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Psychotropic Medication Use among Older Adults: What All Nurses Need to Know

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Abstract

Psychotropic medications are commonly administered to elderly clients to manage behavior and psychiatric symptoms. These drugs are known to have potentially serious side effects, to which older adults are more vulnerable. Nurses care for older adults in many different practice settings but have varying degrees of knowledge about these kinds of medications. The purposes of this article are to (a) provide information to geriatric nurses in all settings about how the most commonly prescribed psychotropic medications (i.e., anxiolytic, antidepressant, and antipsychotic drugs) differentially affect older adults; (b) examine recent concerns about the use of psychotropic medications with older adults; and (c) discuss nursing implications for those administering psychotropic medications to older adults.

Although much of the literature regarding the use of psychotropic medications among older adults is focused on their use in nursing home settings and in residents with dementia, psychotropic medication use is quite common among older adults with or without dementia in all settings (community, assisted living, acute care medical and psychiatric units, and nursing homes). Psychotropic medications are more prevalent among community-dwelling older adults than other age groups. For example, community-dwelling older adults are 7 to 18 times more likely to use psychotropic drugs than are middle-aged adults (Voyer & Martin, 2003). Smith, Buckwalter, Hyunwook, Ellingrod, and Schultz (2008) noted research findings suggesting that between 35% and 53% of assisted living residents receive one or more psychotropic medications, and Voyer and Martin (2003) found that more than half of community-dwelling older adults who are admitted to nursing homes receive psychotropic medications within 2 weeks of their admission. In a study of older adults with dementia in nursing homes and acute care geriatric units, Pitkala, Laurila, Strandberg, and Tilvis (2004) found that 87% of patients were taking one psychotropic medication, 66% were taking two, 36% were taking three, and 11% were taking four or more.

It is well documented that older adults are highly vulnerable to the adverse effects of psychotropic medications (Bulat, Castle, Rutledge, & Quigley, 2008; Carr, 2005; Grasso, Bates, & Shore, 2007; Mott, Poole, & Kenrick, 2005). Those older than age 70 are 3.5 times more likely than younger individuals to be admitted to the hospital due to adverse drug reactions associated with psychotropic medications. The risk for adverse reactions increases dramatically with the number of medications used and with increasing age (Brooks & Hoblyn, 2007). Thus, it is imperative that nurses caring for older adults, regardless of the setting, are knowledgeable about these medications and are able to recognize and

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appropriately respond to side effects and adverse effects. The purposes of this article are to (a) provide geriatric nurses working in all settings with information about how psychotropic medications differentially affect older adults; (b) examine recent concerns about the use of psychotropic medications with older adults; and (c) discuss nursing implications related to potential side effects and adverse effects of these medications.

Background

Because of severe adverse side effects and inappropriate prescribing practices, the use of psychotropic medications first came under scrutiny with nursing home residents. As a result, the Omnibus Budget Reconciliation Act of 1987 (OBRA '87), federal legislation mandating minimum health and care requirements for nursing homes, placed limitations on the use of psychotropic medications with nursing home residents (Snowdon, Day, & Baker, 2006). According to one report, prior to the implementation of OBRA '87, 21.7% of nursing home residents were prescribed typical antipsychotic medications (Snowdon et al., 2006). Although the use of psychotropic medications decreased after the implementation of OBRA '87, their use in U.S. nursing homes has nevertheless remained considerable. Between 1993 and 2000, 15% of nursing home residents received antipsychotic medications (Snowdon et al., 2006). The use of atypical antipsychotic drugs increased in the 1990s because health professionals believed these drugs were safer than typical antipsychotic medications.

Likewise, the use of antidepressant drugs increased significantly in nursing home residents. The use of selective serotonin reuptake inhibitors (SSRIs) largely replaced tricyclic medications, again due to the perception by clinicians of their greater safety. However, assumptions about the safety of these psychotropic medications with older adults have increasingly come into question (Schneider et al., 2006). In 2006, the Centers for Medicare and Medicaid Services (CMS) implemented new guidelines (F-Tag 329) regarding pharmacy services and unnecessary medications in long-term care settings. The new guidelines stress the importance of appropriate dosing and duration of medications as well as gradual dosage reduction or tapering of specific medication classes, including all psychotropic medications.

