Delirium in older adults in critical care is associated with poor outcomes, including longer stays, higher costs, increased mortality, greater use of continuous sedation and physical restraints, increased unintended removal of catheters and self-extubation, functional decline, new institutionalization, and new onset of cognitive impairment. Diagnosing delirium is complicated because many critically ill older adults cannot communicate their needs effectively. Manifestations include reduced ability to focus attention, disorientation, memory impairment, and perceptual disturbances. Nurses often have primary responsibility for detecting and treating delirium, which can be extraordinarily complicated because patients are often voiceless, extremely ill, and require high levels of sedatives to facilitate mechanical ventilation. An aggressive, appropriate, and compassionate management strategy may reduce the suffering and adverse outcomes associated with delirium and improve relationships between nurses, patients, and patients’ family members. (Critical Care Nurse. 2012;32[4]:15-26)

More than one-half of all intensive care unit (ICU) days are incurred by adults 65 years and older.1 Unfortunately, once admitted to an ICU, older adults are at high risk for delirium.2,3 Often referred to as “acute cognitive dysfunction,”4 delirium is a common and serious geriatric syndrome in the ICU. Formally, delirium is defined as an acute but temporary state of fluctuating levels of consciousness and pervasive impairment in mental, behavioral, and emotional functioning.5 The manifestations can be extremely upsetting to patients, patients’ families, and nursing staff. Delirious patients may experience visual and auditory hallucinations, are impulsive, are often disoriented, and often have self-injurious behaviors.6 These behaviors potentially increase the risk for poor outcomes.

Nurses play an essential role in the management of delirious, critically ill older adults. Nurses are often the interdisciplinary team members who first notice that an elderly patient is experiencing a change in mental status; determine whether the patient is experiencing other indications of distress such as pain, anxiety, or dyspnea that may cause or contribute to the behavioral changes; and intervene by using the best available evidence to promote the comfort, safety, and welfare of the patient. This process is extraordinarily complicated because many older adults are voiceless due to their critical illness,
mechanical ventilation, and the sedative effects of medications used in the ICU to facilitate care. Furthermore, critical care nurses are practicing in an environment where health care providers are just beginning to fully appreciate the prognostic importance of delirium. In this article, we review current evidence pertinent to delirium in critically ill older adults and describe pharmacological and nonpharmacological approaches nurses can use to manage the distressing physical, psychological, and emotional manifestations of delirium in older patients.

Frequency and Outcomes Associated With Delirium

Delirium is a common and frequent manifestation of acute brain dysfunction. The reported prevalence of delirium in critically ill adults ranges widely, from 11% to 87%. Few investigators have exclusively examined the occurrence and duration of delirium in critically ill older adults. In a study of older adults admitted to medical ICUs, McNicoll et al found that 62% of the patients had evidence of delirium during the ICU stay. In a similar study of older adults in a surgical ICU, 30% of patients experienced delirium sometime during their ICU stay. Of note, in both of these studies, older adults were screened not only for delirium (via the Confusion Assessment Method for the Intensive Care Unit; CAM-ICU) but also for preexisting cognitive impairment, which is now recognized as an important predictor of delirium. These reports suggest that delirium rates in older patients in medical and surgical ICUs may vary widely, depending on the type of unit. Further study is warranted to determine if these variations persist.

Delirium in the ICU is associated with a wide array of poor patient outcomes (Table 1). The effect of delirium on critically ill older adults seems to extend to the time after discharge from the hospital. In a surgical ICU, older patients with delirium were more likely than patients without delirium to be discharged to a place other than home (61.3% vs 20.5%; P < .001) and have greater functional decline, as measured by the Index of ADL, (67.7% vs 43.6%; P = .02). In this study, delirium was strongly and independently associated with greater odds of being discharged to any place other than home (odds ratio, 7.20; 95% CI, 1.93-26.82). In another study of older medical ICU patients, after adjustments were made for relevant covariates, including age, severity of illness, comorbid conditions, use of psychoactive medication while in the ICU, and baseline cognitive and functional status, the number of days of ICU delirium was significantly associated with time to death within 1 year after admission to the ICU (hazard ratio, 1.10; 95% CI, 1.02-1.18). These findings indicate that delirium is a burden not only for critically ill older adults, who face marked disability and altered quality of life, but also for the patients’ family caregivers.

