Prescription drug misuse/abuse in the elderly

John W. Culberson, MD; Martin Ziska, PharmD

One quarter of the prescription drugs sold in the United States are used by the elderly, often for problems such as chronic pain, insomnia, and anxiety. The prevalence of abuse may be as high as 11% with female gender, social isolation, depression, and history of substance abuse increasing risk. Screening instruments for prescription drug abuse have not been validated in the geriatric population. Benzodiazepines, opiate analgesics, and some skeletal muscle relaxants may result in physical dependence; however, tolerance, withdrawal syndrome, and dose escalation may be less common in the older patient. Lower doses may decrease the risk of abuse and dependence; however, fear of abuse often results in a failure to adequately treat symptoms such as anxiety, pain, and insomnia.


Key words: prescription, abuse, misuse, elderly, benzodiazepine, opiates, skeletal muscle relaxants

Drugs discussed: acetaminophen, alprazolam, carisoprodol, chlordiazepoxide, cyclobenzaprine, diazepam, eszopiclone, hydrocodone/acetaminophen, lorazepam, meprobamate, metaxalone, oxazepam, ramelteon, temazepam, zolpidem

Misuse and abuse of prescription drugs with abuse potential are a growing problem. The overall prevalence of prescription drug abuse among the elderly is difficult to estimate; however, one study determined that up to 11% of older women misuse and abuse prescription drugs. One quarter of the prescription drugs sold in the United States are used by the elderly, often for problems such as chronic pain, insomnia, and anxiety. In 1991, more than a quarter of tranquilizer prescriptions and a third of hypnotic prescriptions were written for older adults. Moreover, older adults were more likely to continue use of psychoactive drugs for longer periods than younger individuals. As the “baby boom” cohort ages, the extent of alcohol and medication misuse is predicted to significantly increase because of the combined effect of the growing population of older adults and cohort-related differences in lifestyle and attitudes.

The drug-taking patterns of psychoactive prescription drug users can be described as a continuum that ranges from appropriate use for medical indications through misuse by the patient or the prescribing practitioner to persistent abuse and dependence as described by the criteria of the American Psychiatric Association (see Table 1, page 23). Abuse of prescription drugs among older adults does not typically involve the use of these substances to “get high,” and the users do not usually obtain them illegally. Instead, unsafe combinations or amounts of medications may be obtained by seeking prescriptions from multiple physicians (doctor shopping), by obtaining medications from family members or peers, or by stockpiling medications over time. Thus, prescription medication abuse among individuals in late life is qualitatively and quantitatively different than it is for younger adults.

Despite a wealth of information on the epidemiology and treatment of alcohol abuse in older adults, few comparable data are available on prescription drug abuse in this population. No validated screening or assessment instruments are available for identifying or diagnosing drug abuse in older adults. Factors associated with increased risk are highlighted in Table 2 (page 23).

Although illegal drug use is relatively rare among older adults, there is evidence that individuals with alcohol-use...
disorders are at high risk to abuse prescription drugs. A study of 565 consecutive geriatric psychiatry admissions to a Veterans Affairs medical center found that 11 of 18 patients diagnosed with a prescription drug use disorder had also suffered from an alcohol-related disorder at some time in their lives. The sample included alcoholism in remission in 6 of 16 patients with current benzodiazepine-use disorders. The authors suggest that this may represent a transition from alcohol to benzodiazepines (BZDs) facilitated by physicians’ greater tendency to prescribe them to elderly patients.6

It is important to note that prescription drug misuse/abuse in elderly patients without a history of substance abuse problems is relatively uncommon, despite the relatively high utilization of drugs with abuse potential in this population. Unfortunately, the fear of abuse often results in failure to adequately treat symptoms such as anxiety, pain, and insomnia. In other cases, the misuse (or abuse) of prescription medications involves inappropriate prescribing or poor monitoring by health care professionals.

This review will focus on four classes of prescription drugs commonly used by geriatric patients that have abuse potential: benzodiazepines, opiates, skeletal muscle relaxants, and sleep aids. The figure on page 24 illustrates the rising prescribing rates for 5 common medications representing these drug classes.

Benzodiazepines

Benzodiazepines were ranked as the seventh most prescribed medication in 2006.7 Their high use may be attributed to their indication to control symptoms such as agitation, anxiety, and insomnia, which are common in older persons.1 The Beer’s Criteria for medication in older adults recommend avoiding long-acting benzodiazepines because of excessive sedation, increased risk of falls and fractures, and accumulation of active metabolites.8 Short-acting benzodiazepines with half-lives less than 24 hours may be used if needed in the elderly at the lowest effective dose (see Table 3, page 24).