It is evident that psychotropic medication use is widespread among older adults in all settings, and nurses caring for them have varying degrees of knowledge about these medications. One study noted that only 45% of nursing homes employ nurses who have had psychiatric training. This lack of training is compounded by the fact that mental health professionals spend limited time in nursing homes to provide consultation or guidance (NSW Department of Health, 1997). An older, but large U.S. study of 44 nursing homes (Avorn, Dreyer, Connelly, & Soumerai, 1989) found that almost half of nurses employed or working in nursing homes were unable to identify the broad psychoactive class for six commonly prescribed drugs. Half of the nurses were also unaware of a common, serious side effect of antipsychotic medications, tardive dyskinesia.

Nurses in other settings also have varying degrees of knowledge about psychotropic medications and their potential adverse effects. Voyer and Martin (2003) suggested that older adults in the community and in nursing homes do not receive optimum nursing care in regard to their mental health problems, because of either nurses' lack of recognition of psychiatric symptoms or overreliance on psychotropic medications without use of alternative nonpharmacological interventions.

Geriatric nurses can access information regarding psychotropic medication use with older adults from a variety of sources. The value of this article is that it provides one easily

accessible source for critical information about psychotropic medications that all geriatric nurses need to enhance their knowledge and care practices.

Psychotropic medications can induce or worsen hypotension and can put elderly clients at greater risk for falls and skeletal fractures, particularly when given in combination with other medications.

Effects of Age-Related Changes

Age-related changes such as altered absorption, altered distribution, changed hepatic metabolism, reduced renal excretion, and altered neurophysiology all affect pharmacokinetics and pharmacodynamics. (See Jacobson, Pies, and Katz [2007] for a more detailed discussion of these issues.) Comorbid medical diagnoses and polypharmacy, common in many older adults, also affect the pharmacokinetic and pharmacodynamic properties of psychotropic medications, putting older adults at increased risk for adverse drug reactions and interactions (Zubenko & Sunderland, 2000). Orthostatic hypotension as well as falls and associated skeletal fractures increase with age and are attributed to multiple causes, including medication side effects, polypharmacy, and comorbid medical conditions. Psychotropic medications can induce or worsen hypotension and can put elderly clients at greater risk for falls and skeletal fractures, particularly when given in combination with other medications and in the presence of other comorbid medical conditions (Bulat et al., 2008).

Adverse Effects of Psychotropic Medications in Older Adults

Psychotropic medication is a broad term referring to medications that affect mental function, behavior, and experience (NSW Department of Health, 1997). Psychotropic medications are typically administered to older adults to manage symptoms of anxiety, depression, psychological distress, and/or insomnia. This article will focus on the three categories of psychotropic medications most commonly prescribed to older adults, and thus those most likely to be encountered by gerontological nurses: anxiolytic, antidepressant, and antipsychotic medications.

Anxiolytic/Hypnotic Medications

Anxiolytic medications are most commonly prescribed for anxiety disorders or symptoms. The most common anxiolytic medications prescribed for older adults are benzodiazepines (Bulat et al., 2008; Grasso et al., 2007). In a 2004 report of the top 300 medications dispensed by psychiatrists, the most commonly prescribed benzodiazepines were alprazolam (Xanax[®]), lorazepam (Ativan[®]), clonazepam (Klonopin[®]), diazepam (Valium[®]), and temazepam (Restoril[®]) (Grasso et al., 2007). Older adults experience an increased magnitude of the common side effects of these drugs, particularly sedation and memory and psychomotor impairment (Mott et al., 2005). This may be due to reduced rates of drug clearance and elimination in older adults. Some older adults experience paradoxical excitement from benzodiazepines.

Because of the increased susceptibility to oversedation and memory and psychomotor impairment, elderly patients who take benzodiazepines are also more at risk for falls and skeletal fractures (Bulat et al., 2008). Long-term use (more than 30 days) of benzodiazepines is contraindicated in older adults due to risk of cognitive decline, poor functional autonomy, and addiction; however, many older adults are prescribed benzodiazepines for months or even years (Mott et al., 2005; Voyer & Martin, 2003). Use of benzodiazepines as a sleep aid may actually worsen sleep patterns in older adults (Voyer & Martin, 2003). It is disturbing to note that 10% of geriatric hospitalizations are related to the use of benzodiazepines (Voyer & Martin, 2003).

Hypnotic medications are prescribed for insomnia. Although hypnotic drugs, such as zolpidem (Ambien[®]), zaleplon (Sonata[®]), and eszopiclone (Lunesta[®]) (as well as mirtazapine [Remeron[®], Remeron SolTab[®]], trazodone [Desyrel[®]], nortriptyline [Pamelor[®]], temazepam, and gabapentin [Neurontin[®]—all of which are often prescribed off label for insomnia) may improve sleep quality in older adults, they generally are not recommended for long-term use (Voyer & Martin, 2003). Sedating antihistamine drugs should be avoided, as they may be associated with delirium and other anticholinergic side effects. Prescribed hypnotic drugs should be tapered if taken for longer than 2 weeks (Jacobson et al., 2007).

