



# Assessment and Management of Delirium in Older Adults in the Emergency Department

## Literature Review to Inform Development of a Novel Clinical Protocol

**Tony Rosen, MD, MPH**

**Scott Connors, BS**

**Sunday Clark, MPH, ScD**

**Alexis Halpern, MD**

**Michael E. Stern, MD**

**Jennifer DeWald, RN**

**Mark S. Lachs, MD, MPH**

**Neal Flomenbaum, MD**

### ABSTRACT

Delirium occurs frequently in older patients in the emergency department (ED), is underrecognized, and has potentially serious consequences. Despite its seriousness, delirium is frequently missed by emergency providers, and patients with unrecognized delirium are often discharged from the ED. Even when it is appropriately recognized, managing delirium in older adults poses a significant challenge for ED providers. Geriatric delirium is typically caused by the interaction of multiple factors, including several that are commonly missed: pain, urinary retention, constipation, dehydration, and polypharmacy. Appropriate management includes nonpharmacological management with medication intervention reserved for emergencies. We have developed a new, comprehensive, evidence-based protocol for diagnosis/recognition, management, and disposition of geriatric delirium patients in the ED with a focus on identifying and treating commonly missed contributing causes. **Key words:** agitation, delirium, emergency medicine, geriatric

**Author Affiliation:** Division of Emergency Medicine (Drs Rosen, Clark, Halpern, Stern, and Flomenbaum, Mr Connors, and Ms DeWald) and Division of Geriatrics and Palliative Medicine (Mr Connors and Dr Lachs), Weill Cornell Medical College, New York.

The authors are grateful to the American Federation of Aging Research, which provided the funding for Scott Connors' participation through its Medical Student Training in Aging Research fellowship program. Dr Mark Lachs is the recipient of a mentoring award in patient-oriented research from the National Institute on Aging (K24 AG022399).

**Disclosure:** The authors report no conflicts of interest.

**D**ELIRIUM is frequently seen in older patients in the emergency department (ED), is underrecognized, and has potentially serious consequences. Seven percent to 17% of older adults who present to

**Corresponding Author:** Tony Rosen, MD, MPH, Division of Emergency Medicine, Box 179, Weill Cornell Medical College, 525 East 68th St, New York, NY 10065 (aer2006@med.cornell.edu).

DOI: 10.1097/TME.000000000000066

the emergency department (ED) suffer from delirium (Han, Wilson, & Ely, 2010). Delirium is a medical emergency with significant associated morbidity and mortality requiring rapid diagnosis and management (Han et al., 2010). Patients who have delirium in the ED have increased mortality, increased length of stay in the hospital, and a higher risk of functional decline (Han, Shintani, et al., 2010; Han, Eden, et al., 2011). Patients with delirium diagnosed in the ED have a 12-month mortality rate of 10%–26%, comparable with patients with sepsis or acute myocardial infarction (Gower, Gatewood, & Kang, 2012).

Despite its seriousness, delirium is missed by ED physicians in 57%–83% of cases. (Han et al., 2009, 2013). As many as 25% of patients with unrecognized delirium are discharged from the ED (Han et al., 2009, 2013). Historically, patients discharged with undetected delirium are nearly three times more likely to die within 3 months than those in whom delirium is recognized in the ED (Kakuma et al., 2003). Delirious patients discharged from the ED, particularly those with underlying cognitive impairment, are less likely to be able to accurately provide the reason why they were in the ED or to understand their discharge instructions, creating significant potential patient safety hazards (Han, Bryce, et al., 2011). The Society for Academic Emergency Medicine Task Force has recommended delirium screening as a key quality indicator for emergency geriatric care (Han et al., 2009), and researchers have identified delirium as a crucial aspect of geriatric emergency medicine requiring additional research (Carpenter et al., 2011).

Managing delirious patients in the ED may pose a significant challenge, particularly if they become agitated. Patients may fall, pull out intravenous catheters or endotracheal tubes, not tolerate necessary invasive therapy, or even become violent, placing themselves and their caregivers at risk for injury (Chevrolet & Jolliet, 2007). The health care team must intervene to ensure the safety of the patient, staff, and other patients while evaluating for potential life-threatening

causes of acute mental status change. In addition, the ED milieu itself can precipitate episodes of delirium in older adults who are not delirious when they initially present (Carpenter et al., 2011), particularly during a lengthy ED stay. Effective management of these episodes may significantly improve patient outcomes, whereas inappropriate or inadequate treatment can have disastrous consequences.

The goal of our research was to thoroughly review the existing literature in order to develop a novel protocol to improve diagnosis/recognition, management, and disposition of geriatric patients with delirium in the ED.

## **MENTAL STATUS ASSESSMENT AND DELIRIUM DIAGNOSIS**

Recognizing delirium among older adult ED patients is challenging, but it is imperative for effective management. Any patient who is not alert and oriented, who has behavior changes while in the ED, or whose appearance seems otherwise altered should be formally assessed for delirium. Because mental status assessment depends on the patient's baseline mental status and the time course of any changes, efforts should be made whenever possible to acquire collateral information from other informants such as family, friends, home health aides, and/or the skilled nursing facility.

Several assessment tools have been developed to assist nonpsychiatrists to diagnose delirium (Han et al., 2010). The Confusion Assessment Method (CAM) is the most widely used instrument (Inouye et al., 1990; Wei, Fearing, Sternberg, & Inouye, 2008). The CAM evaluates four cognitive elements: (1) acute onset and fluctuating course; (2) inattention; (3) disorganized thinking; and (4) altered level of consciousness (Inouye et al., 1990). To be diagnosed with delirium, a patient must demonstrate Elements 1 and 2 as well as either 3 or 4 (Inouye et al., 1990). The CAM has been extensively validated in several clinical settings (Inouye et al., 1990; Rolfson, McElhaney, Jhangri, & Rockwood, 1999; Wei

et al., 2008). The CAM may be challenging to use routinely in a busy ED, however, because it requires as long as 10 min to perform (Han et al., 2010). Researchers have recently evaluated modified, shorter versions of this tool in the ED (Han et al., 2013; 2014): the Confusion Assessment Method for the Intensive Care Unit and the brief Confusion Assessment Method (bCAM). Both were found to be very specific, with positive tests strongly suggestive of delirium, but with only modest sensitivity (Han et al., 2013; 2014). A brief (less than 20 s), more sensitive Delirium Triage Screen has recently been proposed and evaluated as a preliminary step that may be used in conjunction with the bCAM to increase its sensitivity (Han et al., 2013). Research on these and other tools is ongoing, but a definitive approach for mental status assessment and delirium diagnosis in geriatric ED patients has not yet been identified.

