Delirium in the Critical Care Patient
What the Professional Staff Needs to Know

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Delirium has been recognized in the literature as a significant problem in the care and treatment of the critical care patient. Delirium, a medical disorder that results in the morbidity and mortality of the patients, especially in the elderly, is often misdiagnosed and inappropriately treated. Nurses and other health care professionals need in-depth education about delirium, validated and understandable assessment tools, and astute clinical observational skills. A comprehensive and aggressive clinical management plan that incorporates appropriate pharmacological agents will result in less morbidity and improved long-term outcomes. Key words: acute confusion, anxiety, assessment tools, critical care, delirium, delirium tremens

Professional nurses in the critical care unit pride themselves on their clinical assessment skills. They are at the bedside “24/7” and are educated and knowledgeable about the patient’s clinical status. Overt changes in the patient’s clinical status (i.e., hemodynamic instability, cardiogenic shock, and hypertension) are quickly identified and appropriately treated. When there are significant alterations in the patient’s behavior and mental status, they are likely to be noted first by the nurses and then communicated among other health care team members. Why these covert behavioral changes occur is what is often missed, even by the most experienced staff. Even though nurses may be well indoctrinated about psychiatric disorders during their initial education, they are often ill-prepared to identify and properly manage the various states of delirium.

Delirium vs Psychosis

Behavioral disturbances in patients admitted to the critical care environment, especially the elderly, are quite common. In those individuals who are not well managed in terms of pain, sedation, and anxiety, full blown delirium often develops. The associated long-term effects on the clinical and functional stability of the patient negatively impact morbidity and mortality. Problems begin to escalate when characteristics of delirium are noted as mere behavioral changes, but are not properly identified in terms of etiology as a true medical condition. Patients who enter the critical care unit are rarely voluntarily admitted. A significant accident or life-threatening medical condition has occurred, or perhaps they have undergone a complex surgical procedure. In any instance, they suddenly find themselves in a strange and scary environment where they experience pain, anxiety, and sleep deprivation. Nurses who are accustomed to the sights, sounds, and technology associated with the environment may not fully appreciate the negative impacts on the patient. They tend to accept the fact that patients are restless, sleep fitfully and intermittently, and are virtually
Deprived of the everyday comforts of home. With the accompanying physical and mental insults, and the bombardment from medications, procedures, monitoring devices, and technological life-support, it is not surprising that certain individuals do not cope well. They become depressed and anxious. Sleep and sensory deprivation, insomnia, pain, continuous stimulation, isolation, and fear combine to set in motion the procession to delirium.

Too often, behavioral changes in these patients are dismissed as intensive care unit psychosis and treated accordingly with sedatives and antipsychotic medications. It is assumed that the behavioral signs and symptoms are associated with a psychiatric disorder, and are treated accordingly with antipsychotic drugs. Rarely are the indications of delirium related to an actual psychiatric disorder. Delirium and the root causes of the disorder tend to be medical in nature, not psychiatric.¹

There are various terms and definitions that are linked to delirium. Delirium is defined as an acute confusional state, characterized by a fluctuating course, attention and concentration deficits, impaired cognition, disorganized thinking, and an altered consciousness level.² Acute confusion is a clinical and medical syndrome/disorder.

COMPONENTS OF DELIRIUM

The 3 noted aspects of delirium, as related to cognition, are perception, thinking, and memory, all of which are adversely affected in the diagnosis of delirium.³ The accepted criteria for diagnosing delirium are published in the Diagnostic and Statistical Manual of Mental Disorders—IV. These criteria include a disturbance of consciousness, and changes in cognition occurring in a relatively short period of time. The diagnostic criteria for delirium stem from multiple etiologies. These include disturbance of consciousness, resulting in a reduced awareness of the environment and a markedly reduced ability of the patient to focus on anything. The behaviors noted may include things such as the patient not talking appropriately, not focusing on others or understanding what is being said, and not being oriented to the environment. Patients may think that they are at home or somewhere other than the hospital, certainly not in the critical care unit. Others may exhibit a noticeable change in cognition, such as a memory deficit and/or perceptual disturbance. These may result in not being oriented to time, place, or person. Patients often may not appreciate or remember why they are in the hospital or what has happened to place them in the intensive care environment. They may also have some perceptual disturbance such as hallucinations, seeing or hearing something that does not exist. These disturbances often develop over a very short period of time, usually over hours or a few days. Changes in behavior fluctuate according to the time of the day, with deterioration often noted as nighttime approaches. This phenomenon is sometimes inappropriately referred to by the staff as sundowner's syndrome. Although acute confusion may be more apparent during the evening or night hours, the basic condition is unrelated to the time of day. There is usually evidence from the clinical findings that delirium is multifactorial. Numerous contributing factors include severe illness, effects of medications, substance abuse, and/or intoxication.⁴