Nursing Implications—The use of benzodiazepines and hypnotic drugs should be avoided, or their use should not exceed 30 days, if possible (Carr, 2005; Voyer & Martin, 2003). When benzodiazepines are prescribed, it is preferable to avoid older drugs (i.e., diazepam or chlordiazepoxide [Librium[®]]), which are more likely to accumulate and cause toxicity. Preferred anxiolytic and hypnotic medications, along with dosing guidelines and major adverse effects, are provided in Table 1.

Recognizing and being able to differentiate anxiety from other underlying medical illness (e.g., cardiac disorders, endocrine disorders, withdrawal from alcohol, caffeine, or nicotine) can be difficult because patients may exhibit similar symptoms. Many elderly patients have undiagnosed depression, which can present with atypical symptoms similar to an anxiety disorder, or patients may have comorbid anxiety and depression (Norman, Whooley, & Lee, 2004).

Nurses should work collaboratively with physicians to identify patients with chronic benzodiazepine use and carefully implement a titrated withdrawal program (Voyer & Martin, 2003). Patients currently taking benzodiazepines should be closely monitored for cognitive and/or functional decline using screening tools such as the Mini-Mental State Examination (Folstein, Folstein, & McHugh, 1975). Fall risk should be assessed, as well as symptoms of increasing tolerance (requiring higher dosages to achieve the same effect) and/or addiction (i.e., taking the drug in larger amounts over a longer time than intended; persistent desire or unsuccessful attempts to control use; spending a great deal of time trying to obtain the medication, such as going to multiple doctors; and impaired social functioning as a result of the substance) (Morgan, White, & Wallace, 2005). Nonpharmacological interventions such as activity-based therapies (e.g., music, art, dance, drama), reality orientation, reminiscence, validation, and multisensory stimulation (Minardi & Hayes, 2003) should be explored to ameliorate symptoms of anxiety and insomnia prior to reliance on anxiolytic medications.

Antidepressant Medications

Antidepressant medications are prescribed for depressive disorders, anxiety disorders, and insomnia or depression with comorbid anxiety (Jacobson et al., 2007). Among antidepressant medications, SSRIs, a newer generation of this class of medications, have become the preferred first-line treatment for depression in older adults (Brooks & Hoblyn, 2007), as these drugs have more benign side effects than other antidepressant agents. Side effects common to SSRIs include headache, gastrointestinal disturbances, increased sweating, and sexual dysfunction. Unlike other antidepressant drugs, SSRIs have fewer anticholinergic or cardiovascular effects. However, older adults have increased sensitivity to SSRI adverse effects than do younger patients (Zubenko & Sunderland, 2000). Of the SSRIs, preferred first-line choices generally include citalopram (Celexa[®]), escitalopram (Lexapro[®]), and sertraline (Zoloft[®]). Second-line choices include fluoxetine (Prozac[®]) and paroxetine (Paxil[®], Paxil CR[®]), as well as the atypical antidepressant drugs venlafaxine

(Effexor[®], Effexor XR[®]) and bupropion (Wellbutrin[®], Wellbutrin SR[®], Wellbutrin XL[®]) (Jacobson et al., 2007).

Tricyclic antidepressant drugs (TCAs), an older generation of antidepressant medications, have a number of side effects that increase elderly patients' risk for falls. These include sedation, psychomotor retardation, postural hypotension, and anticholinergic effects, which may cause blurred vision and cognitive impairment. Fall risk is the greatest during the first 90 days of treatment, when dosages are being adjusted and before physiological adjustment has taken place (Zubenko & Sunderland, 2000). Both TCAs and SSRIs have been shown in epidemiological studies to have equivalent risk for falls in older adults; however, the risk appears to be dosage related (Bulat et al., 2008; Jacobson et al., 2007).