Most physicians are inclined to prescribe lower doses to the elderly than to younger patients, which may offset potential impact of altered pharmacokinetics on the abuse and dependence potential of psychoactive agents. It is unclear whether the pharmacokinetic changes in the elderly translate into an increase in the abuse and dependence potential of benzodiazepines.9 Furthermore, the incidence of escalation to a high dosage is uncommon. A study of individuals receiving benzodiazepines continuously for at least 2 years found that less than 2% escalated to high doses, and that subgroups with a higher risk of dose escalation included antidepressant recipients and patients who

### Table 1  Continuum of psychoactive prescription drug use

<table>
<thead>
<tr>
<th>Proper Use</th>
<th>Misuse (by patient)</th>
<th>Misuse (by practitioner)</th>
<th>Abuse (by patient)</th>
<th>Dependence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• dose level more or less than prescribed</td>
<td>• prescription for inappropriate indication</td>
<td>• use resulting in declining physical or social function</td>
<td>• use resulting in tolerance or withdrawal symptoms</td>
</tr>
<tr>
<td></td>
<td>• use for purpose other than prescribed</td>
<td>• prescription of unnecessary high dose</td>
<td>• use in risky situations (hazardous use)</td>
<td>• unsuccessful attempts to stop or control use</td>
</tr>
<tr>
<td></td>
<td>• use in conjunction with other medications or alcohol</td>
<td>• failure to monitor or fully explain appropriate use</td>
<td>• continued use despite adverse social or personal consequences</td>
<td>• preoccupation with attaining or using the drug</td>
</tr>
</tbody>
</table>

Abuse (by patient)
- use resulting in declining physical or social function
- use in risky situations (hazardous use)
- continued use despite adverse social or personal consequences

Dependence
- use resulting in tolerance or withdrawal symptoms
- unsuccessful attempts to stop or control use
- preoccupation with attaining or using the drug

Data derived from Blow FC.2

Created for Geriatrics by Culberson JW

### Table 2  Factors associated with drug abuse in older adults

| female gender          |
| social isolation       |
| history of substance abuse |
| history of mental illness |
| medical exposure to prescription drugs with abuse potential |

Data derived from Simoni-Wastila L, Yang HK.1

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filled duplicate prescriptions at multiple pharmacies. Elderly persons had a lower risk of dose escalation than younger patients. In all age groups, isolated benzodiazepine abuse is unusual and typically occurs as part of a pattern of abuse with alcohol or other substances. The high comorbidity of anxiety and depressive disorder in the elderly has also led to a concern that depressed elderly patients may be receiving benzodiazepines rather than antidepressants. Alcohol and benzodiazepines may act synergistically in these patients, possibly increasing the risk of suicide.

Federal guidelines designed to reduce the unnecessary use of benzodiazepines and other sedative hypnotic drugs in long-term care facilities define excessive duration as >10 continuous days for short-acting benzodiazepine hypnotics and >4 continuous months for other benzodiazepines unless 2 or more gradual dose reduction attempts failed within 1 year. A study of skilled nursing facilities found that a fourth of all residents were prescribed a benzodiazepine and nearly 10% of all residents had chronic benzodiazepine use. More than 70% of BZD prescriptions were for sleep. Depression, sleep problems, and demand for medication were the strongest predictors of chronic BZD use.

Approximately 40% of patients treated for at least 6 months with a long half-life benzodiazepine will experience some withdrawal symptoms, such as insomnia or anxiety, following abrupt discontinuation. Shorter half-life, abrupt discontinuation, and higher daily dosage increase the risk of withdrawal syndrome. The discomfort of withdrawal symptoms or rebound of previously effectively treated symptoms may result in behavior that may be interpreted as “drug seeking.”

The Severity of Dependence Scale has been validated as a sensitive and specific instrument to screen for dependence in benzodiazepine users (see Table 4, page 25). If there is no indication for use, a patient’s daily functioning is impaired, or the dose of medication is escalating or used in conjunction with alcohol or other drugs, one should consider discontinuation.

