Pharmacological Management Of Behavioral Disturbance in Dementia

David A. Casey, MD

Educational Objectives

After reviewing this article, readers should be able to:
- Discuss the etiology of behavioral disturbance in dementia.
- Describe the burden of behavioral disturbance in dementia.
- Identify the role of the various therapeutic agents in the treatment of behavioral disturbance in dementia.

Introduction

Approximately five million Americans currently suffer from Alzheimer’s disease (AD) and other forms of dementia.1 This figure is rapidly growing as the elderly population increases. Along with a rising number of elders, a longer life span is leading to a larger group of people over 85 years of age who are at the highest risk of developing dementia. The number of persons with dementia in the U.S. may reach 16 million or more over the next 25 years.1 Most people with dementia have some form of psychiatric or behavioral disturbance during the course of their disease. Up to 50% of these people are believed to have psychotic symptoms, including delusions and hallucinations.2 Despite these problems, behavioral disturbance in dementia (BDD) has not been a major focus of psychiatric research.

Behavioral disturbance contributes greatly to a reduced quality of life for patients, their caregivers, and those around them. Hospitalization and placement of the patient in a long-term care facility are often prompted by BDD. Therefore, BDD drives much of the cost of caring for these patients. As the problem becomes more prevalent, the most severely disturbed patients move back and forth between the hospital and nursing home in a new kind of “revolving door.” In the typical nursing home, approximately 50% of patients are affected by dementia.3 Nursing homes are becoming de facto psychiatric facilities in the management of BDD, a role that they were not designed to play.

Dr. Casey is Associate Professor in the Department of Psychiatry and Behavioral Sciences at the University of Louisville School of Medicine in Louisville, Kentucky.

Accepted for Continuing Education Credit August 22, 2007.

This article discusses the assessment and treatment of BDD. Although the primary focus is on pharmacological therapy, it should be recognized that medications should be considered only after environmental and behavioral management are optimized.

Symptoms by Stage

Virtually any psychiatric symptom can occur in patients with BDD. Complex combinations of symptoms are common, and these evolve over time. Symptoms might or might not resemble typical psychiatric syndromes.

Early Stage

In early or mild dementia, increased anxiety or mood changes frequently occur and may actually predate the onset of diagnosable symptoms of dementia relating to memory. Various psychiatric manifestations characterize each stage of dementia (Table 1). As dementia progresses through its stages, the earlier symptoms may persist while new ones develop.3

Moderate Stage

Moderate dementia is often a challenging period in the management of BDD. Wandering, sleep disturbances, agitation, aggression, and combativeness may occur. Yelling or other vocalization syndromes present significant challenges (e.g., chanting, repeatedly asking the same question).

Psychosis often begins and usually includes an element of paranoia, often focused on the caregiver or on those nearby. When patients no longer recognize loved ones, the paranoia may take the form of delusions such as thinking that the loved ones are impostors.

Hallucinations are less common, but they may be noted in Lewy body and other parkinsonian dementias as well as in delirium. Hallucinations are predominantly visual. Because of memory disturbance, confabulation, and communication deficits, psychosis can be difficult to diagnose in patients with dementia. As dementia progresses, sleep usually becomes more erratic. Patients might not perceive this as a problem, but it is a significant challenge for caregivers. Some patients become more agitated or psychotic at night, a condition sometimes known as “sundowning.” Disinhibition and inappropriate sexual behaviors may also occur.2,3
**Late Dementia**

In late-stage dementia, agitation and aggression may be ongoing problems. Apathy, refusal of health care services, and eating problems may ensue. In addition, behavioral patterns typical of infancy or childhood may re-emerge.2,3

**Etiology**

The etiologic mechanism of BDD is not well understood. BDD is almost certainly a heterogeneous, multifactorial problem. Pre-existing psychiatric illness such as affective disorder, schizophrenia, or substance abuse may be a contributing factor in some cases. Some symptoms, such as anxiety, may be a direct result of cognitive loss.

Dementia frequently contributes to stressful life situations such as loss of independence and placement in a nursing home. Patients with dementia often deal with such stressors by acting out behaviorally. Many symptoms undoubtedly follow as a direct result of neurodegeneration. Dementing illnesses lead to changes in levels of acetylcholine, norepinephrine, and serotonin, the key neurotransmitters that affect thinking and behavior.