Many older adults with depression experience comorbid anxiety. Careful assessment is critical to provide appropriate interventions. Treating these symptoms with anxiolytic medications alone has been associated with poor outcomes. Choosing antidepressant drugs with known anxiolytic effects is preferable. These medications include SSRIs and venlafaxine, as well as other novel antidepressant drugs such as mirtazapine and duloxetine (Cymbalta[®]) (Jacobson et al., 2007). Depression is often a comorbid factor with a variety of medical conditions including cancer, coronary heart disease, Parkinson's disease, thyroid disease, and cerebrovascular disease. Treatment of depression in patients with comorbid medical illnesses can positively affect mood and functioning; however, careful consideration must be given to the choice and dosing of antidepressant medication in relation to the patient's medical condition (Byrd, 2005).

Of concern is that depression in older adults goes unrecognized 85% of the time (Bair, 2000), and only 15% to 19% of older people with symptoms of depression receive ample antidepressant medication (Taylor, McCracken, Wilson, & Copeland, 1998). Voyer and Martin (2003) contended that antidepressant drugs are underprescribed for older adults due to a lack of recognition of depressive symptoms by health care providers. In a study of 320 randomly selected Iowa nursing home residents (Kerber, Dyck, Culp, & Buckwalter, 2008), the odds of being treated for depression were eight times greater for those who were diagnosed by a primary care provider versus those diagnosed with either the Geriatric Depression Scale (Yesavage et al., 1982-1983) or the Minimum Data Set. These results provide further evidence that depression in older adults is often unrecognized and untreated.

Nursing Implications—Nurses should be aware that depression is often overlooked in older adults and should work collaboratively with physicians to identify elderly clients with depressive symptoms. When administering antidepressant drugs to older adults, nurses should be familiar with the drug category and the side effects most commonly associated with them. With use of TCAs and SSRIs, fall risk should be of greatest concern. Preferred antidepressant drugs, along with dosing guidelines and major adverse effects, are provided in Table 2. Recognizing depression in older adults can often be challenging due to atypical symptoms. A list of atypical symptoms of depression in older adults is provided in Table 3.

Use of psychotherapy alone or as an adjunct to antidepressant medication should not be overlooked with elderly clients. Older adults with depression can benefit from psychoeducation, family counseling, visiting nurses, grief/loss support groups, and senior center activities (Alexopoulos et al., 2001). Older adults can also benefit from supportive counseling and assistance with problem solving for day-to-day stressors. The preferred kinds of psychotherapies for treatment of depression in older adults include cognitive-behavioral therapy, problem solving psychotherapy, interpersonal therapy, and supportive psychotherapy (Alexopoulos et al., 2001). Complementary or alternative therapies such as

prayer, massage, and aromatherapy can also help reduce depressive symptoms (Simpson, 2003).

Antipsychotic Medications

Antipsychotic medications, typically given for psychotic symptoms (e.g., delusions, hallucinations), are also frequently administered to manage disruptive behavior in older adults with cognitive impairment. Antipsychotic medications include both typical (older generation) and atypical (newer generation) drugs. Typical antipsychotic medications (e.g., haloperidol [Haldol[®]]) have several serious adverse effects that can affect quality of life, including tardive dyskinesia, acute extrapyramidal side effects (EPSEs), and neuroleptic malignant syndrome (NMS) (Mott et al., 2005). Once again, older adults are more at risk for these side effects than are younger patients (Mott et al., 2005; Zubenko & Sunderland, 2000). Tardive dyskinesia involves abnormal muscle movements in the face, eyes, mouth, tongue, and limbs and can develop in 30% to 50% of patients, even at low drug dosages for short periods of time. It can last for several years and, in some cases, is irreversible even after the medication has been discontinued.

EPSEs include drug-induced parkinsonism, akinesia, dystonia, and akathisia. Parkinsonism and akinesia consist of lack of or slowed movement, depressed affect, salivation, expressionless face, tremor, and shuffling gait. Dystonia is characterized by muscle rigidity, contracted neck and eye muscles, and jaw and muscle soreness. Dystonic reactions are less common in older adults for reasons that remain uncertain (Zubenko & Sunderland, 2000). Akathisia is characterized by pacing and restlessness. Between 50% and 75% of all patients taking typical antipsychotic drugs experience EPSEs (Høiberg & Nielson, 2006); however, elderly patients are at higher risk for drug-induced parkinsonism and are at increased risk for EPSEs than are younger patients (Mott et al., 2005).

NMS involves high fever, rigidity, altered consciousness, and autonomic system instability (i.e., unstable hypertension, tachycardia, sweating, pallor). NMS can be potentially fatal if not recognized and treated. Conditions such as neurological illness, dehydration, malnutrition, exhaustion, agitation, and organic brain disease are considered risk factors that make older adults more vulnerable to the development of NMS (Kidder, 1999). In addition to the previously stated adverse effects, older adults are more susceptible to the anticholinergic (dry mouth, constipation, blurred vision, urinary retention) and cardiovascular (hypotension, cardiac conduction delay) effects of typical antipsychotic drugs (Madhusoodanan, Shah, Brenner, & Gupta, 2007).

