

REVIEWS

Delirium: The 21st century health care challenge for bedside clinicians

Ruth Richards *, Rejena Azad, Mobolaji Adeola, Betty Clark

Houston Methodist Hospital, Houston, United States

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ABSTRACT

Delirium is a leading cause of preventable injury in hospitalized patients. Early recognition and intervention for delirium are critical to prevent morbidity and mortality, especially in the older population. Older patients are at increased risk for delirium owing to a combination of age-related changes and environmental factors. Health care providers, including nurses and physicians, often miss delirium symptoms and diagnosis in patients. Without early recognition and treatment, delirium can have significant life-changing consequences in our most vulnerable patients. This acute change in cognition can continue throughout the hospital course and may require additional rehabilitation or placement, delaying transition to home. As the baby boomers age, the older population is expected to increase, with significant implications for health care. With this in mind, the health care team, including frontline caregivers, need to be well informed about delirium. This article will expand readers' knowledge and familiarity with delirium with the purpose of improving their practice and care of the older patient. It will also address the impact of delirium and discuss tools that can help to improve recognition. The most recent advances and current treatment methods to integrate into daily patient care are also discussed. This article places heavy emphasis on identification and prevention of delirium as these are the most important aspect of understanding delirium. Thus, treatment and management are both discussed after prevention since the primary focus of delirium is understanding and preventing this devastating syndrome in our hospitalized patients.

Key Words: Delirium, Confusion, Geriatric hospitalized patients

1. INTRODUCTION

Extensive research on delirium has been conducted since the 1980s and different investigators have used similar but distinct categories and subcategories to explain the condition. A full understanding of delirium requires consideration of the patient population, causes, environment, prevention, detection, treatment, and outcomes.

The syndrome that we now recognize as delirium has been referred to since the days of Hippocrates, and it was called phrenitis throughout the centuries.^[1] The term phrenitis, which means inflammation of the mind, was used to describe delirium up to and through the 18th century.^[2] From the 18th

century through the late 20th century, interest was sporadic in what was termed "acute confusional state". During the 1980s, increased interest and research into delirium was preceded by publication of the Diagnostic and Statistical Manual of Mental Disorders, third edition (DSM-III). This edition established delirium as a diagnosis, replacing the term "acute confusional state".^[3]

Inouye introduced the Confusion Assessment Method (CAM) to the medical community in 1990, and the ability to accurately diagnose delirium became a reality. The CAM combined 9 criteria of delirium from the Diagnostic and Statistical Manual of Mental Disorders, third edition (DSM-

* **Correspondence:** Ruth Richards; Email: RWRichards@houstonmethodist.org; Address: Houston Methodist Hospital, Houston, United States.

III-R) into an easy, quick, and reliable four-question tool that any bedside clinician could use. Throughout the 1990s, the CAM was found to be the most reliable and accurate tool for diagnosing delirium.^[4] Since 1990 clinicians have continued to research prediction, prevention, intervention, treatment, and outcomes regarding delirium.

Delirium is common, however, it often goes unrecognized in hospitalized older adults. It is defined as an acute change in global cognitive function characterized by inattention and a fluctuating course. The pathophysiology of delirium is poorly understood, because it involves a complex interaction between heterogeneous predisposing and precipitating risk factors.^[5] Several theories have been postulated, including inflammatory processes, neurotransmitter imbalances, and physiologic stress.^[5,6] Advanced age is an independent predictor, and this is of particular concern because more than 48% of hospital days are incurred by patients aged 65 years and older.^[7] Delirium complicates hospital stays for about 2.3 million older patients and the economic burden is substantial, comparable to that for conditions such as hip fracture, diabetes, and cardiovascular disease.^[8]

Early recognition of patients at high risk of delirium facilitates immediate intervention and improves prognosis. Routine screening is recommended and feasible in clinical practice.^[9] Management strategies are focused on prevention because this has been shown to save lives. Evidence suggests that a multicomponent intervention plan targeting known modifiable risk factors may reduce the incidence of delirium and its adverse outcomes.^[10]

Due to its significant clinical and economic implications, delirium is emerging as an increasingly important piece of this decade's complex health care puzzle. As such, bedside clinicians must be equipped to effectively manage delirium to improve quality of care for patients. This article will summarize current approaches to the recognition, prevention, and management of delirium in hospitalized older adults.

2. EPIDEMIOLOGY AND PROGNOSIS

Delirium is a leading complication in hospitalized older adults. Among acute care populations, approximately 14% to 24% of older patients will be admitted with this condition and 6% to 56% will develop delirium during hospitalization.^[1] An exponential increase in rates of occurrence is observed in more specialized populations such as intensive care, postoperative, and palliative care populations.^[5,11-13] Delirium is prevalent in 1.1% of community-dwelling adults aged 55 years and over, and this prevalence rate increases to 14% in those over 85 years of age.^[14] In nursing homes and post-acute care facilities, up to 60% of older adults will expe-

rience delirium.^[5] The wide disparity in reported incidence and prevalence rates is due in part to variations in screening instruments and patient populations studied.