Delirium resulting from comorbid medical conditions or from medications frequently contributes to BDD (Table 2). Loss of hearing or of vision may exacerbate confusion. Pain or physical discomfort can also contribute to problem behaviors, complicated by the patient’s difficulty with communication.4

**Assessment**

The treatment of BDD must follow from an extremely thorough assessment of the patient. The evaluation includes screening for medical conditions that may be a source of delirium or pain. The patient’s entire medication list, including over-the-counter drugs, must be scrutinized. Polypharmacy is common among elderly patients and is frequently a source of confusion or behavioral disturbance. Patients are particularly susceptible to negative effects from anticholinergic medications. Benztropine (Cogentin, Merck), tricyclic antidepressants, diphenhydramine (Benadryl, Johnson & Johnson), and many others have significant anticholinergic effects (Table 3). The patient’s environment may also be an important factor in the development of BDD.2,3

**Pharmacological Treatment**

Patients with dementia may experience many symptoms, usually in the context of an incurable disease. Because treatment cannot address all of these symptoms, it is important to have a specific goal or goals in mind when therapy is initiated.

Because the disease provokes strong emotional reactions in caregivers and often precipitates conflict over diagnosis or treatment, it is useful to try to achieve some consensus among the primary people involved in determining the goals and means of treatment. It is often helpful to choose one or more “target symptoms” (i.e., those that are amenable to pharmacotherapy). In most cases, reducing the intensity of symptoms is a more realistic goal than completely eradicating a behavioral problem.

Providing a means of quantifying the symptom and response is also necessary, because caregivers’ impressions may be at

---

**Table 1 Behavioral and Psychiatric Symptoms of Dementia by Stage**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>Depression, Anxiety, Defensiveness</td>
</tr>
<tr>
<td>Moderate</td>
<td>Wandering, Sleep disturbances, Agitation, Inappropriate vocalization, Mood symptoms, “Sundowning”</td>
</tr>
<tr>
<td>Severe</td>
<td>Wandering, Sleep disturbance, Agitation and aggression, Inappropriate vocalization, Mood symptoms, apathy, Refusal of health care services, Lack of self-care, Eating problems, Sundowning, Dependency, Communication deficits, Inappropriate sexual behavior</td>
</tr>
</tbody>
</table>


**Table 2 Features of Delirium**

- Common in dementia patients
- Provoked by comorbid medical problems (often systemic rather than CNS-based) or medications
- Multiple contributing factors often involved
- Urinary tract infection, medication often involved in dementia/delirium
- Time course usually acute (influenced by course of underlying comorbid medical conditions)
- Often recurrent
- Symptoms include increased confusion, psychomotor agitation or withdrawal, altered sensorium, psychosis, sleep disturbances
- Treatment primarily involves addressing underlying medical conditions

CNS = central nervous system.

odds with those of others and may be greatly influenced by their emotional response to the patient’s illness. Medication therapy is best regarded as an adjunct to nonpharmacological treatments that focus on modifying the patient’s environment.2,3,5

The U.S. Food and Drug Administration (FDA) has not yet approved any medication specifically for treating BDD. Therefore, pharmacotherapy for BDD, other than dementia-specific drugs such as cholinesterase inhibitors and memantine (Namenda, Forest) is “off-label.” In such situations, physicians must be aware of the heightened requirements for documenting the rationale for the treatment and monitoring of adverse events. Informed consent, usually involving a surrogate rather than the patient alone, is required.

The choice of a pharmacological agent is largely empirical. The clinician attempts to match the drug to the target symptoms to be treated. However, medication effects are often non-specific and highly variable among patients. The drug should be initiated at the lowest dose and gradually escalated to the dose required to manage the symptoms. Most patients with BDD can be managed with low doses of medication, but individual patients may require higher levels. Polypharmacy should be minimized. Clinicians must be alert to the possibility of side effects, which may be obvious (e.g., sedation, extrapyramidal symptoms, ataxia) or subtle (e.g., apathy, swallowing difficulties).

