided whether the justifiable drugs were prescribed in an appropriate dosage range and administration regimen. Only the following explicit criteria were used for the ratings: an indication of either a mental disorder diagnosis or a psychiatric symptom corresponding to the drug used was required for approval; sleeping medications were approved only on an as-needed basis; and medications had to be prescribed within a wide latitude of effective dosages. The physician raters, coming from disparate backgrounds, had little difficulty reaching a consensus about the drug orders. The panel members were instructed to be generous in their ratings, allowing very modest dosages and rather questionable indications to pass as appropriate.

All drug prescriptions or orders were thus classified into four categories: (1) appropriate with respect to drug, dosage, and administration regimen, (2) justifiable drug, but a problem in dosage, (3) justifiable drug, but a problem in administration regimen (discretionary vs nondiscretionary), or (4) inappropriate drug, not based on notation of a related symptom or diagnosis in the chart. Drugs with missing dosage information were excluded from the ratings.

TABLE 1. PERCENTAGE OF NURSING HOME RESIDENTS RECEIVING PSYCHOTROPIC MEDICATIONS ACCORDING TO DIAGNOSTIC GROUPS

Drug Class	Chart Diagnoses			
	All Sampled Residents (n = 526)	No Mental Disorder (n = 208)	Organic Brain Syndrome (n = 204)	Other Mental Disorders (n = 114)
Sedative-hypnotic	6.7	7.7	3.4	10.5
Antianxiety	5.7	6.3	5.9	4.4
Antidepressant	6.1	4.0	5.4	11.4
Antipsychotic-lithium	21.7	6.7	24.0	44.7
Any psychotropic*	32.7	21.1	32.8	53.5

* Columns are not additive because of multiple prescriptions to individual residents

RESULTS

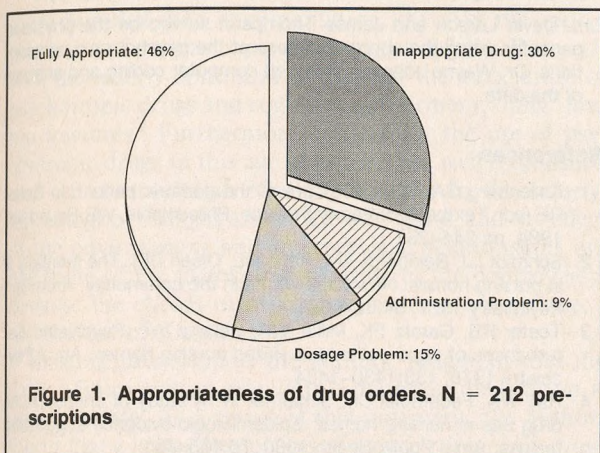
Patient and Prescription Characteristics

Of the 526 residents, 208 (39.5 percent) had no mental disorder diagnoses in their charts. Of the remainder, 204 (38.8 percent) had the diagnosis of organic brain syndrome, and 114 (21.7 percent) had another mental disorder or disorders diagnosed. The most frequently occurring of these other mental disorders were mental retardation, depression, and schizophrenia, each occurring in approximately 5 percent of the sample.

In Table 1 are listed the percentages of nursing home residents receiving different classes of psychotropic medications, stratified by diagnostic category. A total of 223 psychotropic prescriptions were prescribed for the 526 residents. Just under one third of all residents received a psychotropic medication, and one fourth of this group (8 percent of the sample) received a second psychotropic medication. Although fewer psychotropic drugs were ordered for nursing home residents without mental disorder diagnoses, 21 percent of these residents did receive a psychotropic drug, and the medications they received were not all for sleeping problems. Almost one third of those without a mental disorder diagnosis who received a psychotropic drug got an antipsychotic medication.

Drug-Appropriateness Ratings

The drug-appropriateness ratings by the three-physician panel are shown in Figure 1. Of the 223 drug orders, 11 (5 percent) had missing dosage information and thus were excluded from the ratings. Forty-six percent of the re-



remaining 212 psychotropic medications were judged fully appropriate with respect to drug, dosage, and regimen. Problems either in dosage or frequency of administration totaled 24 percent. Thirty percent of the psychotropic drug prescriptions were judged inappropriate, as there was no corresponding notation of a related symptom or diagnosis in the chart. Thus, more than one half of the prescriptions for psychotropic drugs did not meet all three criteria for appropriateness, and over one half of these lacked any indication at all for the psychotropic medication. The latter is a serious concern because these presumably misprescribed drugs were not just sleeping pills; one half of them were antipsychotic medications.

Frequency of administration was considered a problem for all of the sedative-hypnotic medications that were prescribed for nondiscretionary daily use rather than on an as-needed basis. Because of this decision, a larger proportion of sedative-hypnotic medications were considered to be misprescribed than were any other class of drug ($\chi^2 = 4.22$, $P = .04$). When the choice of drug was correct but dosage was a problem, a subtherapeutic dose was most common. All improper antidepressant dosages and 70 percent of the improper antipsychotic dosages were subtherapeutic.