### CAUSES OF ACUTE DELIRIUM

Delirium is rarely caused by a single insult, but, similar to other syndromes in older adults, including falls and failure to thrive, is typically due to the interaction of multiple contributing factors (Wilber, 2006). Researchers have described “predisposing factors” that make the individual more vulnerable to delirium and “precipitating factors,” which are the insults that cause the acute mental disturbance (Inouye & Charpentier, 1996). In the ED, it is important to identify predisposing risk factors and to prevent or ameliorate precipitating factors, because the risk of delirium increases with the number of predisposing and precipitating risk factors present (Wilber, 2006). Therefore, a multi-component intervention is most likely to be effective for delirium prevention or control (Inouye, 2006).

Management of delirium in the ED requires careful assessment of potential precipitating factors. This includes a complete history and physical examination, electrocardiographic tests, blood and urine tests, chest radiographs, and consideration of further imaging.

Emergency department providers are very familiar with, and experienced in, evaluating for immediately life-threatening delirium triggers such as infection, head trauma, electrolyte disturbance, myocardial infarction/acute coronary syndrome, hypoxia, hypoglycemia, stroke, renal insufficiency, and liver failure. Because there is a substantial body of literature regarding the identification and management of these causes of delirium, they are not discussed in detail here. This review of the literature focuses on the importance of several more subtle precipitating factors, such as pain, urinary retention, constipation, dehydration, environmental distractions, and polypharmacy, that may be more difficult to recognize and treat in the ED setting. These factors are missed by ED providers because they may not be immediately life-threatening and ED providers are not trained to routinely check for them in patients with altered mental status.

### Pain

Uncontrolled pain is commonly identified as a significant delirium trigger (Schreier, 2010). Patients admitted to the hospital from long-term care settings who received opioid medications were more likely to experience mild rather than moderate or severe delirium (Schreier, 2010). Among postoperative patients, those who received less effective pain management after hip fracture surgery were more likely to suffer from delirium (Schreier, 2010). Although these studies are correlative rather than causative, they suggest that complete pain assessment and adequate control is relevant for prevention or management of delirium (Nassisi, Korc, Hahn, Bruns, & Jagoda, 2006). Unfortunately, ED physicians are less successful at treating pain in older adults than in younger patients (Hwang, Morrison, Richardson, & Todd, 2011). This is likely partially due to reduced opiate prescribing by ED practitioners because of concerns about side effects, which include sedation and delirium (Hwang et al., 2011). In cases where a patient has severe pain, however, treatment

with opioids should be strongly considered (Nassisi et al., 2006) because this may prevent as well as manage delirium. Nonpharmacological therapies to manage pain, including ice application, elevation, and immobilization in the setting of acute injury may be considered. In addition, local or regional drug therapies that manage pain but have minimal systemic effects, such as nerve blocks and epidural catheterization, may be considered when appropriate (Hogan et al., 2006).

### Urinary Retention

Significant urinary retention can precipitate or exacerbate delirium, a disorder referred to as cystocerebral syndrome (Waardenburg, 2008). Urinary retention from prostatic hypertrophy, other mechanical blockage, or anticholinergic medications is common in elderly ED patients and is underrecognized (Gower et al., 2012; Thorne & Geraci, 2009; Waardenburg, 2008). Research in geriatric rehabilitation patients has shown that 11%–21% of older adults who are asymptomatic retain a significant amount of urine (Borrie et al., 2001; Wu & Baguley, 2005). Bladder distension may contribute to delirium due to the increased sympathetic tone and catecholamine surge triggered by the tension on the bladder wall (Liem & Carter, 1991). Bladder scanning via ultrasonography has been validated as an accurate measure of retention (Borrie et al., 2001), and one study used a postvoid residual of 150 ml as a threshold for clinically significant retention in a geriatric population (Wu & Baguley, 2005). Bladder decompression via straight catheterization may improve symptoms (Waardenburg, 2008). Whenever possible, insertion of indwelling urinary catheters should be avoided in delirious older patients (Young, Murthy, Westby, Akunne, & O'Mahony, 2010). Although frequently more convenient for care staff and sometimes requested by patients, these catheters limit patient mobility, are a potential nidus of infection, and have been shown to increase the risk for delirium (Waardenburg, 2008). Therefore, intermittent catheterization is preferable for

urinary retention management (Hogan et al., 2006). Critically ill older adults, major trauma victims, and patients undergoing certain surgical procedures may require indwelling urinary catheters for a short term, but these should be removed as soon as clinically indicated (Fakih et al., 2010).

### Constipation

Constipation is a frequent, often overlooked precipitating factor for delirium (Morley, 2007). Research suggests that 17%–40% of adults older than 65 years may have chronic constipation, with as many as 45% of frail older adults suffering from it (Morley, 2007). Research in skilled nursing facilities finds that 47% of residents have constipation and 50% take daily laxatives (Tariq, 2007). Notably, constipation is associated with verbal and physical aggression in nursing home patients with dementia (Leonard, Tinetti, Allore, & Drickamer, 2006). Constipation may be caused by many factors, including immobility, comorbid diseases such as diabetes mellitus or colon cancer, electrolyte abnormalities, medications, and even depression (Morley, 2007). A frequent cause of constipation is opioid pain medication. Although it is important not to withhold opioid analgesics, all patients receiving opiates should prophylactically be given a stool softener unless a contraindication exists (Ross & Alexander, 2001). A careful history and physical examination, including a rectal examination with consideration of disimpaction, may also be helpful in assessing and managing delirious patients.

### Dehydration

Dehydration is a common precipitating factor for delirium, in part, because it leads to cerebral hypoperfusion (Wilson & Morley, 2003). Dehydration in older adults is often related to acute illness and results in high mortality (George & Rockwood, 2004). Dehydration may have many causes, including decreased thirst mechanism, physical limitations causing inability to access water, swallowing difficulty, cognitive impairment, and misuse

of diuretics (George & Rockwood, 2004). In addition, severe dehydration may indicate substandard care or neglect (George & Rockwood, 2004). Recognition of dehydration in the ED can be challenging, as the physical signs of dehydration, such as weight loss, decreased skin turgor, dry mucous membranes, tachycardia, and hypotension, which are very useful in assessing younger adults, are unreliable in geriatric patients (George & Rockwood, 2004). As a result, a blood urea nitrogen (BUN)/creatinine ratio of 18 or greater has been suggested by researchers as a threshold for identification and aggressive treatment of dehydration in delirious elderly patients (Chu et al., 2011; Marcantonio et al., 2006).