Patients are at risk for treatment-induced delirium, which may be mistaken for the symptoms of BDD itself. The full effects of a new medication may take many weeks to be completely manifest. The overall goal of treatment is improved quality of life for the patient and caregivers rather than “cure” of the disease. Sedation is rarely a goal of treatment and typically reduces quality of life. Instead, reduction of agitation without undue sedation is desirable. Polypharmacy, rapid dose titration, and frequent medication changes can all contribute to poor outcomes.2,3,5

Medication management in dementia presents significant ethical challenges. At times, the interests of patients might not be identical to those of caregivers or others. For instance, providing the patient with sedation for sleep enables the caregiver to rest as well, even though patients might not perceive their sleep deficit as a problem. The nature of dementia often prevents patients from participating in such discussions.6

Careful, ongoing monitoring is required for the pharmacological management of BDD. Behavioral symptoms evolve over time, necessitating changes in medication therapy. Especially close monitoring is required after a new treatment or dose change is implemented.

After the medication doses have been stabilized, patients should be evaluated at regular intervals. Medications should be reviewed approximately every three months. When symptoms abate, health care providers should consider tapering and eventually stopping psychiatric medications.

**Medications Indicated for Alzheimer’s Disease**

Cholinesterase inhibitors as well as memantine have been shown to affect behavior as well as cognition in patients with Alzheimer’s disease (AD) (Table 4). These effects have been identified in a wide range of BDD symptoms. Generally, symptoms of BDD are lessened in patients with AD who are taking these medications. These symptoms may be less likely to emerge in treated patients (treatment-emergent effects). However, for patients who already have significant BDD, these medications are usually not sufficient. Overall, the effects of these medications on symptoms of BDD are worthwhile but relatively modest.

The cholinesterase inhibitors galantamine hydrobromide (Razadyne, Ortho-McNeil) and rivastigmine tartrate (Exelon, Novartis) are indicated for mild-to-moderate AD, whereas donepezil (Aricept, Eisai/Pfizer) is indicated for mild, moderate, or severe disease. Memantine (Namenda) is indicated for moderate-to-severe AD and may be used alone or in combination with a cholinesterase inhibitor.7,8

**Atypical Antipsychotic Agents**

The atypical (“second-generation”) antipsychotic agents were introduced beginning in the 1990s and have largely sup-

---

**Table 3** Common Anticholinergic Medications and Dementia

- Benztrapine mesylate (Cogentin, Merck)
- Diphenhydramine (Benadryl, Johnson & Johnson)
- Hydroxyzine pamoate (Vistaril, Pfizer)
- Cyproheptadine (Periactin, Merck)
- Chlorpheniramine maleate (Chlor-Trimeton, Schering-Plough)
- Tricyclic antidepressants (examples):
  - imipramine (Tofranil, Mallinckrodt)
  - amitriptyline (Elavil, AstraZeneca)
  - doxepin (Sinequan, Pfizer)
- Glycopyrrolate (Robinul, First Horizon)
- Oxybutynin ( Ditropan, Ortho-McNeil)
- Tolterodine (Detrol, Pfizer)
- Dicyclomine (Bentyl, Aventis)
- Hyoscyamine sulfate (PharmaFab)
- Propantheline (Pro-Banthine, Searle)
- Antipsychotic agents (examples):
  - chlorpromazine (Thorazine, GlaxoSmithKline)
  - thioridazine (Mellaril, Novartis)
  - Metazolone (Skelaxin, King)
- Chlorzoxazone (Parafon Forte DSC, Ortho-McNeil)


**Table 4** Drugs Indicated for Alzheimer’s Disease

<table>
<thead>
<tr>
<th>Cholinesterase inhibitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donepezil (Aricept, Eisai/Pfizer)</td>
</tr>
<tr>
<td>Rivastigmine tartrate (Exelon, Novartis)</td>
</tr>
<tr>
<td>Galantamine hydrobromide (Razadyne, Ortho-McNeil)</td>
</tr>
</tbody>
</table>

| N-methyl-D-aspartate (NMDA) receptor antagonist |
| Memantine (Namenda, Forest) |
planted the older, typical antipsychotic medications. The older drugs such as haloperidol decanoate (Haldol, Ortho-McNeil) and chlorpromazine (Thorazine, GlaxoSmithKline) caused parkinsonian side effects (e.g., rigidity and tremor). The designation “atypical” refers to the relative lack of these extrapyramidal side effects with these medications.