Appropriate assessment, understanding the cause, and treating it are essential for a positive outcome when delirium occurs. The condition and its attendant increases in morbidity, mortality, and length of stay impact not only the patient, but the family and others who care for them. At times, patients do not recover to their predelirium state of functioning and need posthospital care and rehabilitation.

CLINICAL ASSESSMENT AND RECOGNITION

Several research studies have assessed the level of delirium in the critical care patients and alarming findings were noted. Delirium is an underrecognized condition by both nurses and physicians. One study assessed
patients during a 1-month period and found that the staff rarely had made the appropriate assessment of delirium. The same staff members also failed to recognize anxiety and states of depression. In many instances, psychotropic and sedating medications were used to treat the behavioral aberrations, but appropriateness of treatment was low.\(^5\) Another study showed that delirium was poorly recognized by the health care providers in the clinical setting, and that the major problems associated with lack of recognition were: (1) a knowledge deficit on the part of nurses about the criteria and methods of detecting delirium and (2) ineffective communication between all staff members in relaying symptoms of the disorder. Studies also report that physicians fail to recognize and appropriately treat delirium in as many as 30% to 84% of their patients. Failure to recognize delirium was because of negative stereotypes, and at times, merely a lack of awareness of the high mortality rates related to delirium and its underlying illness. In some settings, standardized, comprehensive cognitive assessments are not done on a regular basis. Finally, inadequate documentation and superficial interactions with patients are contributory to missing the diagnosis of delirium.\(^6\) When clinicians fail to recognize the primary or root cause of the delirium, they merely treat the behavioral signs and symptoms, i.e., agitation, aggression, and depression, often resulting in both inappropriate and inadequate treatment. The delirium persists and the patient does not improve.

**CRITICAL ILLNESS AND AGING AS COMORBIDITIES**

Why do patients develop delirium in a critical care unit? The answer to this can be as varied as there are patients admitted to the critical care environment. It is estimated that between 12.5% and 38% of all conscious patients who enter a critical care unit may develop some kind of delirium during their hospitalization.\(^7\) It is known that any condition or situation that can affect the patient’s mentalization and brain function can potentially pave the way for developing delirium. The recognition and assessment of the high-risk patient is foremost for preventing the condition. One causative factor may be related to a patient’s age. Half of all patients admitted to critical care units in the United States are older than 65 years. Possibly up to one half of the patients may develop delirium if early recognition and treatment are not provided. As with many other clinical syndromes, delirium in older adults may have a masked presentation. Delirium may be multifactorial and embedded in a complex host of acute and chronic conditions and their treatments. unrecognized dementia or undiagnosed clinical depression in the elderly may exist prior to admission, negatively impacting the patient’s overall clinical state and resulting in the development of delirium.\(^3\)

**MEDICATIONS: EFFECTS ON BRAIN NEUROTRANSMISSION**

Something that health care professionals may be aware of, but do not monitor or assess during the patient’s hospitalization, is that many of the therapeutic agents administered to patients may precipitate the condition. The etiology of delirium is likely to involve imbalances in the activity of various neurotransmission systems. There are 3 main systems that are thought to be implicated in the pathophysiology of delirium. Medications often affect the excitability of the neurons and impact neurotransmitters or the central nervous system.

Some of the other medications that may be routinely given that may precipitate an episode are listed in Table 1.

Looking at the many drugs in Table 1 that could affect the critical care patient and have the potential for precipitating delirium, it is quite apparent that many critical care patients may be at risk.