Atypical antipsychotic medications (e.g., olanzapine [Zyprexa[®]], quetiapine [Seroquel[®]]) generally produce fewer of the adverse effects commonly associated with the typical antipsychotic medications. Weight gain is common, especially with clozapine (Clozaril[®]) and olanzapine (Boyd, 2008). On the basis of controlled studies of their use in younger patients, atypical antipsychotic drugs were initially considered a safer alternative in treating older adults with psychotic symptoms or agitation associated with dementia.

However, recent warnings from the U.S. Food and Drug Administration (FDA) have emerged regarding the use of these medications with older adults due to cardiac, cerebrovascular, and mortality risks associated with their use in patients with dementia (Madhusoodanan et al., 2007). A number of recent publications have called into question the common practice of administering atypical antipsychotic medications to patients with Alzheimer's disease (Jeste, Dolder, Nayak, & Salzman, 2005; Jones, 2006). Jones (2006) reported that much of the data regarding use of atypical antipsychotic medications with older adults remained unpublished by pharmaceutical companies, and thus the risk of untoward events from the use of antipsychotic medications was not widely known. A systematic

review of published and unpublished literature on the use of atypical antipsychotic medications in patients with Alzheimer's disease revealed a number of dangerous side effects, including serious adverse cerebrovascular events, EPSEs, and other side effects such as somnolence, upper respiratory tract infections, edema, urinary tract infections, and fever (Ballard, Waite, & Birks, 2006).

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In 2005, the FDA completed a meta-analysis of clinical studies examining the use of atypical antipsychotic medications in patients with dementia. Results revealed a high death rate in patients who received atypical antipsychotic medications versus those treated with placebo. As a result, the FDA instructed drug manufacturers to add a black box warning to atypical antipsychotic drug labels indicating associated risks and that these drugs are not approved for use in patients with dementia (Jones, 2006).

A recent report from the Clinical Antipsychotic Trials in Intervention Effectiveness—Alzheimer's Disease (CATIE-AD) study revealed that the adverse effects of atypical antipsychotic drugs outweighed the advantages of these medications when administered to elderly clients with Alzheimer's disease (Schneider et al., 2006). Although the effectiveness of atypical antipsychotic drugs was greater than placebo, the adverse effects were found to limit their overall effectiveness. As a result, findings from this National Institutes of Health-sponsored study suggest that there is no clinical benefit of treatment with atypical antipsychotic drugs in patients with Alzheimer's disease.

Madhusoodanan et al. (2007) recently criticized the CATIE-AD study with regard to outcome measures utilized and pointed to the fact that most participants in the study were living at home. They argued that older adults in nursing homes and hospital settings have more serious neuropsychiatric symptoms than do community-dwelling older adults and that the results of the CATIE-AD study may not be generalizable to these populations. Furthermore, they stated that no medications are more efficacious than atypical antipsychotic drugs for the treatment of psychosis of Alzheimer's disease, which is one of the behavioral and psychological symptoms of dementia.

Nursing Implications—Preferred antipsychotic medications, along with dosing guidelines and major adverse effects, are provided in Table 4. Nurses should monitor for oversedation, orthostatic hypotension, unsteadiness, and EPSEs when administering both typical and atypical antipsychotic drugs. To assess for tardive dyskinesia, a standardized assessment instrument such as the Abnormal Involuntary Movement Scale (Guy, 1976) is recommended before treatment at baseline and then 4 weeks, 8 weeks, and at least every 6 subsequent months after starting antipsychotic medications (Jacobson et al., 2007).

Because antipsychotic drugs can cause parkinsonism and lower the seizure threshold, elderly patients with a history of Parkinson's disease or seizure disorders should be monitored closely. Antipsychotic drugs prescribed for behavior management should be used for short periods; if continued for longer periods, they should be reviewed regularly (Carr, 2005). The use of atypical antipsychotic medications should be avoided in patients with dementia if possible, but when used, patients should be monitored closely for potential cerebrovascular or cardiovascular adverse effects, as well as signs of infection.