The atypical antipsychotic agents include risperidone (Risperdal, Janssen), olanzapine (Zyprexa, Eli Lilly), quetiapine (Seroquel, AstraZeneca), ziprasidone (Geodon, Pfizer), and aripiprazole (Abilify, Bristol-Myers Squibb/Otsuka). These agents have become the most widely used type of medication for BDD. The most commonly used of these medications for dementia are risperidone, quetiapine, and olanzapine (Table 5).

A number of small-scale, open-label studies have shown modest efficacy with reasonable tolerability for atypical antipsychotic agents in BDD. However, a small number of placebo-controlled trials have been published. For example, a six-week study of olanzapine in dementia revealed efficacy for 5- or 10-mg doses but worsening of behavior at a dose of 15 mg/day.9 A 12-week study of risperidone showed dose-related improvement in psychotic symptoms and agitation but also revealed greater levels of extrapyramidal symptoms at higher doses (up to 2 mg/day).10 A 52-week open-label study of quetiapine in elderly psychotic patients (with a mixture of diagnoses) revealed overall benefit as well as good tolerability with a mean dose of 138 mg/day.11

Reviewing the literature, Tariot et al. (2004) concluded that atypical antipsychotic agents were generally efficacious for agitation in dementia, with a less clear impact on psychotic symptoms, but they varied in their tolerability.12 Sink et al. (2005) suggested that treatment with olanzapine or risperidone led to modest but significant reductions in behavioral symptoms and that psychiatric medications as a group had limited efficacy, with the atypical agents potentially showing the best results.13

In a meta-analysis of all 16 published placebo-controlled trials of atypical antipsychotic agents for dementia, Schneider et al. (2006) concluded that aripiprazole and risperidone, but not olanzapine, showed efficacy.14 Smaller effects were noted in outpatients, who were presumably less ill; in patients with less severe dementia; and in those with psychosis. The overall dropout rate—about one third—did not differ between subjects who received active treatment or placebo.

Adverse events were typically somnolence and urinary tract infections or incontinence for all drugs. Extrapyramidal effects and gait disturbances were associated with risperidone and olanzapine, but increased injury, falls, and syncope were not observed. Cognitive scores were worse in patients receiving atypical agents than in controls. There was an overall increased risk of cerebrovascular adverse events, especially with risperidone.14

Recently, the Clinical Antipsychotic Trials in Intervention Effectiveness—Alzheimer’s Disease (CATIE–AD) showed limited efficacy and generally poor tolerability of atypical antipsychotic medications in patients with dementia.15 The methodology of this large, double-blind, placebo-controlled study differed from most previous psychopharmacological trials in using duration of treatment as the primary outcome measure; that is, how long did the clinician and patient choose to maintain a particular medication? The study included olanzapine, risperidone, and quetiapine as well as placebo.

The time to discontinuation of therapy attributable to a lack of efficacy favored olanzapine and risperidone over quetiapine and placebo. The time to discontinuation resulting from adverse effects favored placebo. There were no differences among the groups on the Clinical Global Impression of Change (CGI–C), a rating scale measure of effectiveness. The authors concluded that even though atypical antipsychotic medications were more effective than placebo, “adverse effects limited their overall effectiveness, and their use may be restricted to patients who have few or no side effects and for whom benefits can be discerned.”15

Despite these results, it seems clear that individual patients do benefit from atypical antipsychotic therapy. The impact of BDD on quality of life is often so great that these risks are deemed acceptable, given the benefits in these cases. Some authors have suggested that patients with risk factors for stroke, early development of side effects, the “old–old” (over 85 years of age), and the frail are at greatest risk of experiencing negative effects from atypical antipsychotic medications.

In 2003, 2004, and 2005, the FDA issued several “black-box” warnings addressing atypical antipsychotic agents in dementia and suggested caution in their use. These warnings were issued to the medical community and the public in the form of advisories, and they mandated labeling changes in the package inserts of the affected medications. The initial warning cited an increased risk of cerebrovascular adverse events such as stroke and transient ischemic attacks in patients treated with risperidone and olanzapine. The magnitude of the increased risk was estimated at roughly two-fold to three-fold. Later, aripiprazole was added to the warning.16 This FDA review was prompted in part by an Australian study of risperidone that showed efficacy but an increased risk of cerebrovascular adverse events in patients with dementia.17

An additional warning, published in 2005, addressed increased mortality (from all causes) in dementia patients treated with atypical agents as a class. This warning followed an FDA meta-analysis of all 17 placebo-controlled trials available at that time involving four different atypical agents. This analysis revealed the death rate from all causes (principally cardiovascular diseases and pneumonia) to be 1.6 to 1.7 times higher among patients taking an active drug compared with those taking placebo.