### Table 3  Characteristics of benzodiazepines

<table>
<thead>
<tr>
<th>Generic drug</th>
<th>Half-life hrs (parent)</th>
<th>Half-life hrs (metabolite)</th>
<th>Maximum dose/24h</th>
</tr>
</thead>
<tbody>
<tr>
<td>alprazolam</td>
<td>12-15</td>
<td>none</td>
<td>2mg</td>
</tr>
<tr>
<td>chlordiazepoxide</td>
<td>5-30</td>
<td>24-96</td>
<td>not recommended</td>
</tr>
<tr>
<td>diazepam</td>
<td>20-80</td>
<td>50-100</td>
<td>not recommended</td>
</tr>
<tr>
<td>lorazepam</td>
<td>10-20</td>
<td>none</td>
<td>3mg</td>
</tr>
<tr>
<td>oxazepam</td>
<td>5-20</td>
<td>none</td>
<td>60mg</td>
</tr>
<tr>
<td>temazepam</td>
<td>10-40</td>
<td>none</td>
<td>15mg</td>
</tr>
</tbody>
</table>


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of benzodiazepines. A brief intervention strategy, similar to the Brief Alcohol Intervention developed by Barry et al., may prove useful in the prevention and management of benzodiazepine abuse and dependence in the elderly. A gradual tapering of dosage, review of withdrawal symptoms, reassurance that symptoms will abate in 4-5 weeks, and behavioral support including sleep-hygiene techniques are essential ingredients. Hospitalization is advisable for rare individuals who experience seizures or extreme agitation.

### Opiates

Pain is one of the most common symptoms encountered in any medical-practice environment and is particularly prevalent in the elderly patient. Despite their abuse potential, opiate analgesics are indicated in the treatment of chronic pain that is not controlled with other agents. Prescription of opioids is increasing across all age groups. Drug Topics listed the short-acting opiate, hydrocodone/acetaminophen, as the drug most commonly prescribed by physicians and dispensed by pharmacists in 2006, and 8 different opiate analgesics are among the top 200 medications dispensed. In spite of the increasing use of opioids, there is considerable evidence that physicians fail to adequately control chronic pain in geriatric patients. A study of nursing home residents found that 49% had persistent pain as determined using the Minimum Data Set. A quarter received no analgesics, and the most commonly prescribed analgesic was acetaminophen, which was given as needed.

Fear of addiction is a major barrier to long-term opiate treatment in chronic non-malignant pain. Unfortunately, it is common for prescribing physicians to misinterpret drug-seeking by patients with poorly managed chronic pain as a symptom of substance abuse. A small, long-term randomized trial of 36 patients with back pain found that those titrated to an effective dose of narcotic analgesic had less pain and emotional distress, with no adverse effects. Only one of the participants showed signs of abuse behavior after 6 months of treatment. Although this study did not specifically examine elderly patients, there is no evidence that the geriatric population is more prone to the development of prescription opiate abuse following medical titration to an appropriate analgesic dose.

The development of tolerance is a primary phenomenon that may lead to increased dosage and the potential for abuse of psychoactive drugs and alcohol. Tolerance of opioids may result in the need for increased dosage in patients that have a decreased duration or effectiveness of analgesia. While the available evidence is limited, clinical experience suggests that tolerance may not be a significant clinical problem in older adults. In addition, a number of reports demonstrate minimal risk of addiction in patients treated with long-term opiate therapy who do not have a prior history of substance abuse. Controlled-release opioids have a slower onset of action and in theory have lower abuse potential than short-acting opioids; however, the abuse potential of opioids is generally dose-related.

Route of administration may affect the likelihood of diversion or abuse; however, the goal of all opiate therapy for chronic pain should be to deliver the lowest effective, most continuous dose of analgesia. Guidelines for long-term opiate use are summarized in Table 5 (page 26).

Physical dependence on opioids is characterized by a withdrawal syndrome, resulting from a rise in neurotransmitter release and symptoms including runny nose, shivering, diarrhea, and mydriasis. Physicians may confuse physical dependence, a natural consequence of appropriate chronic opiate analgesia at appropriate and effective doses, with abuse.

### Skeletal muscle relaxants

Back pain is among the most common reasons for primary care visits for elderly patients. Skeletal muscle relaxants are indicated for the treatment of muscle spasm associated with acute painful musculoskeletal conditions. In elderly patients, cyclobenzaprine may be initiated at 5mg three times per day and titrated slowly to a 10mg dose. The extended-release form is not recommended. Metaxalone does not require dose titration and may be prescribed at 800mg three to four times each day. Common adverse reactions are attributable to anticholinergic ac-

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**Table 4**

Severity of dependence scale for use as screening instrument for benzodiazepine dependence in current users of benzodiazepines

1. Did you think your use of tranquilizers was out of control?
2. Did the prospect of missing a dose make you anxious or worried?
3. Did you worry about your use of tranquilizers?
4. Did you wish you could stop?
5. How difficult would you find it to stop or go without your tranquilizers?