Risk Factors

Delirium in ICUs was originally thought to be caused by environmental factors unique to the units,
such as sleep deprivation, sensory overload, and lack of windows.\textsuperscript{16,25-27} More recent evidence\textsuperscript{5,10,19,25,27-30} suggests that risk factors associated with delirium in critical care are similar to those in other hospitalized older adults (Tables 2 and 3). Of note, some of these variables are fixed (eg, age, diagnosis), whereas others may be amenable to nursing intervention.

Several interrelated patient characteristics are associated with delirium in older ICU patients. Pisani et al\textsuperscript{31} identified 4 preexisting risk factors for delirium in older patients admitted to medical ICUs: dementia, administration of benzodiazepines before ICU admission, elevated serum creatinine levels, and low arterial pH. The relationship among medications, physiological derangements, and delirium in older ICU patients was also reported for another study\textsuperscript{32} by Pisani and colleagues. These researchers were interested in examining modifiable risk factors for delirium in the ICU. They found that administration of a benzodiazepine, an opioid, or haloperidol; preexisting dementia; and severity of illness were associated with the duration of delirium in older ICU patients.

### Table 2 Risk factors for delirium

<table>
<thead>
<tr>
<th>Setting (population)</th>
<th>Nonmodifiable</th>
<th>Potentially modifiable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital (older adults)\textsuperscript{5,27-30}</td>
<td>Dementia/cognitive impairment, Severity of illness, Advanced age, Male sex, Premission institutionalization, Social isolation, History of depression, Fever, low blood pressure, Hearing and visual impairments, Diminished activities of daily living, Multiple abnormal results of laboratory tests, Unplanned surgery/type of surgery, Alcohol abuse, Fracture at time of admission, Increased number of admissions in the past year, Premission malnutrition</td>
<td>Use of physical restraints, Medication use (see following), Low mobility after surgery, Malnutrition, Sensory impairment, Iatrogenic events (defined as cardiopulmonary complications, hospital-acquired infections, medication related, complications of diagnostic or therapeutic procedures, unintentional injury)</td>
</tr>
<tr>
<td>Critical care (adults)\textsuperscript{5,10,19,25}</td>
<td>Comorbid conditions, Preoperative psychiatric illness, History of smoking, Multiple abnormal results on laboratory tests, Infections, Fever, Advanced age, Severity of illness</td>
<td>Medications (eg, mean daily dose of morphine, larger daily doses of both fentanyl and midazolam), Windowless units, Intensive care unit (ICU) length of stay, Sleep deprivation, Infections</td>
</tr>
<tr>
<td>Critical care (older adults)\textsuperscript{13,31,32}</td>
<td>Dementia, Receipt of benzodiazepines before ICU admission, Elevated creatinine levels, Low arterial pH, Severity of illness</td>
<td>Receipt of a benzodiazepine, an opioid, or haloperidol</td>
</tr>
</tbody>
</table>

### Table 3 Medications associated with delirium\textsuperscript{8}

<table>
<thead>
<tr>
<th>Medications associated with delirium\textsuperscript{a}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthetics</td>
</tr>
<tr>
<td>Analgesics</td>
</tr>
<tr>
<td>Antiasthmatic agents</td>
</tr>
<tr>
<td>Anticonvulsants</td>
</tr>
<tr>
<td>Antihistamines</td>
</tr>
<tr>
<td>Antihypertensive and cardiovascular medications</td>
</tr>
<tr>
<td>Antimicrobials</td>
</tr>
<tr>
<td>Antiparkinsonian medications</td>
</tr>
<tr>
<td>Benzodiazepines</td>
</tr>
<tr>
<td>Corticosteroids</td>
</tr>
<tr>
<td>Gastrointestinal medications</td>
</tr>
<tr>
<td>Muscle relaxants</td>
</tr>
<tr>
<td>Immunosuppressive agents</td>
</tr>
<tr>
<td>Lithium</td>
</tr>
<tr>
<td>Psychotropic medications with anticholinergic properties</td>
</tr>
</tbody>
</table>

\textsuperscript{a Based on information from American Psychiatric Association.\textsuperscript{3}}
Definition and Clinical Manifestations

The gold standard for diagnosis of delirium is the Diagnostic and Statistical Manual of Mental Disorders (Fourth Edition, Text Revision; DSM-IV-TR). The DSM-IV-TR defines delirium as a disturbance of consciousness, attention, and perception that develops over a short time (usually hours to days) that can fluctuate during the course of the day. The manual emphasizes that delirium often develops as a sudden decline from the previous level of functioning rather than with the gradual decline associated with dementia. The 4 DSM-IV-TR diagnostic criteria for delirium are given in Table 4.