These concerns come amid other controversies surrounding the atypical antipsychotic medications, particularly their propensity to cause weight gain and to increase the risk of

---

**Table 5** Dosing of the Most Commonly Prescribed Antipsychotic Agents in Dementia

- **Risperidone** (Risperdal, Janssen): 0.5–2 mg/day
- **Quetiapine fumarate** (Seroquel, AstraZeneca): 50–150 mg/day
- **Olanzapine** (Zyprexa, Eli Lilly): 2.5–7.5 mg/day

type-2 diabetes and other metabolic problems. The FDA has also addressed these concerns with changes in labeling that are not specific to dementia.

The methodology used in determining these risks has been controversial. Nevertheless, these warnings (Table 6) are part of the FDA labeling for all atypical antipsychotic drugs. Combined with the lack of an FDA indication, the warnings call for a special focus on documentation, informed consent, and monitoring for all patients with dementia who are taking atypical antipsychotic drugs.

Ironically, the older, typical (conventional) antipsychotic agents have not received similar black-box warnings despite abundant evidence that they pose greater risks than the atypical agents. A 2005 study revealed risks of death for patients with dementia who had been treated with the older drugs to be at least as great as that for atypical drugs. The authors advised against returning to the use of the conventional medications as a replacement for the newer agents.18

Mood Stabilizers

Anticonvulsant mood stabilizers such as valproic acid (divalproex [Depakote, Abbott]) have long been used to treat BDD, especially in patients with agitation, aggression, mood lability, disinhibition, and manic-like symptoms. Studies of valproic acid have revealed a mixed picture.

Several studies have shown benefit, but a large placebo-controlled study of nursing-home patients did not. A meta-analysis of valproic acid in dementia suggested limited efficacy at low doses and problems with adverse effects at higher doses. Another review of the literature on divalproex revealed a conflicting picture of controlled trials; three studies showed some limited benefits, whereas another did not. Sink et al. concluded that the literature did not support the use of valproate.

Carbamazepine (Tegretol, Novartis) showed modest but conflicting results in several studies, but concerns persist over its tolerability and side effects. Several reports have suggested some utility in managing symptoms of sexual aggressiveness.

Other anticonvulsant mood stabilizers have been used anecdotally. Lithium has not been well studied in BDD, but it has generally been regarded as poorly tolerated in this population.

Antidepressants

Antidepressants have been used to treat depressive symptoms, anxiety, and agitation in dementia. Older studies showed benefits for trazodone (Desyrel, Apothecon), especially for sleep. Several selective serotonin reuptake inhibitors (SSRIs), including sertraline (Zoloft, Pfizer) and citalopram (Celexa, Forest), have shown benefits in clinical trials. These drugs have shown some efficacy for depressive symptoms and anxiety and modest evidence of utility in agitation in some studies. In several small-scale studies, verbal aggression responded to citalopram.

Other antidepressants, including mirtazapine (Remeron, Organon), have been widely utilized, although not thoroughly studied. Mirtazapine is sometimes used as a sleep or appetite aid. Venlafaxine (Effexor, Wyeth) as well as bupropion (Wellbutrin, GlaxoSmithKline) and other newer antidepressants have also been used anecdotally, especially when a medication with an activating effect on behavior is needed. Tricyclic antidepressants should be avoided, primarily because of their anticholinergic properties.

Benzodiazepines

Benzodiazepines have been widely prescribed to treat BDD despite admonitions against their use. Anxiety, agitation, and sleep disturbances in patients are common reasons for their use. These drugs may be given orally or by injection. Recent concerns about atypical antipsychotic drugs may have contributed to renewed interest in the benzodiazepines.