Data derived from Llórente MD, David D, Golden AG, Silverman MA.

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tivity, and include sedation, dizziness, and xerostomia. Duration of use is not to exceed 2-3 weeks. Skeletal muscle relaxants are contraindicated in patients with hyperthyroidism, congestive heart failure, arrhythmias, heart block, or in the acute recovery phase of myocardial infarction.

There is evidence that skeletal muscle relaxants are misused or abused. One study found that two-thirds of muscle relaxant users had histories of recent back pain; however, only 4% of all those with a recent history of back pain reported any muscle relaxant use. Mean length of use was greater than 2 years, with 45% taking medication longer than a year. Muscle relaxant use in the elderly appeared undiminished compared with use in the general population. These statistics indicate that a small proportion of individuals are using skeletal muscle relaxants chronically and may indicate that some are abusing these agents. Additionally, the Beer’s Criteria indicate that muscle relaxants should be avoided altogether in the elderly because the efficacy is insufficient to outweigh the adverse effect profile.

One commonly prescribed skeletal muscle relaxant, carisoprodol, is not recommended for use in the elderly. Long term use (> 3 weeks) of carisoprodol has the potential for abuse because of its addictive metabolite meprobamate, which has led to its classification as a Schedule IV controlled substance in 10 states. A study of 40 patients taking carisoprodol for a mean duration of 4.8 months found that half had a history of substance abuse. These individuals obtained carisoprodol prescriptions from other physicians, took more doses than prescribed, or used carisoprodol for effects other than prescribed. On the basis of this information, physicians should avoid prescribing carisoprodol and be aware of its abuse potential when used by elderly patients.

### Sleep aids

Sleep disorders, especially insomnia, are common in older adults. These disorders are frequently treated using non-benzodiazepine hypnotics. Nonetheless, there is a relative lack of data regarding the use of these agents in the elderly. Before the development of non-benzodiazepine sedative-hypnotics, benzodiazepines were the mainstay of treatment for insomnia. Non-benzodiazepine sedative-hypnotics and melatonin agonists offer an improved adverse-effect profile and decreased potential for tolerance compared with traditional benzodiazepines.

**Zolpidem** is indicated for the short-term treatment of insomnia with difficulty of sleep onset (regular formulation) and difficulty with sleep onset and/or maintenance (controlled-release formulation). Elderly or delibilated patients must be monitored closely for impaired cognitive or motor performance. Zolpidem should be administered to the elderly at 5mg, or half the recommended adult dose, and immediately prior to bedtime. **Eszopiclone** may be initiated at 1mg and titrated to 2mg in elderly individuals having difficulty falling or staying asleep. Although dizziness, headache, and somnolence are the most common adverse reactions, rare cases of abnormal thinking and amnesia have been reported.

Eszopiclone and zolpidem are considered Schedule IV controlled substances and their use is not recommended to exceed 10 days. They must be used with caution in patients receiving other psychoactive medication or ethanol, depression, history of drug dependence, or pulmonary disease. Despite these concerns, trials evaluating zolpidem and eszopiclone use for longer than 4 weeks have shown little evidence of tolerance, withdrawal symptoms, or rebound insomnia. A single trial of 250 elderly patients indicated a worsening of sleep for a single night after abrupt discontinuation of sustained-release zolpidem.

**Remelteon** has not been shown to have any tolerance or dependency characteristics; thus, it is not labeled as a controlled substance and may provide possible long-term treatment. The geriatric dosage is 8mg within 30 minutes of bedtime. This agent has a similar adverse-effect profile to other non-benzodiazepine hypnotic medications. A review of data from placebo-controlled trials found the efficacy of ramelteon to be limited to improving sleep latency, while zolpidem and eszopiclone, especially at higher doses, were found to produce improvement in both sleep latency and some improvement in total sleep time. All of the medications were found to be well tolerated in the elderly.

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development and validation of screening instruments and treatment guidelines for prescription drug abuse in the elderly may increase the appropriate use of established and newer medications.

References