### Environmental Factors

Environmental factors also contribute to the development of delirium. The cacophonous, chaotic, unfamiliar, and potentially threatening environment of the ED may be stressful and disorienting for geriatric patients (Carpenter et al., 2011). Because sensory overload has been shown to worsen delirium, providers should consider moving at-risk patients out of the busy ED corridors into quieter, more controlled settings (Dahlke & Phinney, 2008). In most EDs, however, patients are less closely observed if removed from the hallway, so the potential benefits and risks must be weighed. An uncomfortable temperature may also worsen delirium, so providers should consider adjusting the climate and adding/removing blankets as needed (Conley, 2011; Gillis & MacDonald, 2006). Immobility is another important environmental risk factor for delirium (Rigney, 2006). Minimizing intravenous catheters, wires, and monitors, which may reduce mobility, is recommended (Rigney, 2006). Frequent checks should be made to ensure that patients have not become tethered to devices or tangled in bedsheets or blankets. A soiled incontinence brief may also increase stress and disorientation for a delirious older adult and increases risk of urinary tract infection and superinfection of existing pressure ulcers, potentially worsening delirium. There-

fore, every effort should be made to change to a clean brief when appropriate.

### Polypharmacy

Polypharmacy is very common among older adults and frequently contributes to delirium (Wilber, 2006). Older patients presenting to the ED take an average of 4.2 medications per day, with 91% taking at least one, 13% taking eight or more, and some taking as many as 17 medications (Samaras, Chevalley, Samaras, & Gold, 2010). Of these patients, 31% have been prescribed a combination of medications that may lead to at least one potentially adverse drug interaction (Hohl, Dankoff, Colacone, & Afilalo, 2001). The Beers criteria alert clinicians about medications that, due to potentially dangerous side effects, are inappropriate for older adults (Campanelli, 2012). Despite the existence of these criteria, Chin et al. (1999) found that 11% of elderly patients presenting to the ED have been prescribed at least one of the medications deemed inappropriate by Beers and colleagues. Compounding this problem, Chin et al. (1999) also found that medications identified by the Beers list as inappropriate were given to 3.6% of elderly patients in the ED and prescribed to 5.6% upon ED discharge. The medications most frequently linked to delirium among older adults are those with anticholinergic properties (Han et al., 2010). The types of medications commonly associated with delirium among older adults are described in Table 1. The effects of polypharmacy may be magnified during acute illness, with hepatic or renal dysfunction unexpectedly increasing the half-life and therefore the effect of medications. A complete medication history and careful consideration of medications and doses given in the ED are essential parts of delirium management.

### MANAGEMENT STRATEGIES

Practice guidelines emphasize that most episodes of delirium can be managed with nonpharmacological interventions and that pharmacological treatment be limited to

**Table 1.** Medications most commonly associated with delirium

Medications with anticholinergic properties
Antihistamines (such as diphenhydramine)
Antispasmodics (such as oxybutynin)
Antiemetics
Antiparkinsonian drugs
Antipsychotics <sup>a</sup>
Other psychoactive medications
Benzodiazepines
Anticonvulsants
Narcotic pain medications <sup>b</sup> (particularly meperidine)
Nonpsychoactive medications
Digoxin
$\beta$ -Blockers
Corticosteroids
Nonsteroidal anti-inflammatory agents
Antibiotics

*Note.* From Campanelli (2012), Han, Wilson, and Ely (2010), and Hogan et al. (2006).

<sup>a</sup>Although antipsychotic medications are often used to treat delirium, these medications have anticholinergic properties and may cause or worsen existing delirium.

<sup>b</sup>Although very important for pain control and prevention of pain-induced delirium, narcotics may paradoxically themselves contribute to delirium.

behavioral emergencies when a patient's severe agitation is interfering with essential investigations or treatment or placing him/her or others at risk (Hogan et al., 2006). Despite this, there is currently no universally accepted strategy for managing a delirious patient in the ED (Han et al., 2009). In fact, there is significant variation in hospitalized inpatient management of delirium, with many established treatments remaining underused and most recommended management strategies based on common sense rather than empirical evidence (Carnes et al., 2003; Pitkälä, Laurila, Strandberg, & Tilvis, 2006).

### Nonpharmacological Management

Nonpharmacological management recommendations include strategies for effective communication with a delirious patient, which may be challenging, given these pa-

tients' mental status fluctuations and difficulty in sustaining attention. Each time a nurse or physician interacts with a delirious older adult, he/she should provide orienting information, reminding the patient where he/she is, the date and time, and what is happening to him/her (Aguirre, 2010). Addressing the patient face-to-face, with instructions and explanations that are slow-paced, short, simple, and repeated, helps manage delirium (Hogan et al., 2006). Interpreters should be used if there is any concern that the patient may have difficulty understanding the language (Tropea, Slec, Brand, Gray, & Snell, 2008). Nurses and physicians should keep their hands in sight whenever possible and avoid gestures or rapid movements or touching the older person in an attempt to redirect him/her because these actions may trigger an episode of agitation (Hogan et al., 2006).

Sensory impairment is a frequent contributor to delirium, worsening disorientation and making communication difficult (Hogan et al., 2006). Many older adults have vision or hearing problems, and the eyeglasses and hearing aids they regularly use should be available and worn when possible (Aguirre, 2010). In addition, the use of magnifying glasses and portable amplifying devices in the ED may be helpful for patients with severe sensory impairment (Aguirre, 2010).

Providers may request that family members and friends, if available, stay with the older person (Aguirre, 2010). Family and friends can assist with communication and reorientation (Hogan et al., 2006). Also, they may calm, aid, protect, support, and advocate for the patient (Hogan et al., 2006). Emergency department providers may facilitate this by placing the patient in a large enough room to accommodate family members and bringing chairs to the bedside.

Environmental strategies may also be useful in managing delirium. Although frequently challenging in a crowded ED, reducing noise near a patient may prevent the sensory overload that can exacerbate delirium (Young et al., 2010). Large, easily visible clocks and calendars may help reorient patients, as may

whiteboards displaying names of staff members and the day of the week (Aguirre, 2010). Low lighting to allow rest is ideal (Hogan et al., 2006; Young et al., 2010), but total darkness may prevent an older adult from perceiving the environment correctly and reorienting him/herself if he/she awakens (Rigney, 2006). In fact, use of nightlights has been recommended to reduce anxiety associated with waking up in unfamiliar surroundings (Rigney, 2006). The disorienting “timelessness” of an often windowless hospital environment is confusing and interrupts older adults’ sleep-wake cycles. Therefore, lighting changes to cue night and day may be helpful.

Physical restraints should be avoided with agitated delirious older adults because their use may increase agitation and prolong delirium (Evans & Cotter, 2008). Notably, in one study, restraint use among patients in a medical inpatient unit was associated with a three-fold increased odds of delirium persistence at time of discharge (Inouye et al., 2007). In addition, physical restraints create additional clinical problems, such as loss of mobility, pressure ulcers, and incontinence, and they increase the chance of serious injury or death (Evans & Cotter, 2008). With anticipated health care changes, including worsening ED overcrowding, budgetary cutbacks, nursing shortages, and decreased availability of one-to-one sitters, commentators are concerned about a potential resurgence of restraint use (Inouye et al., 2007). Raising the head and foot of the bed to prevent climbing or falling out may be a safer alternative (Somes, Donatelli, & Barrett, 2010).