Delirium is manifested by disturbances in consciousness, orientation, speech, and perception and by neurological abnormalities. The disturbance in consciousness is manifested as a reduced ability to focus, sustain, or shift attention. Behaviorally, a patient with delirium is easily distracted and often difficult to engage in conversation. In contrast, cognitive changes associated with delirium are characterized by impaired memory, visual spatial impairment, disorientation, and language disturbances. Progressive loss of orientation is often a cardinal indication of the onset of delirium. Disorientation to time is one of the first indications of cognitive decline; next are disorientations to place, person, and self. Speech and language disturbances can also occur in delirium, and include dysarthria, dysnomia, dysgraphia, and even aphasia.

Perceptual disturbances involve 3 main areas: misinterpretations, illusions, and hallucinations. Although visual hallucinations are common, misperceptions associated with other senses, including auditory, tactile, and olfactory, also occur. Initial neurological manifestations of delirium include disturbances in the sleep-wake cycle, activity levels, and emotional responses and multiple nonspecific neurological abnormalities (eg, tremor, myoclonus, asterixis, reflex changes, and electroencephalographic abnormalities). Neurological disturbances are often dramatic, fluctuating, and disturbing to witness.

The psychomotor behaviors of delirious patients are often classified into 3 subtypes: hyperactive, hypoactive, and mixed. Behaviors associated with the hyperactive form may be particularly disturbing; these include screaming out in fear, describing hallucinations, pulling at tubes, trying to climb out of bed, and attempting to hit staff. In stark contrast, the hypoactive form of delirium may be missed in the absence of active monitoring and is more common in older, seriously ill patients. Elderly patients with the hypoactive form may be deemed “easier to care for” because they often lie quietly in their bed and are withdrawn or lethargic. In one study, in an ICU, the purely hyperactive form of delirium was rare (1.6%); the hypoactive (43.5%) and mixed (54.9%) forms were far more common. The transient nature and multiple manifestations of delirium often complicate accurate diagnosis.

Challenges in Diagnosis

Intensive care providers have historically observed dramatic changes in cognitive and neurological function in critically ill older adults. Unfortunately, a lack of conceptual clarity continues to exist in describing the exact nature of these changes. For example, delirium in the critical care setting often is referred to as ICU psychosis, ICU syndrome, or sundowning. The variable definitions and terminology used to describe delirium inhibit effective communication and research on this condition. Delirium continues to be overlooked, misdiagnosed as dementia (a more chronic form of cognitive dysfunction), psychiatric illnesses such as depression, and decline attributed to normal aging. A lack of familiarity with valid and reliable screening tools used to diagnose delirium in the ICU may also contribute to either missed diagnosis or underdiagnosis.

Table 4: Diagnostic and Statistical Manual of Mental Disorders (Fourth Edition, Text Revision) criteria for delirium

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Disturbance of consciousness with reduced ability to focus, sustain, or shift attention.</td>
</tr>
<tr>
<td>2</td>
<td>A change in cognition or the development of a perceptual disturbance that is not accounted for by a preexisting, established, or evolving dementia.</td>
</tr>
<tr>
<td>3</td>
<td>The disturbance develops over a short time (usually hours to days) and tends to fluctuate during the course of the day.</td>
</tr>
<tr>
<td>4</td>
<td>Evidence from the history, physical examination, or laboratory findings indicates that the disturbance is caused by some direct physiological consequences of a general medical condition, by a toxic substance, by use of medications, or by more than one cause.</td>
</tr>
</tbody>
</table>

*Based on information from American Psychiatric Association.*

Secondary physiological injuries in critically ill older adults.
In the ICU, voicelessness, or the inability to speak, is often due to the effects of intubation and mechanical ventilation, sedation, or the frequent cognitive, sensory, and physiological imbalances that often accompany critical illness. These effects make it difficult to detect delirium in voiceless patients. Restrictions in the amount of time family members of critically ill older patients can spend with the patients also potentially influence delirium detection rates, because a patient’s family members are often the first to recognize the patient is experiencing a change in mental status. Not having the same patient on a consistent basis and the multiple changes in caregivers that occur in the ICU environment are also inherent problems in the recognition of delirium. These barriers impede early recognition, delaying timely and appropriate intervention.