A clear, thorough assessment and review of the patient’s medications, both those taken prior to the admission and those administered during hospitalization, should be undertaken if any signs of delirium are noted.

Recognizing the early states of delirium and the behavioral changes that occur will
Table 1. Neurotransmitter-altering medications associated with onset of delirium\textsuperscript{8,9}

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<thead>
<tr>
<th>Anticholinergics: Atropine or scopolamine</th>
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<tr>
<td>Antipsychotics: Chlorpromazine hydrochloride (Thorazine) or thioridazine hydrochloride (Mellaril)</td>
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<td>Antiemetics: Prochlorperazine maleate (Compazine) and promethazine hydrochloride (Phenergan)</td>
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<td>Anti-parkinsonians: Benztropine mesylate (Cogentin), trihexphenidyl hydrochloride (Artane), and amantadine hydrochloride (Symmetrel)</td>
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<td>Antihistamines: Dephenhydramine hydrochloride (Benadryl), chlorpheniramine maleate (Chlo-Trimeton), hydroxyzine (Atarax, Vistaril), and cyclizine hydrochloride (Marezine)</td>
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<td>Antiarrhythmics: Quinidine, disopyramide phosphate (Norpace), and procainamide hydrochloride; tricyclic antidepressants: amitriptyline hydrochloride (Elavil), doxepine hydrochloride (Sinequan), and imipramine pamoate (Tofranil)</td>
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<tr>
<td>Anticonvulsants: Phenytoin sodium valporate and barbiturates</td>
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<td>Cardiovascular medications: Captopril, flecainide, lidocaine, and antihypertensives such as propranolol and nitroprusside</td>
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<tr>
<td>Antimicrobials: Aminoglycosides, sulfa drugs, penicillin, cephalosporins, ciprofloxacin, amphotericin B, Cyclovir, imipenem, and metronidazole</td>
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<td>Others: Meperidine hydrochloride (Demerol), cimetidine hydrochloride (Tagamet), prednisolone, theophylline, digoxin, furosemide (Lasix), ranitidine (Zantac), and nifedipine (Procardia). Two other medications that have been associated with delirium when they are suddenly withdrawn are 2 benzodiazepines, triazolam (Halcion) and oxazepam (Serax)</td>
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ensure that adjustments in pharmacological therapies are promptly made to avoid medications that could be contributory. The fact that patients enter the critical care unit taking many medications that have the potential to contribute to delirium underscores the importance of obtaining a thorough medication history from the patient and/or family and caregivers. This medication history must include both prescription and nonprescription medications, as well as herbal and nontraditional supplements.

ALCOHOLISM AND DELIRIUM

Another clinical medical problem that may not be diagnosed prior to the patient admission to the unit is alcoholism. Unrecognized alcohol abuse may result in the patient’s developing alcohol withdrawal during the critical care stay. A patient who has a history of alcohol abuse, and this is known to the health care team, can be appropriately treated, thus preventing or lessening the effects of delirium tremens (DTs). It is the patient who is not known to have alcohol abuse, and then experiences acute withdrawal effects once admitted, who presents a challenge to the team.

The onset of the withdrawal effects from alcohol usually occurs in the first 48 to 72 hours after admission. When the patient develops DTs and experiences hallucinations, tremors, and seizures, these devastating consequences will negatively alter the patient’s clinical course and create long-term morbidity. Early recognition that the patient is having symptoms that are due to alcohol abuse is vital for the optimum outcomes since it will evoke early treatment with the proper medications and other therapeutic support. Again, the initial assessments and obtaining a complete history from the patient and/or family/significant others regarding alcohol intake and any substance abuse are extremely useful adjuncts to guide the patient’s care.

