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Preventing and identifying **hospital-acquired delirium**

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Abstract: Hospital-acquired delirium often goes unnoticed because the signs and symptoms resemble those of dementia and depression, making diagnosis difficult. This article explores the differences between delirium, dementia, and depression and discusses the role of nursing in patient assessment and education.

Keywords: delirium, dementia, depression, hospital-acquired delirium, ICU delirium, patient-centered care, posttraumatic stress disorder, PTSD

PATIENTS ENTER the healthcare setting expecting to receive care and return home well, but some come in as one person and leave as someone else entirely due to hospital-acquired delirium.[1] Although not uncommon, this disorder often goes undiagnosed because its signs and symptoms are similar to other disorders, such as dementia and depression. Hospital-acquired delirium impacts patients throughout the healthcare continuum, but this article will focus on adult patients in acute care hospitals and the role of nurses in identifying delirium and implementing the appropriate interventions.

Communication between healthcare providers is imperative to prevent delirium, support at-risk patients, and reduce the associated complications and costs. Often most familiar with the patient, families and other loved ones may be the first to recognize changes in the patient's behavior. Nurses play an important part in assessing patients for delirium and providing education.

Pathogenesis and etiology

The exact reason why delirium occurs is unclear. It is speculated that the mechanism involves the reversible impairment of multiple neurotrans-

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mitters. These may include cholinergic deficiencies, excess dopamine, or cytokine activity.[2] A genetic association with apolipoprotein E epsilon 4 allele has also been identified.[3]

Delirium is fairly common and well studied in hospital settings, with 30% of older patients experiencing it at some point during their stay.[4] There is also an increased risk for patients over age 65, as well as those with underlying or preexisting neurologic disorders.[4,5] Approximately 50% of older patients have been diagnosed with comorbidities such as stroke, dementia, or Parkinson disease.[4] Similarly, surgical patients from this population are also at an increased risk, especially those who are frail due to falls or complex procedures.[4]

Younger adults may also develop delirium, typically due to factors such as drug use, dehydration, or infection.[6] Because adverse drug reactions are a common cause of delirium, some risk factors can be identified during medication reconciliation. Several drugs are known to cause or prolong delirium, including opioids, benzodiazepines, dopamine agonists, and corticosteroids.[4,7]

While all patients in acute care facilities should be monitored for delirium, the presence of certain widely underrecognized precipitating factors may raise red flags.[4] These include dehydration, infection, immobility, malnutrition, sensory impairment, and urinary catheterization.[4-6] In approximately 20% of cases, the underlying cause is unknown.[6]

Clinical manifestations

Signs of delirium may include clouded and fluctuating levels of consciousness, limited attention span, and disorientation. Patients may also experience delusions or hallucinations. Focal syndromes present similarly to delirium, but these can be ruled out with a neurologic exam to identify patients with the characteristic deficits in consciousness, attention, visual fields, and cranial nerve and motor function.[4]

According to the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition (DSM-5), delirium has key characteristic clinical features. Patients may experience fluctuating difficulties with attention, awareness, and cognition lasting for short periods such as days or weeks. These cannot be explained by "another preexisting, evolving or established neurocognitive disorder." Additionally, they cannot be identified as the result of any alternative conditions, adverse reactions, or potential intoxication or withdrawal based on the patient's history, physical exam findings, or lab results.[8]

Delirium diagnosis

Delirium is defined as an "acute, transient, usually reversible, fluctuating disturbance in attention, cognition, and consciousness level."[6] It requires a clinical diagnosis. Due to its similar presentation to depression or dementia, however, delirium can be difficult to identify.[6,9] As such, a patient's health history, physical assessment findings, and medication reconciliation may provide clues to the underlying etiology.

Although delirium is diagnosed based on criteria from the DSM-5, lab testing and imaging studies may help to determine the underlying etiology.[6,8,9] Lab tests for patients with delirium include serum electrolytes, creatinine, glucose, and calcium levels, in addition to a complete blood cell count, urinalysis, and urine culture.[4] Additional testing for drug toxicology, arterial blood gases, and liver and hepatic function may also be beneficial.[4] Other tests, such as neuroimaging studies, electroencephalograms, and lumbar punctures, may be helpful if the underlying etiology for delirium is still unclear.[4]

THINK DR. DRE[10]

THINK: factors to consider when delirium is present

T	Toxic situations: shock, dehydration, deliriogenic medications, new organ failure
H	Hypoxemia
I	Infection: sepsis, immobilization
N	Nonpharmacologic interventions: hearing aids, eyeglasses, reorientation, sleep protocols, music, noise control, ambulation
K	potassium or electrolyte imbalances

DR. DRE: strategies to consider when delirium is present

DR	Disease remediation: sepsis, chronic obstructive pulmonary disease, heart failure
DR	Drug removal: substance abuse testing, benzodiazepines, opioid discontinuation
E	Environmental modifications: immobilization, day- and nighttime sleep, hearing aids, eyeglasses

Adapted with permission from: Critical Illness, Brain Dysfunction, and Survivorship Center. For medical professionals: terminology and mnemonics. 2019. www.icudelirium.org/terminology.html.