Detection of Delirium
Screening for Preexisting Cognitive Impairment

Several tools are available to nurses to aid in the differential diagnosis of delirium in critically ill older patients (Table 5—available online only at www.ccnonline.org). Because dementia is a known risk factor for delirium in the ICU and the development of delirium may actually hasten or accelerate the development of dementia-like syndromes, ICU clinicians should consider routinely screening patients for evidence of preexisting cognitive impairment. Pisani et al suggest that knowledge of a patient’s dementia status will not only make ICU staff more cognizant of the risk for delirium but also alert them to factors that contribute to delirium, such as use of physical restraints and use of certain anticholinergic medications. Effective screening instruments for detection of preexisting cognitive impairment in older critically ill patients include the short form of the Informant Questionnaire on Cognitive Decline in the Elderly and the Modified Blessed Dementia Rating Scale.

Monitoring for Contributory Symptoms

Critically ill older adults experience several other symptoms and syndromes that may contribute to the development of delirium. The contribution of these other entities is reflected in the clinical practice guidelines of the Society of Critical Care Medicine for the sustained use of sedatives and analgesics in critically ill adults. The guidelines state that all ICU patients should be regularly assessed for pain, sedation, delirium, and sleep disturbances by using scales or tools that are both validated and appropriate to older patients. The society further recommends that this assessment be performed sequentially; that is, providers should first assess and treat pain, and the sedation of agitated critically ill patients should be started only after the patients have been provided adequate pain relief and treatment of reversible physiological causes.

Performing Regular Assessments

Several delirium detection tools have been validated in critically ill populations (see Table 5—online only). Of note, however, the scales differ substantially in the quality and extent of validation efforts, the specific components of the delirium syndrome addressed, the ability to differentiate between the forms of delirium, and the ease of use. One of the most established and widely used tools is the CAM-ICU. This tool is a modified version of the CAM developed to assist in diagnosing delirium in nonverbal, critically ill patients. The CAM-ICU criteria for a diagnosis of delirium are the same as in the CAM, although some components have been modified. Features 1 (acute onset of mental status change or fluctuating course), 3 (disorganized thinking), and 4 (altered level of consciousness) remain the same. However, for assessment of feature 2 (inattention), the CAM-ICU uses either the Visual (Picture) or the Auditory (Letter) Attention Screening Examination. The CAM-ICU can be administered in less than 2 minutes and is valid and reliable in different ICU settings. More information about the CAM-ICU is available online.

Another useful tool for evaluating delirium is the Intensive Care Delirium Screening Checklist. This tool consists of 8 items based on the DSM-IV-TR criteria for delirium: altered level of consciousness, inattention, disorientation, hallucination or delusion, psychomotor agitation or retardation, inappropriate mood or speech, sleep-wake cycle disturbance, and symptom fluctuation. Scores range from 0 to 8. A total score of 4 or greater has 99% sensitivity for a psychiatric diagnosis of delirium.

Treatment Options

The exact pathophysiology of ICU delirium remains unclear. Its development is thought to be related
to anatomical deficits; imbalances in the neurotransmitters that modulate control of cognitive function, behavior, and mood; and various inflammatory mechanisms. Neurotransmitters, including the monoamines (eg, serotonin, dopamine, norepinephrine), and imbalances in acetylcholine, glutamate, and γ-aminobutyric acid are postulated to be involved in delirium. Pharmacological treatment of delirium is usually directed toward decreasing agitation and psychotic symptoms.

Pharmacological Methods

A thorough discussion of medication management in critically ill older adults is beyond the scope of this article. A few caveats, however, warrant special attention. First, many medications are associated with the onset of delirium (Table 3). Almost every medication used in the ICU can potentially predispose an older patient to delirium. Ironically, many of the medications used to treat the symptoms of delirium (eg, restlessness, altered sleep cycle) have anticipated side effects that may actually make the symptoms worse. Nurses caring for delirious, older patients should critically review each patient’s record of medications administered for the number and type of medications the patient is receiving and should discuss with the patient’s physician or nurse practitioner the possibility of discontinuing all nonessential medications to limit the total number of drugs administered. Implementation of many of the standard geriatric principles of medication management (eg, frequent review of medications used, avoidance of polypharmacy, application of the Beers Criteria and concepts) may reduce the incidence and severity of delirium in critically ill older patients.