Objections to the use of benzodiazepines in elderly patients include concerns about sedation, ataxia, falls, cognitive clouding, dependency, and paradoxical excitation. Despite these potential effects, benzodiazepines in BDD have not been well studied. Long-acting benzodiazepines such as diazepam (Valium, Roche), chlordiazepoxide (Librium, ICN), and clonazepam (Klonopin, Roche) have proved to be poorly tolerated in elderly patients. These drugs have been associated with increased confusion, falling, fractures, and accidents in this population, although a cause-and-effect relationship has not been clearly established. Generally, clinicians prefer the short-term use of shorter-acting drugs with few active metabolites, such as lorazepam (Ativan, Wyeth) or oxazepam (Serax, Faulding). Benzodiazepines may occasionally prove useful in the treatment of catatonia, which can mimic or complicate dementia.

Sleep Medications

Sleep problems are extremely common in dementia and are often chronic in nature. Typically, sleeping becomes more fragmented and less entrained to the usual circadian cycle as dementia progresses. Patients also frequently have sleep disorders such as sleep apnea and rapid-eye movement (REM) disorder. Comorbid medical conditions such as cardiovascular disease, pulmonary disorders, and arthritis may complicate

Table 6	Warnings Associated with Antipsychotic Agents Used to Treat Dementia

- Increased risk of cerebrovascular adverse events in dementia patients:
  - risperidone (Risperdal, Janssen)
  - olanzapine (Zyprexa, Eli Lilly)
  - aripiprazole (Abilify, Bristol-Myers Squibb/Otsuka)
- Increased mortality in dementia (entire class of atypical antipsychotic drugs)
- Risk of weight gain, type-2 diabetes mellitus, metabolic syndrome (not limited to dementia)

sleep as well. Unlike other forms of insomnia, neurodegeneration is the primary underlying cause of sleep disturbances in dementia. Therefore, data from medication studies of insomnia might not be applicable to dementia-related sleep deficits. In fact, even the definition of insomnia is problematic in dementia. Insomnia is typically viewed as a subjective complaint of a sleep deficit. The patient is unable to sleep despite a desire to do so. However, patients with dementia often do not perceive their sleep deficits as a problem, even though they can be a major source of distress for their caregivers.

Nonpharmacological management of sleep disturbance in dementia focuses on sleep hygiene. Maintaining a reasonable level of daytime activity and exercise is helpful. Exposure to bright light during daylight hours may also be useful. Caffeine and alcohol consumption can affect sleep as well. If patients with dementia are permitted to sleep during the day, they are less likely to sleep at night.

Few studies have specifically addressed the pharmacotherapy of sleep disorders in dementia. Nevertheless, medications are frequently prescribed for these disorders on an empirical basis. Sedating antidepressants such as trazodone (Desyrel) and mirtazapine (Remeron) are sometimes used. Sleep disturbances complicated by sundowning, psychosis, or agitation are often managed with atypical antipsychotic agents such as quetiapine. Hypnotic medications such as zolpidem (Ambien, Sanofi-Synthelabo) are often prescribed.

Melatonin has been used anecdotally, and melatonin agonist agents such as ramelteon (Rzerem, Takeda) may prove useful, but they have not been systematically studied. Melatonin agonists are an appealing choice, because they are not believed to induce dependence or to affect motor function.

**Conclusion**

Because cure of BDD is not possible, its treatment should focus on maintaining and improving quality of life for patients as well as their caregivers and those around them. Environmental triggers should be identified, and nonpharmacological approaches should be considered before medication is prescribed. Frequently, these approaches are used alongside pharmacological approaches. The treatment flows from a careful assessment considering pre-existing psychiatric illnesses, current medications, and possible delirium or pain. The spectrum of symptoms needs to be identified, and the targets for treatment should be identified. Pharmacotherapy then focuses on managing these targets, with some objective means of outcome measurement used wherever possible.

The medications for Alzheimer's disease, including cholinesterase inhibitors and memantine, can be useful in reducing symptoms. Informed consent, usually from a surrogate, should be obtained, keeping in mind the lack of an FDA-approved indication for psychiatric drugs in BDD, the non-specificity of patient responses, and the concept of risk–benefit analysis.

The use of multiple psychiatric medications should be avoided whenever possible. Patients taking these medications require close monitoring and a high index of suspicion for adverse effects, which can have a negative impact on their quality of life. As the dementing illness progresses, the medication requirements evolve over time. Avoidance of anticholinergic medications deserves special emphasis.