Nonpharmacological strategies have been suggested as an alternative or adjunct to medications for patients experiencing psychosis to minimize agitation and disruptive behavior. Smith and Buckwalter (2005) identified the following nonpharmacological

approaches: sensory enhancement (e.g., music, aromatherapy, Snoezelen[®] therapy), socialization (e.g., reminiscence, “video respite,” simulated presence therapy), and structured activities. Cohen-Mansfield (2005) recommended the following non-pharmacological interventions to prevent or manage disruptive behaviors: social support and contact (e.g., talking with the person, video or audiotapes of family members, music therapy, pet therapy, dolls, massage), engaging activities (e.g., stimulation, active engagement, and allowing self-stimulation), and relief from discomfort (e.g., pain, hearing or vision problems, positioning, and addressing activity of daily living needs).

Other Considerations

The importance of clinical review and monitoring of psychotropic medications in older adults cannot be overemphasized. In light of CMS guidelines (F-Tag 329) requiring gradual tapering of psychotropic drugs unless clinically contraindicated, nurses must carefully monitor the length of time a patient has received a medication. Dosage reduction or reasons for continuing the medication must be thoroughly documented. Although psychotropic medications are frequently prescribed to manage behavioral disturbances and psychiatric symptoms, it is imperative that a comprehensive nursing assessment be conducted to identify other potential causes of disruptive behavior, such as delirium, pain, fatigue, hunger, incontinence, and infection. Nonpharmacological interventions, such as reminiscence, activity therapy, and pet therapy, should be thoroughly explored (Kerber et al., 2008). When psychotropic medications are administered, the lowest dosage possible should be used, usually one third to one half the usual dosage of younger individuals, with slow titration upward (Carr, 2005). Close monitoring for side effects and documentation of both pharmacological and nonpharmacological interventions, including their effectiveness, is essential.

Conclusion

Administration of psychotropic medications is potentially hazardous and can result in serious and sometimes fatal consequences for patients of all ages (Usher, Lindsay, Holmes, & Luck, 2003). This is even more evident for high-risk populations such as older adults. Nurses in all practice settings caring for elderly patients should be familiar with this group of medications, their side effects, and the impact of age-related changes on their pharmacodynamics and pharmacokinetics. Careful assessment, close monitoring of potentially serious side effects, and use of nonpharmacological interventions when possible will help prevent potential deleterious or fatal effects on this highly vulnerable group.

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Keypoints
Psychotropic Medications

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1. Psychotropic medication use is common among older adults in all settings, including the community, assisted living, and long-term care.
2. The risk for adverse reactions from psychotropic medications increases dramatically with the number of medications taken and with increasing age.
3. It is well documented that older adults are highly vulnerable to the adverse effects of psychotropic medications.
4. It is imperative that nurses caring for older adults, regardless of the setting, are knowledgeable about these medications and are able to recognize and appropriately respond to side effects and adverse effects.

Table 1
Anxiolytic Medications and Recommended Dosing for Use in Older Adults

Generic (Brand) Name	Initial Dosage	Maximum Daily Dosage	Major Adverse Effects
Benzodiazepines			
Alprazolam (Xanax [®])	0.125 mg to 0.25 mg twice per day	0.25 mg to 2 mg twice per day	Incoordination, cognitive impairment, depression, drowsiness, fatigue, irritability, light headedness, sedation, appetite changes, weight loss or gain, constipation, dry mouth, difficulty urinating, dysarthria
Lorazepam (Ativan [®])	0.25 mg to 0.5 mg twice per day	0.5 mg to 4 mg twice per day	Sedation and respiratory depression
Oxazepam (Serax [®])	10 mg twice per day	10 mg to 30 mg twice per day	Edema, drowsiness, ataxia, dizziness, memory impairment, headache, paradoxical excitement, incontinence, blood dyscrasia, jaundice, dysarthria, tremor, diplopia, syncope (rare)
Temazepam (Restoril [®])	7.5 mg at night	7.5 mg to 5 mg at night	Confusion, dizziness, drowsiness, fatigue, anxiety, headache, lethargy, hangover, euphoria, vertigo, diarrhea, dysarthria, weakness, blurred vision, diaphoresis
Hypnotic agents			
Eszopiclone (Lunesta [®])	1 mg to 2 mg at bedtime	1 mg to 2 mg at bedtime	Headache, unpleasant taste
Gabapentin (Neurontin [®])	100 mg at bedtime	100 mg to 300 mg/3600 mg ^a at bedtime	Somnolence, dizziness, ataxia, fatigue, peripheral edema, diarrhea, tremor, weakness, nystagmus, diplopia
Mirtazapine (Remeron [®])	7.5 mg at bedtime	7.5 mg to 45 mg at bedtime	Somnolence, increased appetite with weight gain, increased serum cholesterol, constipation, dry mouth
Nortriptyline (Pamelor [®])	10 mg to 25 mg at bedtime	10 mg to 100 mg at bedtime	Orthostasis, hypertension, myocardial infarction, ataxia, extrapyramidal symptoms, seizures, glucose dysregulation, syndrome of inappropriate antidiuretic hormone, sexual dysfunction, dry mouth, anorexia, constipation, nausea, vomiting, diarrhea, weight gain (or loss), urinary retention, impotence, blood dyscrasia, increased levels in liver function test values, paresthesia, mydriasis
Trazodone (Desyrel [®])	25 mg at bedtime	25 mg to 200 mg at bedtime	Orthostasis, ventricular irritability, sedation, dizziness, gait instability, mild cognitive impairment, seizures, weight gain, priapism, headache, dry mouth, edema, nausea, diarrhea
Zaleplon (Sonata [®])	5 mg at bedtime	5 mg to 10 mg at bedtime	Few common adverse effects. <i>Less common effects:</i> Chest pain, edema, amnesia, dizziness, hallucinations, light headedness, incoordination, anorexia, dyspepsia, nausea, constipation, dry mouth, tremor, weakness, arthralgia
Zolpidem (Ambien [®])	5 mg at night	5 mg to 10 mg at night	Few common adverse effects. <i>Less common effects:</i> Palpitations, headache, dizziness, light headedness, amnesia, nausea, diarrhea, dry mouth, constipation