DISCUSSION

Several study limitations should be mentioned. The sample is relatively small. Because sample weights are not available, these results cannot be said to be representative of the geographic areas that provided the data, nor can the results be generalized to any other group of nursing homes. These pretest data were to have been amplified when full survey results became available. Unfortunately, most information about mental disorders and all infor-

mation about psychotropic drugs were dropped from the final, national version of the survey, so these results are the most definitive that will be available. Although these data are not part of a national systematic survey, they do represent samples from a cross-section of American nursing homes in different regions of the country.

Additionally, the mental disorder diagnoses reported here are not research diagnoses. Since the diagnoses were obtained from medical records and nonpsychiatric clinicians familiar with the patients, they suffer the usual problems of reliability and validity. Furthermore, the issue of identifying residents in need of psychotropic medication, but who did not receive any (errors of omission), was not addressed.

Finally, the evaluations of the appropriateness of the psychotropic drug orders suffer from the limited data available to the physician panel making these determinations. A true clinical evaluation would, of course, take into account patient history, weight, other physical conditions, and other medications prescribed. Contraindications caused by physical conditions or medications were not examined in this study. Thus, with additional information either a lesser or a greater number of medications might have been identified as inappropriately prescribed.

Even given these caveats, however, the results are provocative and clinically relevant. Almost one third of all nursing home residents studied received psychotropic medications, and 9 percent received more than one. Sixty percent of the nursing home residents had a diagnosis of mental disorder or organic brain syndrome. Appropriate drug selection and administration occurred with 46 percent of the psychotropic prescriptions, and problems with the method of prescribing (dosage or administration schedule) occurred in almost one fourth, mostly involving inadequate dosages. Based on the physician-panel assessment, 30 percent of the psychotropic prescriptions had no apparent indication at all; this finding is the most worrisome of the analysis, given the serious side effects of some of these medications.

It is true that the omission of a recorded psychiatric diagnosis does not mean that the physician had not made such a diagnosis; a psychotropic prescription has been shown to serve as a proxy for diagnosis in primary care patients.⁸ These nursing home residents, however, had neither a psychiatric diagnosis in their charts, nor psychosocial symptoms reported by the nurses. Either the drugs were being given without appropriate diagnoses, in which case they were misprescribed, or they were given without a record of such a diagnosis.

If the psychotropic drugs were misprescribed, patients were placed needlessly at risk for such serious side effects as tardive dyskinesia, orthostatic hypotension, and urinary retention. In addition, patients on these drugs are at a greater risk for falls and hip fractures.⁹ Alternatively, if

the drugs were given without a record of the diagnosis, then this practice differs from that of prescribing nonpsychotropic medications, where such prescribing behavior was not found.

For example, digoxin was prescribed in 106 of the 526 residents, 18 of whom (17 percent) had no corresponding cardiac diagnosis listed. The difference between this 17 percent and the 30 percent of psychotropic medications not associated with mental disorder diagnoses was statistically significant ($\chi^2 = 5.39$, $P = .02$). Antipsychotic drugs have potential side effects of seriousness equal to those of digoxin and other somatic medications; the reasons for their use should be documented.

This analysis of pretest data from the National Nursing Home Study raises concerns about primary care physicians' knowledge about psychotropic medications for nursing home residents as well as about the quality of record keeping for nursing home residents with mental disorders. The data reported here do indicate the need for more complete diagnostic recording in nursing home medical records. In addition, despite a mixed literature on the efficacy of educational interventions in changing the behavior of practicing physicians,¹⁰ better training for them in the proper prescribing of psychotropic drugs also seems to be in order.

More research needs to be done into the care of nursing home residents with mental and behavioral disorders to address the questions raised here. Which specific medications (psychotropic and nonpsychotropic) are more likely to be administered without appropriate diagnoses or without record of such diagnoses? Are low dosages of some medications effective for certain patients?¹¹ What educational, chart audit, or training interventions can be used to improve the current situation? The answers to these and other questions await further investigation.

Commentary

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The appropriate use of drugs in nursing homes is one measure of the quality of medical care.¹ The above article by Burns and Kamerow reports a study that has identified a lack of documentation for psychotropic drug prescriptions for nursing home residents. As physicians' and nurses' charting failed to record symptoms or diagnoses for 30 percent of residents receiving psychotropic medication, justification for the use of 30 percent of the psychotropic medication was lacking.

The first issue addressed by Burns and Kamerow, in-

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adequate documentation, should provide little argument. Medical information must move across the continuum of care for the benefit of the patient. In this regard documentation is essential to demonstrate physician competence and quality of care. Buchsbaum and colleagues,² in a study of resident prescribing practices of antianxiety agents, have also found evidence of underdocumentation. It is essential, therefore, that practicing physicians and faculty of residency programs develop strategies to assure appropriate documentation.

The second issue addressed by Burns and Kamerow, more complex than documentation, involves the appropriate use of psychotropic drugs in the elderly. Research with the elderly continues to confirm the association of psychotropic drugs and cognitive impairment,³ falls,⁴ and hip fractures.⁵ Furthermore, criteria for the use of psychotropic drugs in this age group are not well established and are controversial. Multiple diseases in the elderly, physiological changes associated with aging, and the effect of the environment and interpersonal relationships are but some of the factors contributing to the controversy. Because the classes of psychotropic drugs are unique, I will discuss each separately.