The atypical antipsychotic agents have become a special area of controversy because of their wide use as well as ongoing concerns about their limited efficacy, their association with mortality, and their side effects. Recent changes in labeling, including FDA-mandated boxed warnings, have heightened these concerns. Although these agents continue to be prescribed, a clear consensus on how to utilize them is lacking. However, many patients with BDD have serious behavioral problems that have not responded to other measures, and some individual patients have benefited from atypical agents.

Alternative treatments also have limited efficacy and have raised potential concerns about adverse effects. In this setting, it might be prudent to limit antipsychotic agents to patients who have not responded to other treatments or who have shown elements of significant physical aggression or combativeness. The presence of demonstrable psychotic symptoms seems to be a logical rationale for prescribing these medications, although clinical trials have yet to show convincing evidence of their utility.

**References**


Continuing Education Questions for Physicians and Pharmacists

P&T® 2007;32(10):560–566
ACPE Program # 079-000-07-022-H04-P
Expiration Date: October 31, 2008

TOPIC: Management of Behavioral Disturbance in Dementia

CME Accreditation

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of Jefferson Medical College and MediMedia USA, Inc.

Jefferson Medical College of Thomas Jefferson University, as a member of the Consortium for Academic Continuing Medical Education, is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians. All faculty/authors participating in continuing medical education activities sponsored by Jefferson Medical College are expected to disclose to the activity audience any real or apparent conflict(s) of interest related to the content of their article(s). Full disclosure of these relationships appears on the last page of the article.

Continuing Medical Education Credit

This CME activity is designed to assist physicians and other health care professionals who are P&T committee members in making formulary decisions. Its goal is to increase participants’ ability to recognize and treat important medical problems.

Jefferson Medical College designates this continuing medical education activity for a maximum of one Category 1 credit toward the Physician’s Recognition Award (PRA) of the American Medical Association. Each physician should claim only those credits that he/she actually spent in the educational activity.

This credit is available for the period of one year from the date of publication.

Although forms will be processed when received, certificates for CME credits will be issued every six months, in February and August. Interim requests for certificates can be made by contacting the Jefferson Office of Continuing Medical Education at (215) 955-6992 or by going online to http://jeffline.tju.edu/jeffcme/.

Continuing Pharmacy Education Credit

The Department of Health Policy, Thomas Jefferson University Hospital, is approved by the Accreditation Council for Pharmacy Education (ACPE) as a provider of continuing pharmacy education and complies with the Criteria for Quality for continuing pharmacy education programming. This program (079-000-07-022-H04-P) is acceptable for 1.0 hour of continuing education credit (0.1 CEUs) in states that recognize ACPE-approved providers. Statements of Credit indicating hours/CEUs will be mailed within six to eight weeks to participants who completed this activity and submitted a completed evaluation with payment.

How to Apply for CE Credit

1. Each CE article is prefaced by learning objectives for participants to use to determine whether the article relates to their individual learning needs.
2. Read the article carefully, paying particular attention to the tables and other illustrative materials.
3. Complete the questions and fill in the answers on the evaluation form on the next page.
4. Complete the CE Registration and Evaluation Form. Type or print your full name and address in the space provided, and evaluate the activity as requested. In order for the form to be processed, all information must be complete and legible.
5. Payment of $10 per exam is required for processing and maintenance of records. Make checks payable to P&T®. This processing fee is non-refundable.
6. Send the completed form, answer sheet, and $10 payment to:
   Department of Health Policy
   Thomas Jefferson University
   Attn: Continuing Education Credit
   1015 Walnut Street, Suite 115
   Philadelphia, PA 19107
7. Be sure to mail the Registration, Evaluation Form, and $10 payment within one year of the date of publication. After that date, this article will no longer be designated for credit and forms cannot be processed.
Continuing Education Questions for Physicians and Pharmacists

**TOPIC:** Management of Behavioral Disturbance in Dementia

**ACPE Program # 079-000-07-022-H04-P**

---

**Multiple Choice**

*Select the one correct answer.*

1. According to the article, approximately what percentage of nursing-home patients have dementia?
   - a. 10%
   - b. 25%
   - c. 50%
   - d. 90%

2. Which benzodiazepine should be used in elderly patients with behavioral disturbance in dementia (BDD)?
   - a. diazepam
   - b. clonazepam
   - c. lorazepam
   - d. flurazepam