Minimizing the risk[1,5,16,17]

Regular monitoring for six major risk factors can help reduce the incidence of delirium by up to 33%. These include cognitive impairment, sleep deprivation, dehydration, immobility, vision impairment, and hearing impairment. Preventive actions can reduce the incidence of delirium in at-risk patients. These include weaning patients off mechanical ventilators in a timely fashion, avoiding the use of restraints, removing urinary catheters as soon as they are no longer needed, ambulating patients early, using large clocks for orientation, minimizing alarms, providing access to eyeglasses and hearing aids, and turning off the lights at night and opening shades during the day.

Management

The most important aspect of patient-centered care for delirium is prevention (see *Minimizing the risk.*). Screening for risk factors will help to identify patients who may require precautions, such as medication adjustments, or more active monitoring for early signs of delirium. If delirium occurs, timely identification and treatment of the underlying etiology is a priority.

Clinicians can use certain acronyms to remember appropriate strategies for treatment. For example, THINK DR. DRE is an acronym that provides an easy progression of thought processes and strategies to consider in cases of delirium (see *THINK DR. DRE*).[10]

Clinical protocols, practices, and standard procedures must be developed with clear steps to mitigate delirium and understand the appropriate actions to address it. Typically, staff buy-in on the importance of

Delirium or dementia?

Delirium and dementia are common and important disorders that affect multiple aspects of mental status. Both have many possible causes. Some clinical features of these two conditions and their effects on mental status are compared below. Delirium may be superimposed on dementia.

	Delirium	**Dementia**
Clinical Features		
Onset	Acute	Insidious
Course	Fluctuating, with lucid intervals; worse at night	Slowly progressive
Duration	Hours to weeks	Months to years
Sleep/wake cycle	Always disrupted	Sleep fragmented
General clinical illness or drug toxicity	Either or both present	Often absent, especially in Alzheimer disease
Mental Status		
Level of consciousness	Disturbed, ranging from less alert to clearly aware of the environment; patients may be less able to focus, sustain, or shift attention	Usually normal until late in the course of the illness
Behavior	Activity often abnormally decreased (somnolence) or increased (agitation, hypervigilance)	Normal to slow; may become inappropriate
Speech	May be hesitant, slow or rapid, incoherent	Difficulty in finding words, aphasia
Mood	Fluctuating, labile, from fearful or irritable to normal or depressed	Often flat, depressed
Thought processes	Disorganized, may be incoherent	Impoverished. Speech gives little information
Thought content	Delusions common, often transient	Delusions may occur
Perceptions	Illusions, hallucinations, most often visual	Hallucinations may occur
Judgment	Impaired, often to a varying degree	Increasingly impaired over the course of the illness
Orientation	Usually disoriented, especially for time. A Known place may seem unfamiliar.	Fairly well maintained, but becomes impaired in late-stage illness
Attention	Fluctuates, with inattention. Person easily distracted, unable to concentrate on selected tasks	Usually unaffected until late-stage illness
Memory	Immediate and recent memory impaired	Recent memory and new learning especially impaired
Examples of Cause	Delirium tremens (due to alcohol withdrawal) Uremia Acute hepatic failure Acute cerebral vasculitis Atropine poisoning	*Reversible*: Vitamin B_{12} deficiency, thyroid disorders *Irreversible*: Alzheimer disease, vascular dementia (from multiple infarcts), dementia (from head trauma)

Source: Bickley LS. *Bates' Guide to Physical Examination and History Taking*. 12th ed. Philadelphia, PA: Wolters Kluwer; 2017.

adopted delirium protocols does not present a challenge. Instead, difficulties arise in the effort to find time to adopt the necessary practices.[1]

Healthcare organizations are beginning to implement a multidisciplinary approach to delirium, designating a nurse champion to teams of healthcare professionals. These teams carefully review and assess patients for delirium and develop an action plan based on the individual's clinical status, current treatment plan, and evidence-based interventions. Nurses who are uncertain about the best interventions for patients with delirium can call upon their nurse champion as a resource. Using this approach, one hospital reduced its rate of patient delirium by 60%, resulting in thousands in savings per patient since 2012.[1]

Thiamine supplementation is an appropriate treatment strategy for patients with delirium.[11] As previously stated, however, benzodiazepines are not recommended unless they have been prescribed to reduce acute symptoms of alcohol withdrawal and prevent complications.[11,12] Other drug therapies, such as psychotropic medications, should be administered only when patients may pose a threat to themselves or others due to extreme agitation.[11]