Existing data support the authors' judgment that the daily administration of sedative-hypnotic medication is inappropriate. As a result of this judgment, the authors found that a larger proportion of sedative-hypnotic drugs were misprescribed than any other class of psychotropic medications. The elderly normally spend more time in bed, and more time awake while in bed, than younger individuals, and their sleep patterns are characterized by more frequent awakenings (stage 0).⁶ Elderly patients and their care providers, often unaware of these concomitants of aging, request sedative-hypnotic medications to change these normal sleep patterns. Coincidentally, the incidence of sleep apnea rises steadily with age, and sedative-hypnotic drugs increase the number and duration of apneic episodes in the elderly.⁶

The as-needed use of a short half-life sedative-hypnotic drug may occasionally be justified. Ray et al⁵ reported that the short half-life hypnotic was not associated with increased risk of hip fracture. Nevertheless, research to identify methods of reducing the regular use of sedative-hypnotic medications and to enhance the use of nondrug modalities to promote natural sleep in the elderly is needed.

The authors' only comment about antianxiety agents was the 5.7 percent overall prevalence of their use. Criteria for the appropriate use of these drugs in the elderly are controversial; but prolonged use, exceeding three or four weeks, for anxiety reactions, panic states, and compulsive behavior is discouraged.

The as-needed use of long-acting antianxiety agents may precipitate falls,⁴ confusion,³ and hip fractures.⁵ Long-acting drugs have a half-life of 75 to 100 hours in the elderly, and administration once every three to four days will result in accumulation of the drug in the body. In two or three weeks a steady state will be reached. Toxicity is not recognized because the care providers probably imagine that the as-needed medication is being completely eliminated after each dose. Short half-life antianxiety agents may carry less risk.⁵

Burns and Kamerow state that all of the antidepressant drugs were prescribed in subtherapeutic doses. When considering prescribing antidepressants for the elderly, the

clinician experiences a familiar dilemma; he is encouraged to uncover depression in this population but is warned about adverse events that result from the use of antidepressants. A similar dilemma existed with the use of digoxin, theophylline, and phenytoin before serum levels were generally available. Now that therapeutic windows have been established for some antidepressants and serum levels are becoming available, the clinician will be better able to deal with the adverse effects of antidepressants.

The authors found that in this study only 6.1 percent of the sample were receiving antidepressant medications. This figure suggests that depression is underdiagnosed as well as undertreated. Identifying and treating depression in the elderly is a major challenge, and research in the primary care office and nursing home is necessary to meet this challenge.

Of all the psychotropic drugs, antipsychotic drugs and lithium were prescribed most frequently (21.7 percent). Even 6.7 percent of residents who had "no mental disorder" received an antipsychotic drug. However, 70 percent of the antipsychotic drugs were judged to be prescribed in a subtherapeutic dose.

Recent survey articles^{7,8} encourage the clinician to use the smallest effective dose of antipsychotic drugs in the agitated elderly. Unfortunately, serum drug levels are not available for the antipsychotic preparations (except for lithium) because of the many active metabolites of these drugs. The clinician, therefore, must use potentially serious adverse events (hip fractures, falls, confusion) as guides to toxicity. To minimize adverse events, antidepressant and antipsychotic medications should be prescribed on a regular, not as-needed, basis. Most of these drugs have a long half-life (24 to 72 hours) in the elderly, and steady state is reached in five to 15 days. (Allowing five to 15 days for an agitated patient to reach a steady state will tax a nursing staff.) When steady state is reached without adverse effects, the dosage can be increased. After five to 15 days steady state will be reached again. Observation for therapeutic benefit or adverse effect dictates the next dosage change. Thus titrating the dose in the elderly will minimize adverse events.

Finally, research continues to support the use of environmental manipulation and interpersonal relationships for controlling confusion and agitation.⁹ Raskind et al⁸ state, "The robust placebo response . . . suggests that nonpharmacologic treatment strategies should also be evaluated in the demented population."

North Ridge Care Center, a 550-bed nursing home in Minneapolis, has a wing for demented and agitated residents. A staff nurse observed the increased agitation in the evening ("sundowning") and over weekends. She suggested that the activities programming be extended from the present eight-hour day, five days a week, to cover evenings and weekends. Research exploring similar such treatment modalities in the nursing home may

establish new standards for quality of care in the nursing home.

In summary, long-term care will challenge the finest minds in medicine. Descriptive research such as that by Burns and Kamerow is a necessary first step. Improvements are needed in the use of psychotropic drugs in elderly patients. The primary care physician has an opportunity to make unique contributions to the quality of care of residents in nursing homes. Further research in family medicine is needed to examine (1) the value and uniqueness of documentation in long-term care, (2) the value of nondrug intervention in modifying undesirable behavior in elderly nursing home residents, (3) effective techniques minimizing the use of sedative hypnotics in the elderly, (4) the value of pharmacokinetic principles to primary care physicians using psychotropic drugs, and (5) the usefulness of psychotropic drug serum levels in primary care.

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