3. Which of the following symptom occurs in the early or mild stage of dementia?
   - a. mood symptoms
   - b. sleep disturbances
   - c. aggression
   - d. yelling

4. What nonpharmacological method or methods should not be used to manage sleep problems in patients with BDD?
   - a. maintaining a reasonable level of daytime activity
   - b. exposing patients to bright light during daylight hours
   - c. using caffeine and alcohol
   - d. maintaining a reasonable level of exercise

5. What is the direct cause of many of the symptoms associated with BDD, as demonstrated by current literature?
   - a. stress
   - b. substance abuse
   - c. stroke
   - d. neurodegeneration

6. According to the article, which patient characteristic(s) may increase the risk of negative effects from atypical antipsychotic agents?
   - a. frailty
   - b. early development of side effects
   - c. age over 85 (“old–old”)
   - d. all of the above

7. Which medication has an FDA-approved indication for the treatment of BDD?
   - a. haloperidol
   - b. rivastigmine
   - c. risperidone
   - d. none of the above

8. Which class of medications should be avoided in BDD treatment, as mentioned in the article?
   - a. atypical antipsychotics
   - b. mood stabilizers
   - c. selective serotonin reuptake inhibitors (SSRIs)
   - d. tricyclic antidepressants (TCAs)

9. What is the black-box warning associated with the use of atypical antipsychotic agents in dementia?
   - a. an increased risk of death due to cardiovascular events or infections
   - b. a propensity to cause weight gain and to increase the risk of type-2 diabetes
   - c. extrapyramidal effects and gait disturbances
   - d. adverse events associated with somnolence

10. Antidepressants have shown some efficacy in treating which symptom of BDD?
    - a. mania
    - b. drowsiness
    - c. defensiveness
    - d. anxiety
CE Registration and Evaluation Form

Date of publication: October 2007
Title: Management of Behavioral Disturbance in Dementia
Authors: David A. Casey, MD
Submission deadline: October 31, 2008
ACPE Program #079-000-07-022-H04-P

Registration
Name: ____________________________________________________________ Degree: ____________________________________
Street address: ______________________________________________ City: _______________ State: _________ Zip:__________
Last 4 Digits of Social Security No. (Web ID): __________ Telephone: __________________________
E-mail Address: _______________________________________ Check one: I Physician I Pharmacist I Other
Time needed to complete this CE activity in hours: I 0.5 hr I 1 hr I 1.5 hr I 2 hr I Other _________________________
Certification: I attest to having completed this CE activity. ___________________________________________________________ 
Signature (required) Date _______________

Answer Sheet
Please fill in the box next to the letter corresponding to the correct answer

1. a □ b □ c □ d □ 6. a □ b □ c □ d □
2. a □ b □ c □ d □ 7. a □ b □ c □ d □
3. a □ b □ c □ d □ 8. a □ b □ c □ d □
4. a □ b □ c □ d □ 9. a □ b □ c □ d □
5. a □ b □ c □ d □ 10. a □ b □ c □ d □

Evaluation
Rate the extent to which: Very High High Moderate Low Very Low
1. Objectives of this activity were met
2. You were satisfied with the overall quality of this activity
3. Content was relevant to your practice needs
4. Participation in this activity changed your knowledge/attitudes
5. You will make a change in your practice as a result of participation in this activity
6. This activity presented scientifically rigorous, unbiased, and balanced information
7. Individual presentations were free of commercial bias
8. Adequate time was available for Q&A
9. Which ONE of the following best describes the impact of this activity on your performance:
   □ This program will not change my behavior because my current practice is consistent with what was taught.
   □ This activity will not change my behavior because I do not agree with the information presented.
   □ I need more information before I can change my practice behavior.
   □ I will immediately implement the information into my practice.
10. Will you take any of the following actions as a result of participating in this educational activity (check all that apply)
   □ Discuss new information with other professionals □ Consult the literature
   □ Discuss with industry representative(s) □ Participate in another educational activity
   □ Other ___________________________ □ None

Send the completed form and $10 payment (make checks payable to P&T) to: Department of Health Policy, Thomas Jefferson University, Attn: Continuing Education Credit, 1015 Walnut Street, Suite 115, Philadelphia, PA 19107.