Resources for differentiation[18,19]

Delirium

- **ConsultGeri: The Confusion Assessment Method for the ICU (CAM-ICU)**
  https://consultgeri.org/try-this/general-assessment/issue-25.pdf
- **The Journal for Neuropsychiatry and Clinical Neuroscience: Validation of the Delirium Rating Scale-Revised-98**
  https://neuro.psychiatryonline.org/doi/full/10.1176/jnp.13.2.229
- **Journal of Pain and Symptom Management: Fast, Systematic, and Continuous Delirium Assessment in Hospitalized Patients: The Nursing Delirium Screening Scale**
  www.jpsmjournal.com/article/S0885-3924(05)00053-9/pdf
- **British Medical Journal: Improving early recognition of delirium using SQiD (Single Question to identify Delirium): a hospital based quality improvement project**
  https://bmjopenquality.bmj.com/content/4/1/u206598.w2653
- **Journal of Pain and Symptom Management: Memorial Delirium Assessment Scale (MDAS)**
  http://home.planet.nl/~izaks007/DreamHC/Download/MDAS.pdf

Dementia

- **National Center for Biotechnology Information: Mini-Mental State Exam (MMSE)**
  www.ncbi.nlm.nih.gov/projects/gap/cgi-bin/GetPdf.cgi?id=phd001525.1
- **US Department of Veterans affairs: Montreal Cognitive Assessment (MoCA) Administration and Scoring Instructions**
  www.parkinsons.va.gov/resources/MoCA-Instructions-English.pdf

Depression

- **Indiana State Medical Association: Beck's Depression Inventory**
  www.ismanet.org//doctoryourspirit/pdfs/Beck-Depression-Inventory-BDI.pdf
- **University of California San Francisco, Fresno: Edinburgh Postnatal Depression Scale (EPDS)**
  www.fresno.ucsf.edu/pediatrics/downloads/edinburghscale.pdf
- **Agency for Healthcare Research and Quality: Geriatric Depression Scale (Long Form)**
  https://integrationacademy.ahrq.gov/sites/default/files/Update Geriatric Depression Scale-30_0.pdf
- **Stanford Medicine: Patient Health Questionnaire (PHQ-9)**
  http://med.stanford.edu/fastlab/research/imapp/msrs/_jcr_content/main/accordion/accordion_content3/download_256324296/file.res/PHQ9_id_date_08.03.pdf
- **Ohio State University: WHO-5 Well-being Index**
  https://ogg.osu.edu/media/documents/MB%20Stream/who5.pdf

Differentiating the three Ds

To manage delirium effectively, it must first be differentiated from dementia and depression.[3] Delirium is usually reversible, whereas dementia is generally irreversible (see *Delirium or dementia?*).[9] Episodes of major depression require the presence of at least five depressive symptoms, including depressed mood or loss of interest, for a minimum of 2 consecutive weeks and can be treated.[13,14] None of these disorders are mutually exclusive and can occur simultaneously, but the interventions may differ. For example, individuals may present with one disorder, such as dementia, and become susceptible to delirium and/or depression.

Screening tools are available to help clinicians determine whether patients have dementia, depression, or delirium (see *Resources for differentiation*). Because these disorders have many similar, nonspecific signs and symptoms, family input is an important resource for diagnosis. To promote patient- and family-centered care and facilitate education and comprehension, information should be provided proactively to all members of the patient's multidisciplinary healthcare team.

Education efforts

While healthcare providers play a part in patient education, nurses have a key role. There is a direct relationship between the information disseminated by nurses and the level of patient and family understanding.[15] This places the primary responsibility with nurses, who determine what to teach, when to teach it, and how

to educate patients regarding their health. Nurses must also take into consideration patients' language proficiency and speed of speech, as well as questions to determine their level of understanding and any necessary explanations or clarifications.[16]

The ability to differentiate delirium from dementia or depression is a critical competency for nurses. Not only is this skill important in clinical assessments and diagnoses, but it is also essential in helping patients and families monitor for delirium during hospitalization and postdischarge and know who to contact if they have questions or problems.

Meeting the challenge

Hospital-acquired delirium presents a more common challenge to nurses than they may realize. It is often unrecognized, and many clinicians do not fully understand the extent of its incidence and the importance of prevention practices in every patient assessment.

Education is essential for patients, their families and loved ones, and the entire healthcare team. An increased focus on prevention must be implemented, as well as root-cause analysis following the occurrence of delirium. For the greatest strides in addressing hospital-acquired delirium, communication between the acute and postacute care settings within the healthcare system must be established to identify and provide support for at-risk patients. ■

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