Sources. Jacobson, Pies, and Katz (2007); Smith (2005).

^aFor insomnia, the recommended dosage of gabapentin is up to 300 mg per day; for essential tremor, restless leg syndrome, and neuropathic pain, the recommended dosage is up to 3600 mg per day.

Table 2
Antidepressant Medications and Recommended Dosing for Use in Older Adults

Generic (Brand) Name	Initial Dosage	Maintenance Dosage	Major Adverse Effects
Selective serotonin reuptake inhibitors (SSRIs)			
Citalopram (Celexa®)	10 mg to 20 mg per day	10 mg to 40 mg per day	Nausea, vomiting, dry mouth, headache, somnolence, insomnia, increased sweating, tremor, diarrhea, sexual dysfunction
Escitalopram (Lexapro®)	10 mg per day	5 mg to 20 mg per day	Suicidal behavior, fever, insomnia, dizziness, somnolence, paresthesia, light headedness, migraine, tremor, vertigo, abnormal dreams, irritability, fatigue, lethargy, palpitations, hypertension, flushing, chest pain, nausea, diarrhea, constipation, indigestion, vomiting, dry mouth, heartburn, flatulence, gastroesophageal reflux, ejaculation disorder, urinary frequency
Fluoxetine (Prozac®)	10 mg per day	5 mg to 40 mg per day	Nausea, vomiting, diarrhea, insomnia, nervousness, restlessness, agitation, anxiety, light headedness, drowsiness, fatigue, headache, tremor, initial weight loss, possible long-term weight gain, hyponatremia, syndrome of inappropriate antidiuretic hormone (SIADH), increased risk of bleeding (upper gastrointestinal and intraoperative) with co-administration of nonsteroidal anti-inflammatory drugs, aspirin, and warfarin (Coumadin®).
Paroxetine (Paxil®, Paxil CR®)	10 mg per day	5 mg to 40 mg per day	Headache, somnolence, dizziness, insomnia, dry mouth, constipation, diarrhea, ejaculatory disturbances, weakness, diaphoresis
Sertraline (Zoloft®)	12.5 mg to 25 mg per day	25 mg to 200 mg per day	Insomnia, somnolence, dizziness, headache, fatigue, dry mouth, diarrhea, nausea, ejaculatory disturbances
Non-SSRIs			
Bupropion (Wellbutrin®, Wellbutrin SR®, Wellbutrin XL®)	37.5 mg to 75 mg per day; SR: 75 mg to 100 mg every morning; XL: 150 mg every morning	150 mg in two to three divided dosages; SR: 100 mg twice per day; XL: 150 mg per day	Dizziness, anxiety, agitation, dry mouth, insomnia, headache, nausea, constipation or diarrhea, tremor
Duloxetine (Cymbalta®)	20 mg per day	20 mg to 60 mg per day	Nausea, dry mouth, constipation, poor appetite, diarrhea, headache, insomnia, somnolence, fatigue, diaphoresis, dizziness
Mirtazapine (Remeron®, Remeron SolTab®)	7.5 mg at bedtime	7.5 mg to 45 mg at bedtime	Somnolence, increased appetite with weight gain, increased serum cholesterol, constipation, dry mouth
Venlafaxine (Effexor®, Effexor XR®)	25 mg twice per day; XR: 37.5 mg per day	150 mg per day in divided dosages; XR: 150 mg per day	Headache, somnolence, dizziness, insomnia, nervousness, nausea, dry mouth, constipation, anorexia, abnormal ejaculation/orgasm, weakness, diaphoresis
Tricyclic antidepressant drugs			
Desipramine (Norpramin®)	25 mg per day	100 mg per day	Serotonin syndrome, anticoagulant effect with warfarin, cardiotoxicity, orthostasis, hypotension, hypertension, anticholinergic effects, tremor, agitation, insomnia
Nortriptyline (Pamelor®)	10 mg to 25 mg per day	50 mg per day	Orthostasis, hypertension, myocardial infarction, ataxia, extrapyramidal symptoms, seizures, glucose dysregulation, SIADH, sexual dysfunction, dry mouth, anorexia, constipation, nausea, vomiting, diarrhea, weight gain/loss, urinary retention, impotence,