Antipsychotic medications are commonly used in the ICU to treat the symptoms of delirium. According to the most recent guidelines of the Society of Critical Care Medicine, haloperidol is still the preferred agent for the treatment of delirium in critically ill patients. Although the optimal dose and regimen of haloperidol have not been well defined, the guidelines suggest using a loading regimen, starting with a 2-mg dose and then giving doses (double the previous dose) every 15 to 20 minutes while agitation persists. Of note, however, the safety and efficacy of antipsychotic medications, particularly in older adults, have recently been questioned. The level of risk is reflected in the “black box” warning of the Food and Drug Administration for use of antipsychotics in elderly patients. This class of medications is not approved for dementia-related psychosis because of increased mortality risk in elderly patients on conventional or atypical antipsychotics. Most of the deaths are associated with use due to cardiovascular or infectious events. The extent to which the increased mortality can be clearly attributed to antipsychotic vs some patient characteristic(s) is not clear.

Because of the lack of supporting evidence for the use of antipsychotic medications for delirium in critically ill patients and the potentially life-threatening adverse effects of these medications (eg, torsades de pointes, neuroleptic malignant syndrome, sudden cardiac death), Girard et al recently conducted a ground-breaking study to determine the feasibility, efficacy, and safety of antipsychotics for treatment of ICU delirium. The hypothesis behind the Modifying the Incidence of Delirium randomized, multicenter, placebo-controlled trial was that use of antipsychotics would improve days alive without delirium or coma. A total of 101 patients were randomly assigned to receive haloperidol, ziprasidone, or placebo every 6 hours for up to 14 days. The patients were 35 to 68 years old. Frequency of administration of medication was adjusted twice daily according to each patient’s status. The results indicated that compared with placebo, neither haloperidol nor ziprasidone significantly reduced the duration of delirium. Further, patients in the 3 treatment groups spent a similar number of days alive without delirium and coma. Because of the surprising efficacy findings, the researchers suggest that more trials are needed to determine whether use of antipsychotics for treatment of delirium in the ICU is appropriate.

In another clinically relevant, prospective, randomized study, Devlin et al compared the efficacy and safety of scheduled quetiapine to placebo for the treatment of delirium in critically ill patients receiving as-needed haloperidol. The results indicated that use of quetiapine (when added to as-needed haloperidol) resulted in slightly faster resolution of delirium, less agitation, and a greater rate of transfer to home or rehabilitation centers versus other settings. Of note, however, the sample size of
this study was small (only 36 patients), a characteristic that may, as the investigators acknowledge, limit the ability to reliably detect differences in any of the efficacy or safety outcomes. Because of these concerns about safety and efficacy, nurses should consider several things before administering antipsychotic medications to delirious, critically ill older patients68 (Table 6).

Use of sedatives and analgesics is ubiquitous in the ICU.61 Although often necessary, medications such as benzodiazepines and opioids may increase the risk for delirium,69-71 particularly in critically ill older patients.13,31-32 Because these medications themselves contribute to worsening clinical outcomes, an evidence-based organizational approach referred to as the ABCDE bundle (Awakening and Breathing Coordination, Delirium monitoring and management, and Early mobility and exercise) has recently been suggested.72,73 The goal of this approach is to liberate critically ill adults from the harmful effects of exposure to sedatives by using target-based sedation protocols, spontaneous awakening trials, and proper choice of sedatives.73 An additional goal is early mobilization,73 which will hopefully reduce delirium and improve neurocognitive outcomes.

Nonpharmacological Methods

The unstable physiological condition that often precedes or exists at the time of admission of older adults to the ICU is often a nurse’s top priority. One of the most important nonpharmacological interventions nurses can use when caring for a delirious, critically ill older adult is preventing and/or correcting the unstable physiological and hemodynamic conditions that accompany many of the disorders associated with acute change in mental status (eg, early sepsis).74-77 Removal or reversal and recognition of the underlying cause of delirium remain the cornerstone of treatment.5

Nurses who provide care to an older adult experiencing an acute change in mental status need to mobilize all of their available resources early on. If the patient is not yet in the ICU, mobilization may include activating the hospital’s rapid-response team, immediately notifying the patient’s physician of the change in mental status, and increasing the level of care. Precautions to prevent aspiration and falls and ensure safety should also be started to protect the patient from harm.76 Mobilization of resources is important because a nurse caring for a delirious, critically ill older patient will need to work with other members of the ICU team to determine the cause of delirium. Common tools used in the differential diagnosis of delirium include assessment of vital signs, blood glucose levels, pulse oximetry monitoring, laboratory profiles (eg, chemistry studies, drug levels, urinalysis, and arterial blood gas analysis), chest radiographs and electrocardiograms.71,76 Keeping the patient safe and preventing secondary physiological injury is a top priority in effective management of delirium.