The busy, crowded ED, where physicians and nurses are frequently responsible for multiple acutely sick patients, is a challenging environment in which to employ these strategies. Nevertheless, it is important for ED providers to consider using them whenever possible. Unfortunately, all studies to date evaluating their use involve patients either in hospital wards or in rehabilitation facilities and not in EDs. Additional research is required to determine which nonpharmacological in-

terventions are feasible and cost-effective in the ED (Han et al., 2010).

### Pharmacological Management

In some circumstances, older adults’ severe agitation may require emergent medication administration to ensure their safety as well as that of other patients and staff. Despite the recommendation that medication be used only as a last resort, literature suggests that medication use is widespread, with the majority of delirious hospitalized patients receiving pharmacological intervention (Briskman, Dubinski, & Barak, 2010). Additional education regarding the efficacy of nonpharmacological management techniques may be required to change this practice.

After attempting nonpharmacological management, care should be taken in selecting pharmacological approaches to treating delirium. Although benzodiazepines are commonly used to treat delirium in younger adults, guidelines recommend that these medications be avoided as monotherapy unless treating delirium due to alcohol or benzodiazepine withdrawal (Trzepacz et al., 1999). In older adults, benzodiazepines may precipitate or worsen delirium and can cause severe side effects, including oversedation, disinhibition, ataxia, and confusion (Pandharipande et al., 2006).

International guidelines suggest that providers instead use antipsychotic medications to treat behavioral emergencies in geriatric delirium (Trzepacz et al., 1999). These medications include haloperidol, a typical antipsychotic, and newer, atypical antipsychotics including olanzapine, quetiapine, and risperidone. Despite the routine use of these antipsychotic medications for delirious older adults in many EDs, there is little reliable evidence supporting their efficacy or safety (Devlin & Skrobik, 2011; Flaherty, Gonzales, & Dong, 2011). Larger studies with rigorous methodology are needed to accurately assess the efficacy of the different pharmacological approaches to treating geriatric delirium (Flaherty et al.,

2011; Ozbolt, Paniagua, & Kaiser, 2008). As with most medication interventions in older adults, providers should always “start low and go slow” because additional medication may always be given but it cannot be taken away (Tobias, 2003). Unfortunately, research suggests that high doses are frequently administered to delirious geriatric patients and the medication orders are only rarely reviewed (Tropea, Slee, Holmes, Gorelik, & Brand, 2009).

### Disposition

Although little evidence-based guidance exists for disposition of older ED patients with delirium, most of these patients likely require hospital admission. For patients who are admitted, admission to a unit specializing in acute geriatric care may improve outcomes (Naughton et al., 2005).

### NOVEL CLINICAL PROTOCOL

On the basis of this literature review, we have developed a novel clinical protocol for diagnosis/recognition, management, and disposition of geriatric delirium in the ED (see Figure 1).

### Diagnosis/Recognition

Our protocol emphasizes the use of a formal mental status assessment tool for at-risk patients. In addition, it asks providers to acquire collateral information from family or a skilled nursing facility whenever possible because baseline mental status and time course of behavior change significantly affect assessment. Providers are also reminded that it is important to check vital signs immediately if any mental status change is suspected because of their implications for underlying cause and subsequent testing, management, and disposition.

### Management

Emergency providers are experienced and comfortable with assessment and manage-

ment of immediately life-threatening conditions that may precipitate agitated delirium, such as sepsis, acute myocardial infarction, or hypoglycemia. Our protocol reminds providers to initially check for these conditions.

The central focus of this protocol, however, is on reminding the ED provider about the importance of assessing for additional commonly missed contributing precipitants of delirium in older adults as well as to provide specific interventions to treat these precipitants. To assist providers with remembering these contributing causes, we developed a mnemonic, A-B-C-D-E-F (A = analgesia; B = bladder/urinary retention; C = constipation; D = dehydration; E = environment; F = f(ph)armacy/medications). For each of these potentially missed contributing causes, we have developed critical action(s) in evaluation and treatment. For A = analgesia (poor pain control): Fully expose skin, palpate long bones and joints, consider if acute complaint is pain related, and check for a chronic pain condition. If pain is found: Intervene with adequate analgesia. For B = bladder/urinary retention: Check the bladder via ultrasonography; if measurement is greater than 150 ml: Empty the bladder using a straight urinary catheter. For C = constipation: Perform a rectal examination, consider disimpaction, and check for and potentially hold constipation-causing medications. For D = dehydration: Check BUN/creatinine ratio and, if it is 18 or greater, give a 500-ml bolus of isotonic intravenous fluid, if not contraindicated, and reassess. For E = environment: Check if the patient is in a noisy hallway, is too hot or cold, is tethered to sheets/intravenous catheters/wires, or has a wet or soiled brief, and address each as appropriate. For F = f(ph)armacy: Perform a reconciliation for new, changed, or missing medications and avoid prescribing delirium-causing medications.

In addition to the critical A-B-C-D-E-F evaluation of commonly missed factors that can contribute to delirium, our protocol suggests other nonpharmacological actions that

NewYork-Presbyterian  
The University Hospital of Columbia and Cornell  
GERIATRIC EMERGENCY MEDICINE

## PROTOCOL FOR ED MANAGEMENT OF DELIRIUM IN OLDER ADULTS

### DIAGNOSIS / RECOGNITION

**BRIEFLY ASSESS MENTAL STATUS**

1. acute onset & fluctuating course
2. inattention
3. disorganized thinking
4. altered level of consciousness

Delirium diagnosis requires both of these and one of these

**ACQUIRE COLLATERAL** Contact family and/or nursing facility to find out baseline mental status and any recent acute changes

**CHECK VITAL SIGNS** Results may dramatically change diagnostic investigations, management, and dispo

### MANAGEMENT

**EVALUATE FOR & TREAT COMMONLY MISSED CONTRIBUTING CAUSES**  
CHECK **A B C D E F**

**A NALGESIA**

Fully expose skin →

Palpate long bones and joints →

Consider if current diagnosis pain-related →

Check for chronic pain condition →

**TREATMENT**

Give adequate analgesia

**B LADDER-URINE RETENTION**

Check bladder ultrasound (positive if measurement >150cc) →

Straight cath

avoid foley unless necessary

**C ONSTIPATION**

Perform abdominal exam →

Perform rectal exam for stool →

Check for constipation-causing meds →

Give stool softener unless contraindicated

Bowel disimpaction

Consider holding

**D EHYDRATION**

Check if BUN:Creatinine is ≥18 →

Give 500cc IV isotonic bolus & reassess

**E NVIRONMENT**

Move patient from hallway →

Check if patient too hot or cold →

Check if tethered to sheets / IVs / wires →

Check for wet or soiled diaper →

Move to room or document why not poss

Give blanket or uncover

Untangle

Change diaper

**F ARMACY (MEDICATIONS)**

Perform med reconciliation (for new, changed, or missing meds) →

Avoid delirium-causing medications →

Give regular daily medications

**NEVER START & CONSIDER HOLDING:**

diphenhydramine

oxycodone

\*concerned about meds should NOT prevent adequate pain control

**REMEMBER TO RULE OUT LIFE-THREATENING CAUSES**

- Infection
- Head Trauma
- Electrolyte disturbance
- MI / ACS
- Hypoxia
- Hypoglycemia
- CVA
- Renal Insufficiency
- Liver Failure