Generic (Brand) Name	Initial Dosage	Maintenance Dosage	Major Adverse Effects
			blood dyscrasia, increased levels in liver function test values, paresthesia, mydriasis

Sources. Jacobson, Pies, and Katz (2007); Morgan, White, and Wallace (2005); Norman, Whooley, and Lee (2004).

Table 3
Atypical Symptoms of Depression in Older Adults

Anxiety, nervousness, increased worry
Apathy
Cognitive complaints (difficulty with concentration and memory)
Confusion
Irritability
Lack of energy/fatigue
Lack of feeling or emotion
Low motivation
Slowed movements
Unexplained somatic complaints

Note. All symptoms appear without evidence of feelings of sadness. Source. Byrd (2005).

Table 4
Antipsychotic Medications and Recommended Dosing For Use In Older Adults

Generic (Brand) Name	Initial Dosage	Maintenance Dosage	Major Adverse Effects
Typical antipsychotic agent			
Haloperidol (Haldol®)	0.25 mg to 0.5 mg per day	0.25 mg to 4 mg per day	Extrapyramidal symptoms, tardive dyskinesia, neuroleptic malignant syndrome
Atypical antipsychotic agents			
Aripiprazole (Abilify®)	5 mg per day	2.5 mg to 15 mg per day	Headache, agitation, anxiety, insomnia, somnolence, akathisia, light headedness, weight gain, nausea, dyspepsia, constipation, vomiting
Clozapine (Clozaril®)	6.25 mg to 12.5 mg per day	6.25 mg to 400 mg per day (slow titration)	Agranulocytosis, neuroleptic malignant syndrome, deep venous thrombosis and pulmonary embolism, glucose dysregulation, weight gain, increased serum creatine kinase, increased serum lipids (including triglycerides), seizures, tachycardia, confusion, sedation, dizziness, salivary pooling
Olanzapine (Zyprexa®)	2.5 mg per day	2.5 mg to 15 mg per day	Orthostatic hypotension, sedation, weight gain, glycemic dyscontrol, elevation of serum lipids (triglycerides), anticholinergic effects (e.g., constipation), nausea, dizziness (not orthostatic), tremor, insomnia, overactivation, akathisia, neuroleptic malignant syndrome, tardive dyskinesia
Quetiapine (Seroquel®)	25 mg at bedtime	50 mg to 400 mg at bedtime	Sedation, orthostatic hypotension, dizziness, agitation, insomnia, headache, neuroleptic malignant syndrome
Risperidone (Risperdal®)	0.25 mg to 0.5 mg at bedtime	0.25 mg to 3 mg at bedtime	Hypotension (especially orthostatic), tachycardia, dysrhythmias, electrocardiogram changes, syncope, sedation, headache, dizziness, restlessness, akathisia, anxiety, extrapyramidal symptoms, tardive dyskinesia, neuroleptic malignant syndrome
Ziprasidone (Geodon®)	20 mg twice per day with food	20 mg to 80 mg twice per day with food	Extrapyramidal symptoms, somnolence, headache, dizziness, nausea, akathisia

Sources. Edlund, Sterrett, and McEnany (2005); Jacobson, Pies, and Katz (2007); Norman, Whooley, and Lee (2004).