Another major obstacle to effectively managing delirium in critically ill, older patients is the major communication challenges experienced by these patients. Recent evidence78 suggests that patients with impaired communication may be at elevated risk for poor outcomes. The inability to communicate one’s needs effectively can be associated with feelings of panic, insecurity, stress, anger, worry, and fear,79,80 feelings that may result in further hormonal and physiological abnormalities. Older adults appear to be at particularly high risk for impaired

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**Table 6** Points to consider when administering antipsychotic medications to critically ill older adults

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the goal of treatment?</td>
<td></td>
</tr>
<tr>
<td>Is there a particular behavior, such as pulling at tubes, that is being targeted by the antipsychotic medication?</td>
<td></td>
</tr>
<tr>
<td>If behavior is the target symptom, is the cause of the behavior identifiable and manageable?</td>
<td></td>
</tr>
<tr>
<td>Does a nonpharmacological approach exist that would be more effective at treating that specific behavior?</td>
<td></td>
</tr>
<tr>
<td>Does the patient have a contraindication for typical or atypical use of antipsychotic medication?</td>
<td></td>
</tr>
<tr>
<td>Has a psychiatric consultation been obtained?</td>
<td></td>
</tr>
<tr>
<td>Is the medication approved by the Food and Drug Administration for the target symptoms for elders?</td>
<td></td>
</tr>
<tr>
<td>Do the side effects of the medication compromise the nutritional or electrolyte status of the patient?</td>
<td></td>
</tr>
<tr>
<td>What is the patient’s QT interval?</td>
<td></td>
</tr>
</tbody>
</table>
communication in the ICU. In a study by Happ et al41 that included 18 older ICU patients, all 18 patients had impaired vision or wore glasses, but more than half (10) did not have their glasses with them in the ICU. In addition, none of the 3 patients who reported wearing hearing aids had their devices in the ICU. Older adults in this study41 were also more likely to have impaired communication (eg, difficulties with speech, word recall, writing) before hospitalization and were more often delirious and sedated at the time of enrollment in the study than were younger patients. Critically ill, older patients need to be provided with their glasses, hearing aids, or other assistive devices to facilitate early mobilization and safe performance of their activities of daily living.

Establishing an effective means of communication with critically ill older patients, their families, and other staff members will provide nurses the opportunity to create the strong social network needed for successful, healthy patient outcomes. Methods of providing critically ill, older patients a way to communicate their needs to staff and family members while the patients are in the ICU include using body language or gestures, touching or pointing, lipreading or using mime, using yes-no questions, providing a pencil and paper, establishing eye contact, using blinking, using communica-

tion boards, consulting speech language pathologists for speaking valves and other augmentative and alternative communication systems, and encouraging family presence during weaning from prolonged mechanical ventilation.19,40,81,82

Several other strategies for improving communication with delirious patients have been offered. These techniques include using short, simple sentences; speaking slowly and clearly; identifying oneself by name and calling patients by their preferred names; repeating questions as needed; allowing time for patients to respond; and listening and observing patients’ behavior.74,77,81,84 Encouraging patients to be involved in and in control of as much of their care as possible, using reminiscing, acknowledging patients’ feelings and fears, and providing reassurance not only facilitate effective communication83 but also provide reassurance and increase patients’ self-esteem.

In addition, nurses providing care for a critically ill older patient must remember that the patient is not the only person who suffers when the patient becomes delirious. Seeing a loved one confused is often devastating to a patient’s family members. Involving and informing a patient’s significant other of the patient’s change in mental status as early as possible is important.75

Providing emotional support to a patient’s family members is paramount. Family members should be encouraged to visit frequently with the patient and to assist in reorientation and nursing care. Family members are also a vital source of information for determining a patient’s baseline mental functioning and behavior and often are important team members in surveillance of patients.40