**OTHER ACTIONS THAT MAY PREVENT OR HELP TREAT**

- Reorient patient frequently
- Arrange for family members to stay with patient
- Address patient face-to-face
- Talk clearly, slowly repetitively
- Keep your hands in sight when possible, avoiding gestures or rapid movements that may be misinterpreted as aggressive
- Use interpreters if difficulty with comprehension of the language
- Optimize lighting in room
- Replace hearing aids
- Put glasses on
- Put dentures in
- Check if patient hungry
- Avoid room/location changes as much as possible

	Initial Dose	Redose	Max Dose	always start low and go slow
Olanzapine	2.5mg PO/SL	q2hr	30mg	good choice if concerned about swallowing pill, history of EPS, long QT avoid if orthostatic hypotension
Risperidone	0.25mg PO	q1hr	15mg	good choice in demented patients avoid if long QT syndrome
Quetiapine	12.5mg PO	q1.5hr	50mg	good choice if concerned about history of EPS, long QT avoid if movement disorder, may cause sedation
Haloperidol	0.5mg IM	q30min	10mg	good choice if sedation desired avoid if Parkinson disease, history of EPS, long QT, seizures
Ativan	0.5mg IV	q15min	6mg	good choice in EtOH withdrawal, procedural sedation, can give IV or IM avoid if concern for hypotension, respiratory depression

**MEDICATION INTERVENTIONS if necessary**

Avoid and remove physical restraints

Redose patients with their chronic psychotropic meds

Check for prior psychotropic use and adverse reactions

### DISPOSITION

**PRIORITIZE FOR BED ON ACE Unity or any appropriate bed if ACE Unit full** → Contact in-patient bed coordinator  
Contact Admitting Office

**ASSURE CONTINUITY OF CARE** → Include mention of delirium and management in Nursing and MD verbal sign-out

**Figure 1.** Novel clinical protocol for emergency department management of delirium in older adults. ACS = acute coronary syndrome; BUN = blood urea nitrogen; CVA = cerebrovascular accident; EPS = extrapyramidal symptom; IM = intramuscular; IV, intravenous; MI = myocardial infarction; PO = by mouth; SL = sublingual.

providers may take to prevent or help treat delirium.

### Pharmacological Interventions

The protocol acknowledges that medication administration to manage delirium-related behaviors may be necessary to ensure the safety of the patient and staff but encourages providers to use it only as a last resort. As well, the protocol emphasizes the avoidance of physical restraints. We recommend that providers first redose patients with their current psychotropic medications and, if possible, check their records for prior psychotropic use and adverse reactions.

Despite a literature review yielding limited evidence, we have provided a chart of various medication alternatives with recommended dosing and circumstances in which each medication may be beneficial or deleterious choice (see Figure 2). Olanzapine, which is available in sublingual form in addition to oral and intramuscular forms, is a good choice if a practitioner is concerned

about a patient's ability to swallow a pill. Also, olanzapine is appropriate for individuals with a history of extrapyramidal symptoms or evidence or concern for prolonged QT interval (Bhana, Foster, Olney, & Plosker, 2001; Chung & Chua, 2011). Given this side effect profile, olanzapine is often an appropriate first choice in the elderly ED patient. Olanzapine should be avoided in those at risk for orthostatic hypotension (Escobar et al., 2008). Evidence suggests an increased risk of sudden death when intramuscular olanzapine is used in combination with diazepam (Allen, Currier, Carpenter, Ross, & Docherty, 2005).

Risperidone, although it is an unfamiliar medication to many ED providers, it may be a particularly good choice for patients with underlying dementia complicating their acute delirium (Alexopoulos, Streim, Carpenter, & Docherty, 2004). It is commonly used in skilled nursing facilities to manage agitated behaviors. Of the atypical antipsychotics, risperidone has the highest likelihood for dangerous QT interval prolongation, so it should

NewYork-Presbyterian The University Hospital of Columbia and Cornell GERIATRIC EMERGENCY MEDICINE		PROTOCOL FOR ED MANAGEMENT OF DELIRIUM IN OLDER ADULTS		
<b>MEDICATION INTERVENTIONS <i>if necessary</i></b> Avoid and remove physical restraints Redose patients with their chronic psychotropic meds Check for prior psychotropic use and adverse reactions				<i>always start low and go slow</i>
Medication	Initial Dose	Redose	Max	
Olanzapine	5mg PO/sl/IM	q2hr	30mg	good choice if concerned about swallowing pill, history of EPS, long QT avoid if orthostatic hypotension, IM has black box warning if combined with diazepam
Risperidone	0.25mg PO	q1hr	15mg	good choice in demented patients avoid if long QT syndrome
Quetiapine	25mg PO	q1.5hr	50mg	good choice if sedation desired avoid if movement disorder, may cause QT prolongation at higher doses
Haloperidol	0.5mg IM	q30min	10mg	good choice if sedation desired avoid if Parkinson disease, history of EPS, long QT, seizures
Lorazepam	0.5mg IV	q15min	6mg	good choice in ETOH withdrawal, procedural sedation, can give IV or IM avoid if concern for hypotension, respiratory depression

Common trade names:  
Olanzapine = Zyprexa, Zylis  
Risperidone = Risperdal  
Quetiapine = Seroquel

**Figure 2.** Recommended medication interventions for emergency department management of delirium in older adults. IM = intramuscular; IV, intravenous; PO = by mouth; SL = sublingual.

be avoided in at-risk patients (Chung & Chua, 2011).

Quetiapine is an appropriate choice if sedation is desired (Devlin et al., 2010) and may be appropriate for patients with significant acute medical illness who will require intensive care unit level care. Quetiapine should be avoided in those with a known movement disorder (Rizos, Douzenis, Gournellis, Christodoulou, & Lykouras, 2009; Walsh & Lang, 2011); however, it may prolong the QT interval at higher doses, so providers should be wary of using quetiapine in conjunction with other QT-prolonging drugs (Aghaenia, Brahm, Lussier, & Washington, 2011).