IMPACT OF PAIN MISMANAGEMENT

Another unknown or unrecognized cause of delirium is pain and its undertreatment. Severe pain and the stress and anxiety associated with it may place a patient at risk for delirium. Even if the patients are unable to verbalize the need for pain medications (ie, patient is intubated and on a ventilator or unconscious) they are nevertheless experiencing pain.
Critical care nurses and/or physicians who do not recognize that the patient needs sedation and analgesia are doing a great disservice. The continuing unaddressed pain and the associated stressors, anxiety, and sleep deprivation will surely precipitate delirium. Too often in the critical care setting today, patients are given intravenous medications, such as propofol, for sedation during intubation and while on the ventilator, but they are not medicated for pain; consequently, delirium may develop. All patients should be medicated for pain with an appropriately analgesic, routinely and on an every 2-4-hour basis. The patient should also be assessed at least every hour or two to ensure that sufficient medication is being provided to promote comfort.

CLINICAL MANAGEMENT OF DELIRIUM

Once the delirium is diagnosed, what treatment should be instituted? Initially, during the acute phase, when the patient may be agitated or aggressive, medicines such as haloperidol (Haldol) may be necessary to calm and rest the patient. Removing the underlying cause is the primary treatment. If the patient has developed delirium because of medication administration, discontinuation or weaning of the medication should be done. If a drug cannot be discontinued, changing to a similar type of medication may decrease the behaviors or delirium. If the patient has developed delirium because of sleep deprivation, it is important that this be assessed and the patient provided the ability to enter into an appropriate sleep mode. Decreasing the environmental stimuli and providing a therapeutic milieu is within the nurse's responsibility. If the patient has been undertreated for pain, appropriate assessment and routine dosing of analgesics must be provided. Individuals who have experienced periods of hypotension related to fluid imbalance or blood loss, the metabolically unstable patient, or the patient who develops hypoxia related to poor airway management or respiratory distress are at high risk. Others with significant potential for delirium are patients who have had major surgery or multiple traumatic injuries. Recognizing and treating the clinically unstable patient with the appropriate treatments promptly, will lessen their chances of developing delirium.

NURSING ROLES AND RESPONSIBILITIES

As evidenced by the above information, critical care nurses and others caregivers may not appropriately recognize risks for developing delirium. They may fail to identify the early onset of behaviors that eventually escalate to delirium. Appropriate screening tools are needed to assist the bedside clinician with evaluating the patients at risk for developing delirium. Several assessment tools exist; one has been developed that may help with improving the detection of delirium and result in early recognition and treatment. The Intensive Care Delirium Screening Checklist was used over a 3-month period in a busy medical-surgical intensive care unit and the score assisted in identifying patients at risk and the checklist helped identify 93% of the patients who developed delirium. The conclusion of the study was that the Intensive Care Delirium Screening Checklist can easily be applied by a clinician in the critical care setting, even when communication is compromised (ie, patient intubated). The tool can be utilized quickly and helps to identify delirious patients. Earlier diagnosis may lead to earlier intervention and better patient care.

Another adverse outcome of delirium that has not been fully explored is the overall impact that the delirium has on the family and/or significant others. The acute onset of delirium is disruptive and very upsetting to those who may have known the patient as a lucid and rational being, only hours earlier. Now they are agitated, aggressive, inappropriate, and acting out. No matter if this is an elderly or young patient, a parent or a child, family members are often embarrassed and confused about what has occurred to their loved one. Education and reassurance about determining the underlying causes and finding the appropriate treatment
are imperatives to maintaining open communication between the family and health care professionals.

The potential adverse outcomes of delirium are well-documented. Nursing interventions are designed to enhance the patient’s cognitive status, sense of security, safety, and comfort. Nurses are instrumental in providing appropriate choices, doses and administration of medications, and in recognizing side effects. Having the education and knowledge that various causative factors, place the critical care patient at risk for the development of delirium will positively benefit that patient. It is important that nurses obtain more education and knowledge about the causative effects of delirium (ie, medical condition, medications, alcohol and substance abuse, hemodynamic and respiratory instability, metabolic instability, pain, and anxiety) and its appropriate treatments in order to provide optimum care for this vulnerable patient population. They need validated assessment tools that facilitate accurate interpretations of the patient’s behavioral state. Finally, they must be provided with the understanding and compassion required to manage the aberrant behavior and clinical complexities associated with delirium. With this acumen, the efficacy of the overall management plan and positive functional outcomes of the critical care patient will be assured.

REFERENCES