Although nursing interventions for delirious hospitalized older patients have been reported recently,85,86 the effect of these interventions on the incidence, duration, and outcomes of delirium have not been determined. Nonpharmacological strategies that may be applicable to delirious, critically ill, older patients are presented in Table 7. Health care providers have called for programs such as the Hospital Elder Life Program to be modified in a way that would benefit critically ill older adults.87,88 Since it was first described in 2000, the Hospital Elder Life Program89 is often used as a strategy of improving inpatient care of older adults. This evidence-based, multicomponent, interdisciplinary program has been successful not only in reducing the incidence of delirium in hospitalized older adults but also as an educational resource, improving hospital outcomes (eg, functional decline), providing nursing education, improving retention of nurses, enhancing the satisfaction of patients and their families, and improving quality of care.90

Conclusion

Delirium occurs frequently in critically ill, older patients and is associated with numerous adverse outcomes during and after hospitalization. The safety and efficacy of antipsychotic medications in older adults is questionable, and studies raise the issue of whether this class of medications is appropriate for treatment of delirium in the ICU. Existing evidence also suggests that the use of benzodiazepines may further increase the risk for delirium in critically ill
These findings suggest a need to provide ICU nurses with alternatives to sedation that will keep patients from becoming delirious. Although a wide variety of nonpharmacological interventions to prevent and treat delirium in hospitalized older adults have been offered, these interventions have not been tested in an ICU. Removal, reversal, and recognition of the underlying causes of delirium are essential components in its treatment. Critical care nurses who provide care for older adults should use all available resources to establish an effective communication network with the patients, the patients’ family members, and other health care providers to achieve successful, healthy outcomes for patients.

Table 7  Additional nonpharmacological interventions to prevent and manage delirium in critically ill older adults

<table>
<thead>
<tr>
<th>Avoid malnutrition and vitamin deficiencies\textsuperscript{75,83}</th>
<th>Avoid use of physical restraints\textsuperscript{75,76}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discontinue or remove all unnecessary catheters, tubes, and equipment\textsuperscript{75,76,83}</td>
<td>Keep call bell within patient’s reach at all times</td>
</tr>
<tr>
<td>Consider “camouflaging” catheters and tubes</td>
<td>Provide adequate lighting and limit noise levels\textsuperscript{75,77}</td>
</tr>
<tr>
<td>Keep environment calm and uncluttered; avoid overstimulation and unnecessary room changes\textsuperscript{74,76}</td>
<td>Consider moving patient closer to nurse’s station, using a “low” bed and/or constant observation\textsuperscript{76,77}</td>
</tr>
<tr>
<td>Consider using distraction techniques such as an activity belt; frequent personal contact with family, friends, and staff; or television programs or music with personal significance to the patient\textsuperscript{76}</td>
<td>Use nonpharmacological strategies for sleep promotion; for example, relaxation tapes, massage\textsuperscript{75,78,83}</td>
</tr>
<tr>
<td>Encourage early and frequent mobilization/avoid immobilization\textsuperscript{74,76}</td>
<td>Allow activities that decrease anxiety</td>
</tr>
<tr>
<td>Encourage participation in activities of daily living\textsuperscript{75}; teach appropriate exercises or strength-training activities</td>
<td>Consult physical, occupational, and speech therapy personnel as needed\textsuperscript{76}</td>
</tr>
<tr>
<td>Provide patients with a way of communicating their needs to staff and family\textsuperscript{76}</td>
<td>Use reality orientation\textsuperscript{75}; repeat information as necessary; explain the situation, environment, and equipment; listen and observe behavior; acknowledge patients’ feelings and fears\textsuperscript{76}</td>
</tr>
<tr>
<td>Provide cognitively stimulating activities adapted to each patient\textsuperscript{76}</td>
<td>Interview consistent caregivers and patient’s family to determine patient’s baseline mental status\textsuperscript{75}</td>
</tr>
<tr>
<td>Involve and inform significant other of patient’s change in mental status\textsuperscript{75} (provide emotional support)</td>
<td>Encourage scheduled visits by patient’s family and friends (may be helpful to call in family 24/7)\textsuperscript{74,76}</td>
</tr>
<tr>
<td>Treat pain\textsuperscript{75,78}</td>
<td>Consult psychiatry service as needed\textsuperscript{75,76}</td>
</tr>
</tbody>
</table>

Financial Disclosures

None reported.