Haloperidol, commonly used in the emergent management of agitated younger patients, is the medication that has been most well-studied for use in delirious older adults (Han et al., 2010). Haloperidol may be useful in situations where sedation is required (Attard, Ranjith, & Taylor, 2008) and, even though it is not Food and Drug Administration (FDA)-approved for intravenous use (FDA, 2013), it is commonly given intravenously in emergent situations. Haloperidol, however, is potentially dangerous for many patients because this medication is associated with an increased incidence of extrapyramidal symptoms, seizures, Parkinsonism, and a prolonged QT interval (Angelini, Ketzler, & Coursin, 2001). Many of these side effects may be avoided with lower doses, so haloperidol should likely be used for older adult ED patients in much smaller doses than typically given to younger patients.

Lorazepam and other benzodiazepines, which may cause paradoxical delirium, are typically discouraged for use in delirious older adults, particularly for those at risk for respiratory depression or hypotension (Pandharipande et al., 2006). In limited situations, however, such as delirium due to alcohol withdrawal and sedation for an ED procedure or radiological test, lorazepam may be an appropriate choice (Gower et al., 2012; Trzepacz et al., 1999). As with the use of most medications in older adults, we emphasize “starting low and going slow.” If an ED

practitioner is unfamiliar with use of these medications, consultation with a geriatrician is also recommended.

## Disposition

Safe disposition is imperative for older adults suffering from delirium, and the ED is not an appropriate environment for these patients. Therefore, in our protocol, these patients are prioritized for transfer to inpatient units, particularly units specializing in the care of geriatric patients, where they can receive definitive care. Also, to ensure continuity of care, our protocol requires that both the ED nurse and the physician verbally report to the inpatient team that the patient is delirious and how this condition has been managed as part of the transfer of care.

## CONCLUSION

Assessing and managing agitated delirium in older adults remains a significant challenge for ED providers. We have synthesized existing literature into an evidence-based, comprehensive A-B-C-D-E-F protocol that addresses many of the factors precipitating delirium and provided both nonpharmacological and pharmacological approaches to manage them. Future research involves implementing this protocol and measuring its efficacy.

## REFERENCES

- Aghaenia, N., Brahm, N. C., Lussier, K. M., & Washington, N. B. (2011). Probable quetiapine-mediated prolongation of the QT interval. *Journal of Pharmacy Practice, 24*(5), 506–512.
- Aguirre, E. (2010). Delirium and hospitalized older adults: A review of nonpharmacologic treatment. *Journal of Continuing Education in Nursing, 41*(4), 151–152.
- Alexopoulos, G. S., Streim, J. E., Carpenter, D., & Docherty, J. P. (2004). Expert consensus guidelines for using antipsychotic agents in older patients. *Journal of Clinical Psychiatry, 65*(Suppl. 2), 1–105.
- Allen, M. H., Currier, G. W., Carpenter, D., Ross, R. W., & Docherty, J. P. (2005). The expert consensus guideline series. Treatment of behavioral emergencies 2005. *Journal of Psychiatric Practice, 11*, 5–108.

- Angelini, G., Ketzler, J. T., & Coursin, D. B. (2001). Use of propofol and other nonbenzodiazepine sedatives in the intensive care unit. *Critical Care Clinics*, *17*(4), 863-880.
- Attard, A., Ranjith, G., & Taylor, D. (2008). Delirium and its treatment. *CNS Drugs*, *22*(8), 631-644.
- Bhana, N., Foster, R. H., Olney, R., & Plosker, G. L. (2001). Olanzapine. *Drugs*, *61*(1), 111-161.
- Borrie, M. J., Campbell, K., Arcese, Z. A., Bray, J., Hart, P., Labate, T., . . . Hesch, P. (2001). Urinary retention in patients in a geriatric rehabilitation unit: Prevalence, risk factors, and validity of bladder scan evaluation. *Rehabilitation Nursing*, *26*(5), 187-191.
- Briskman, I., Dubinski, R., & Barak, Y. (2010). Treating delirium in a general hospital: A descriptive study of prescribing patterns and outcomes. *International Psychogeriatrics*, *22*(2), 328-331.
- Campanelli, C. M. (2012). American Geriatrics Society updated Beers criteria for potentially inappropriate medication use in older adults: The American Geriatrics Society 2012 Beers Criteria Update Expert Panel. *Journal of the American Geriatrics Society*, *60*(4), 616.
- Carnes, M., Howell, T., Rosenberg, M., Francis, J., Hildebrand, C., & Knuppel, J. (2003). Physicians vary in approaches to the clinical management of delirium. *Journal of the American Geriatrics Society*, *51*(2), 234-239.
- Carpenter, C. R., Shah, M. N., Hustey, F. M., Heard, K., Gerson, L. W., & Miller, D. K. (2011). High yield research opportunities in geriatric emergency medicine: Prehospital care, delirium, adverse drug events, and falls. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, *66*(7), 775-783.
- Chevrolet, J. C., & Jolliet, P. (2007). Clinical review: Agitation and delirium in the critically ill: Significance and management. *Critical Care*, *11*(3), 214.
- Chin, M. H., Wang, L. C., Jin, L., Mulliken, R., Walter, J., Hayley, D. C., . . . Friedmann, P. D. (1999). Appropriateness of medication selection for older persons in an urban academic emergency department. *Academic Emergency Medicine*, *6*(12), 1232-1241.
- Chu, C. L., Liang, C. K., Lin, Y. T., Chow, P. C., Pan, C. C., Chou, M. Y., . . . Lu, T. (2011). Biomarkers of delirium: Well evidenced or not? *Journal of Clinical Gerontology and Geriatrics*, *2*(4), 100-104.
- Chung, A. K., & Chua, S. E. (2011). Effects on prolongation of Bazett's corrected QT interval of seven second-generation antipsychotics in the treatment of schizophrenia: A meta-analysis. *Journal of Psychopharmacology*, *25*(5):646-666.
- Conley, D. M. (2011). The gerontological clinical nurse specialist's role in prevention, early recognition, and management of delirium in hospitalized older adults. *Urologic Nursing*, *31*(6), 337.
- Dahlke, S., & Phinney, A. (2008). Caring for hospitalized older adults at risk for delirium: The silent, unspoken piece of nursing practice. *Journal of Gerontological Nursing*, *34*(6), 41-47.
- Devlin, J. W., Roberts, R. J., Fong, J. J., Skrobik, Y., Riker, R. R., Hill, N. S., Robbins, T., . . . Garpestad, E. (2010). Efficacy and safety of quetiapine in critically ill patients with delirium: A prospective, multicenter, randomized, double-blind, placebo-controlled pilot study. *Critical Care Medicine*, *38*(2), 419-427.
- Devlin, J. W., & Skrobik, Y. (2011). Antipsychotics for the prevention and treatment of delirium in the intensive care unit: What is their role? *Harvard Review of Psychiatry*, *19*(2), 59-67.
- Escobar, R., San, L., Perez, V., Olivares, J. M., Polavieja, P., Lopez-Carrero, C., . . . Montoya, A. (2008). Effectiveness results of olanzapine in acute psychotic patients with agitation in the emergency room setting: Results from NATURA study. *Actas Esp Psiquiatr*, *36*(3), 151-157.
- Evans, L. K., & Cotter, V. T. (2008). Avoiding restraints in patients with dementia: Understanding, prevention, and management are the keys. *American Journal of Nursing*, *108*(3), 40-49.
- Fakih, M. G., Pena, M. E., Shemes, S., Rey, J., Berriel-Cass, D., Szpunar, S. M., Savoy-Moore, R. T., . . . Saravolatz, L. D. (2010). Effect of establishing guidelines on appropriate urinary catheter placement. *Academic Emergency Medicine*, *17*(3), 337-340.
- Flaherty, J. H., Gonzales, J. P., & Dong, B. (2011). Antipsychotics in the treatment of delirium in older hospitalized adults: A systematic review. *Journal of the American Geriatrics Society*, *59*(s2), S269-S276.
- Food and Drug Administration. (2013). *Information for healthcare professionals: Haloperidol (marketed as Haldol, Haldol Deconate and Haldol Lactate)*. Retrieved from <http://www.fda.gov/Drugs/DrugSafety/PostmarketDrugSafetyInformationforPatientsandProviders/DrugSafetyInformationforHealthcareProfessionals/ucm085203.htm>
- George, J., & Rockwood, K. (2004). Dehydration and delirium—Not a simple relationship. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, *59*(8), M811-M812.
- Gillis, A. J., & MacDonald, B. (2006). Unmasking delirium. *The Canadian Nurse*, *102*(9), 18-24.
- Gower, L. E., Gatewood, M. O. K., & Kang, C. S. (2012). Emergency department management of delirium in the elderly. *Western Journal of Emergency Medicine*, *13*(2), 194-201.
- Han, J. H., Bryce, S. N., Ely, E., Kripalani, S., Morandi, A., Shintani, A., . . . Schnelle, J. (2011). The effect of cognitive impairment on the accuracy of the presenting complaint and discharge instruction comprehension in older emergency department patients. *Annals of Emergency Medicine*, *57*(6), 662-671.
- Han, J. H., Eden, S., Shintani, A., Morandi, A., Schnelle, J., Dittus, R. S., . . . Ely, E. W. (2011). Delirium in older emergency department patients is an independent