References

10. Aldemir M, Ozlen S, Kara IH, Sir A, Bac B. Predisposing factors for delirium in the

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CNE Test  Test ID C124: Management of Delirium in Critically Ill Older Adults

Learning objectives: 1. Identify risk factors for delirium in critically ill older adults and the common barriers to its early recognition  2. Describe the symptoms, possible causes, and potential clinical consequences of delirium in critically ill older adults  3. Discuss the nursing implications associated with both pharmacological and nonpharmacological methods of prevention and management of delirium in critically ill older adults

1. Which one of the following would most improve early recognition of delirium in critically ill older adult patients?
   a. Increasing the number of family members allowed visiting at any given time
   b. Increasing the consistency of intensive care unit (ICU) caregivers
   c. Limiting the use of opioid medications for pain management
   d. Limiting the administration of benzodiazepines for sedation during mechanical ventilation

2. The reported prevalence of delirium in critically ill adults in this article varied widely, depending on which of these parameters?
   a. The type of ICU
   b. The presence or absence of preexisting cognitive impairment
   c. The number of comorbid conditions
   d. The delirium assessment tool used

3. Which of these arterial blood gas results represents a preexisting risk factor for delirium in older adult patients admitted to medical ICUs?
   a. PAO₂ = 49
   b. PACO₂ = 29
   c. pH = 7.50
   d. pH = 7.30

4. Research studies have shown that nursing interventions focused on which of the following can decrease delirium duration specifically?
   a. Sleep promotion in delirious patients
   b. Emotional support for significant others and families of delirious patients
   c. Increased patient involvement in activities of daily living
   d. Prevention of secondary physiological injuries

5. What clinical manifestations in older adult ICU patients are the most indicative of the onset of delirium?
   a. Loss of energy and withdrawal
   b. Disorientation to time and place
   c. Hallucinations and attempting to strike caregivers
   d. Aphasia and loss of memory

6. Body mechanisms related to which of the following are thought to play a role in the development of delirium?
   a. Inflammation
   b. Infection
   c. Glucose metabolism
   d. Protein synthesis

7. What specific parameter should be monitored in critically ill older adults who are receiving antipsychotic medications?
   a. Creatine kinase level
   b. White blood cell count
   c. QT interval
   d. QRS measurement

8. Which of the following statements regarding the subtypes of ICU delirium and their associated psychomotor behaviors is true?
   a. Hyperactive delirium is the subtype of delirium that occurs most frequently.
   b. Hypeactive delirium is the subtype of delirium that occurs most frequently.
   c. Mixed hyperactive and hypoactive delirium is the subtype of delirium that occurs most frequently.
   d. Hallucinations and pulling at tubes are the psychomotor behaviors seen most frequently in older patients with all subtypes of delirium.

9. According to recent evidence, which of these factors most increases older adult ICU patients’ risk for developing delirium?
   a. Sleep deprivation
   b. Sensory overload
   c. Lack of windows
   d. Administration of benzodiazepine medications

10. The duration of ICU delirium in days is significantly associated with which of these outcomes?
    a. Acceleration of development of dementia-like syndromes
    b. Time to death within 1 year of ICU admission
    c. Increased risk of life-threatening cardiovascular or infectious events
    d. Greater use of continuous sedation and physical restraints

11. Which of the following is considered the cornerstone of treatment of older adult patients with ICU delirium?
    a. Precautions to prevent aspiration and falls, and to ensure patient safety
    b. Establishing an effective means of communication with critically ill older patients
    c. Recognition and reversal or removal of underlying causes
    d. Early mobilization of all available resources

12. Nursing interventions to decrease risk of poor outcomes from hormonal and physiological abnormalities as a result of fear and anxiety should be aimed most specifically at what?
    a. Increasing the patient’s ability to effectively communicate his/her needs
    b. Implementing early mobilization
    c. Early determination of the patient’s baseline mental functioning and behavior
    d. Minimizing the amount of energy patient expends on activities of daily living

13. Which risk factors for development of delirium are most modifiable?
    a. Those present at the time of ICU admission
    b. Those not present at the time of ICU admission
    c. Those related to administration of medications
    d. Those related to the severity of the patient’s current illness

Test answers: Mark only one box for your answer to each question. You may photocopy this form.

1.  a   2.  a   3.  a   4.  a   5.  a   6.  a   7.  a   8.  a   9.  a   10. a   11. a   12. a   13. a
   b   b   b   b   b   b   b   b   b   b   b   b   b
   c   c   c   c   c   c   c   c   c   c   c   c   c
   d   d   d   d   d   d   d   d   d   d   d   d

American Association of Critical-Care Nurses

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