- predictor of hospital length of stay. *Academic Emergency Medicine*, 18(5), 451–457.
- Han, J. H., Shintani, A., Eden, S., Morandi, A., Solberg, L. M., Schnelle, J., . . . Ely, E. W. (2010). Delirium in the emergency department: An independent predictor of death within 6 months. *Annals of Emergency Medicine*, 56(3), 244–252.
- Han, J. H., Wilson, A., & Ely, E. W. (2010). Delirium in the older emergency department patient—A quiet epidemic. *Emergency Medicine Clinics of North America*, 28(3), 611–631.
- Han, J. H., Wilson, A., Graves, A. J., Shintani, A., Schnelle, J. F., Dittus, R. S., . . . Ely, E. W. (2014). Validation of the Confusion Assessment Method for the intensive care unit in older emergency department patients. *Academic Emergency Medicine*, 21(2), 180–187.
- Han, J. H., Wilson, A., Vasilevskis, E. E., Shintani, A., Schnelle, J. F., Dittus, R. S., . . . Ely, E. W. (2013). Diagnosing delirium in older emergency department patients: Validity and reliability of the delirium triage screen and the brief confusion assessment method. *Annals of Emergency Medicine*, 62(5), 457–465.
- Han, J. H., Zimmerman, E. E., Cutler, N., Schnelle, J., Morandi, A., Dittus, R. S., . . . Ely, E. W. (2009). Delirium in older emergency department patients: Recognition, risk factors, and psychomotor subtypes. *Academic Emergency Medicine*, 16(3), 193–200.
- Hogan, D. B., Gage, L., Bruto, V., Burne, D., Chan, P., & Wiens, C. (2006). National guidelines for seniors' mental health—The assessment and treatment of Delirium. *Canadian Journal of Geriatrics*, 9(Suppl. 2), 542–551.
- Hohl, C. M., Dankoff, J., Colacone, A., & Afilalo, M. (2001). Polypharmacy, adverse drug-related events, and potential adverse drug interactions in elderly patients presenting to an emergency department. *Annals of Emergency Medicine*, 38(6), 666–671.
- Hwang, U., Morrison, R. S., Richardson, L. D., & Todd, K. H. (2011). A painful setback: Misinterpretation of analgesic safety in older adults may inadvertently worsen pain care. *Archives of Internal Medicine*, 171(12), 1127.
- Inouye, S. K. (2006). Delirium in older persons. *The New England Journal of Medicine*, 354(11), 1157–1165.
- Inouye, S. K., & Charpentier, P. A. (1996). Precipitating factors for delirium in hospitalized elderly persons: Predictive model and interrelationship with baseline vulnerability. *Journal of the American Medical Association*, 275(11), 852–857.
- Inouye, S. K., Van Dyck, C. H., Alessi, C. A., Balkin, S., Siegal, A. P., & Horwitz, R. I. (1990). Clarifying confusion: The Confusion Assessment Method, a new method for detection of delirium. *Annals of Internal Medicine*, 113(12), 941–948.
- Inouye, S. K., Zhang, Y., Jones, R. N., Kiely, D. K., Yang, F., & Marcantonio, E. R. (2007). Risk factors for delirium at discharge: Development and validation of a predictive model. *Archives of Internal Medicine*, 167(13), 1406–1413.
- Kakuma, R., Fort, D., Galbaud, G., Arsenaault, L., Perrault, A., Platt, R. W., . . . Wolfson, C. (2003). Delirium in older emergency department patients discharged home: Effect on survival. *Journal of the American Geriatrics Society*, 51(4), 443–450.
- Leonard, R., Tinetti, M. E., Allore, H. G., & Drickamer, M. A. (2006). Potentially modifiable resident characteristics that are associated with physical or verbal aggression among nursing home residents with dementia. *Archives of Internal Medicine*, 166(12), 1295–1300.
- Liem, P. H., & Carter, W. J. (1991). Cystocerebral syndrome: A possible explanation. *Archives of Internal Medicine*, 151(9), 1884–1886.
- Marcantonio, E. R., Rudolph, J. L., Culley, D., Crosby, G., Alsop, D., & Inouye, S. K. (2006). Serum biomarkers for delirium. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 61(12), 1281–1286.
- Morley, J. E. (2007). Constipation and irritable bowel syndrome in the elderly. *Clinics in Geriatric Medicine*, 23(4), 823–832.
- Nassisi, D., Korc, B., Hahn, S., Bruns, J., & Jagoda, A. (2006). The evaluation and management of the acutely agitated elderly patient. *Mount Sinai Journal of Medicine*, 73(7), 976–984.
- Naughton, B. J., Saltzman, S., Ramadan, F., Chadha, N., Priore, R., & Mylotte, J. M. (2005). A multifactorial intervention to reduce prevalence of delirium and shorten hospital length of stay. *Journal of the American Geriatrics Society*, 53(1), 18–23.
- Ozbolt, L. B., Paniagua, M. A., & Kaiser, R. M. (2008). Atypical antipsychotics for the treatment of delirious elders. *Journal of the American Medical Directors Association*, 9(1), 18–28.
- Pandharipande, P., Shintani, A., Peterson, J., Pun, B. T., Wilkinson, G. R., Dittus, R. S., . . . Ely, E. W. (2006). Lorazepam is an independent risk factor for transitioning to delirium in intensive care unit patients. *Anesthesiology*, 104(1), 21–26.
- Pitkälä, K. H., Laurila, J. V., Strandberg, T. E., & Tilvis, R. S. (2006). Multicomponent geriatric intervention for elderly inpatients with delirium: A randomized, controlled trial. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 61(2), 176–181.
- Rigney, T. S. (2006). Delirium in the hospitalized elder and recommendations for practice. *Geriatric Nursing*, 27(3), 151–157.
- Rizos, E., Douzenis, A., Gournellis, R., Christodoulou, C., & Lykouras, L. P. (2009). Tardive dyskinesia in a patient treated with quetiapine. *World Journal of Biological Psychiatry*, 10(1), 54–57.
- Rolfson, D. B., McElhane, J. E., Jhangri, G. S., & Rockwood, K. (1999). Validity of the Confusion Assessment Method in detecting postoperative delirium in

- the elderly. *International Psychogeriatrics*, 11(04), 431-438.
- Ross, D. D., & Alexander, C. S. (2001). Management of common symptoms in terminally ill patients: Part II. Constipation, delirium and dyspnea. *American Family Physician*, 64(6), 1019-1026.
- Samaras, N., Chevalley, T., Samaras, D., & Gold, G. (2010). Older patients in the emergency department: A review. *Annals of Emergency Medicine*, 56(3), 261-269.
- Schreier, A. M. (2010). Nursing care, delirium, and pain management for the hospitalized older adult. *Pain Management Nursing*, 11(3), 177-185.
- Somes, J., Donatelli, N. S., & Barrett, J. (2010). Sudden confusion and agitation: Causes to investigate! Delirium, dementia, depression. *Journal of Emergency Nursing*, 36(5), 486-488.
- Tariq, S. H. (2007). Constipation in long-term care. *Journal of the American Medical Directors Association*, 8(4), 209-218.
- Thorne, M. B., & Geraci, S. A. (2009). Acute urinary retention in elderly men. *American Journal of Medicine*, 122(9), 815-819.
- Tobias, D. E. (2003). Start low and go slow. *Hospital Pharmacy*, 38(7), 634-636.
- Tropea, J., Slee, J., Holmes, A. C. N., Gorelik, A., & Brand, C. A. (2009). Use of antipsychotic medications for the management of delirium: An audit of current practice in the acute care setting. *International Psychogeriatrics*, 21(01), 172-179.
- Tropea, J., Slee, J. A., Brand, C. A., Gray, L., & Snell, T. (2008). Clinical practice guidelines for the management of delirium in older people in Australia. *Australasian Journal on Ageing*, 27(3), 150-156.
- Trzepacz, P., Breitbart, W., Franklin, J., Levenson, J., Martini, D. R., & Wang, P. (1999). Practice guideline for the treatment of patients with delirium. *American Journal of Psychiatry*, 156, 1-20.
- Waardenburg, I. E. (2008). Delirium caused by urinary retention in elderly people: A case report and literature review on the "cystocerebral syndrome." *Journal of the American Geriatrics Society*, 56(12), 2371-2372.
- Walsh, R. A., & Lang, A. E. (2011). Early-onset tardive dyskinesia in a neuroleptic-naïve patient exposed to low-dose quetiapine. *Movement Disorders*, 26(12), 2297-2298.
- Wei, L. A., Fearing, M. A., Sternberg, E. J., & Inouye, S. K. (2008). The Confusion Assessment Method: A systematic review of current usage. *Journal of the American Geriatrics Society*, 56(5), 823-830.
- Wilber, S. T. (2006). Altered mental status in older emergency department patients. *Emergency Medicine Clinics of North America*, 24(2), 299-316.
- Wilson, M. G., & Morley, J. E. (2003). Impaired cognitive function and mental performance in mild dehydration. *European Journal of Clinical Nutrition*, 57, S24-S29.
- Wu, J., & Baguley, I. J. (2005). Urinary retention in a general rehabilitation unit: Prevalence, clinical outcome, and the role of screening. *Archives of Physical Medicine and Rehabilitation*, 86(9), 1772-1777.
- Young, J., Murthy, L., Westby, M., Akunne, A., & O'Mahony, R. (2010). Diagnosis, prevention, and management of delirium: Summary of NICE guidance. *BMJ*, 341, c3704.

For more than 76 additional continuing education articles related to Emergency Care topics, go to [NursingCenter.com/CE](http://NursingCenter.com/CE).

#### Test Instructions

Read the article. The test for this CE activity can only be taken online at <http://www.nursingcenter.com/CE/AENJ>. Tests can no longer be mailed or faxed. You will need to create (its free!) and login to your personal CE Planner account before taking online tests. Your planner will keep track of all your Lippincott Williams & Wilkins online CE activities for you. There is only one correct answer for each question. A passing score for this test is 13 correct answers. If you pass, you can print your certificate of earned contact hours and access the answer key. If you fail, you have the option of taking the test again at no additional cost.

For questions, contact Lippincott Williams & Wilkins: 1-800-787-8985.

- Registration deadline is September 30, 2017.

#### Provider Accreditation

Lippincott Williams & Wilkins, the publisher of *Advanced Emergency Nursing Journal*, will award 2.5 contact hours for this continuing nursing education activity.

Lippincott Williams & Wilkins is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.

This activity is also provider approved by the California Board of Registered Nursing, Provider Number CEP

11749 for 2.5 contact hours. LWW is also an approved provider of continuing nursing education by the District of Columbia #50-1223 and Florida #50-1223. Your certificate is valid in all states.

The ANCC's accreditation status of Lippincott Williams & Wilkins Department of Continuing Education refers only to its continuing nursing educational activities and does not imply Commission on Accreditation approval or endorsement of any commercial product.

#### Disclosure Statement

The authors and planners have disclosed that they have no financial relationships related to this article.