Beyond the problems with confusion and agitation, delirium is an independent predictor of short- and long-term adverse health outcomes, even after adjustment for age, illness severity, dementia, and functional status.^[15] It has been linked with increased nursing time per patient, prolonged length of hospital stay, and increased morbidity and mortality rates of 25% to 33%.^[16,17] Hospital costs attributable to delirium are estimated at US\$2,500 per patient, totaling about \$6.9 billion (2004 figures) of Medicare hospital expenditures. Additional costs accrue after discharge because of the greater need for long-term care or additional home health care, rehabilitation services, and informal caregiving.^[5,17] Leslie and colleagues reported that patients who developed delirium during hospitalization had a 62% increased risk of mortality within 1 year after discharge.^[18] Moreover, long-term consequences such as cognitive and functional decline, which impact a patient's quality of life, cannot be underestimated.^[5] Despite the significant health care burden associated with delirium, however, it is widely under-recognized, especially in the older population.

3. RISK FACTORS

The etiology of delirium is likely multifactorial and involves a complex relationship between predisposing and precipitating risk factors. Predisposing factors characterize a patient's susceptibility to developing delirium and are generally classified as non-modifiable. Precipitating factors are potentially modifiable iatrogenic insults that may trigger delirium (see Table 1). A patient with high baseline vulnerability such as advanced age, dementia, or multiple comorbid conditions may develop delirium following exposure to a relatively benign insult like a dose of a benzodiazepine. Conversely, multiple noxious insults may be required to trigger an episode of delirium in a patient with low baseline vulnerability.^[19] Several conflicting independent risk factors for delirium have been described in the literature; however, dementia has consistently been shown to be a prominent predictor across various clinical settings.^[20]

Biomarkers that have been shown to have association with delirium include interleukin 8, cortisol, lactate, protean, acetylcholinesterase, and lower levels of somatostatin, B-endorphins, and neuron-specific enolase.^[21] To date, however, there is no agreed upon blood test that can be used to predict or diagnose delirium.

The dearth of evidence for the optimal treatment of delirium has led to a paradigm shift towards preventive efforts.

Researchers have developed predictive risk models for systematic identification of at-risk patients on the basis of their clinical or environmental predisposition.^[22,23] Effective man-

agement of modifiable risk factors is an integral component of a successful delirium prevention program.^[10]

Table 1. Risk factors for delirium

Predisposing (non-modifiable)	Precipitating (potentially modifiable)
<i>Demographic characteristics</i>	
- Age > 65 years old, male sex	<i>Drugs</i>
<i>Cognitive status</i>	- Sedative hypnotics, anticholinergics, narcotics, benzodiazepines, drug and alcohol withdrawal
- Dementia	<i>Intercurrent Illness</i>
<i>Functional status</i>	- Infection, dehydration, trauma, shock, metabolic abnormalities, anemia, iatrogenic complications, malnutrition
- Immobility, history of falls	<i>Surgery</i>
<i>Sensory impairment</i>	- Orthopedic, cardiac, noncardiac
- Visual, hearing	<i>Acute neurologic diseases</i>
<i>Drugs</i>	- Stroke, meningitis, hemorrhage
- Alcohol abuse	<i>Environmental</i>
- Polypharmacy	- ICU admission, pain, physical restraints, catheters, emotional distress, sustained sleep deprivation
<i>Comorbid conditions</i>	
- Severe illness, stroke, neurologic disease, trauma, chronic kidney and liver disease	
<i>Decreased oral intake</i>	
- Dehydration, malnutrition	

Note. ICU, intensive care unit. Source: Inouye, 2006.^[5]

4. DRUGS AND DELIRIUM

Currently, there are no approved medications to prevent or treat delirium. Low doses of haloperidol, gabapentin, and donepezil have been researched with inconsistent results.^[5,20,21] Ramelteon administered nightly to older patients may provide protection against delirium, however larger studies are needed to confirm this finding.^[24] To prevent medication-induced delirium, it is prudent to avoid potentially high risk medications in older patients when possible. If a certain medication cannot be avoided or a safer alternative does not exist, it is best to use the smallest effective dose for the shortest period of time to limit patient exposure. A list of high-risk medications for older patients can be found in the Beer’s Criteria or in the Start and the STOPP guidelines.^[25,26] Examples of high risk drug classes include anticholinergics, benzodiazepines, muscle relaxers, hypnotics, and opioids.

4.1 Anticholinergics

Anticholinergic medications have several useful indications; however, they also have an unfavorable side effect profile in older patients, including dry mouth, blurred vision, constipation, difficulty in urination, drowsiness, sedation, and impaired memory. Diphenhydramine is a first-generation antihistamine drug with sedating and strong anticholinergic properties. It is linked to delirium and other negative side effects in older patients. A study done in Yale–New Haven

Hospital showed that symptoms of delirium were much more likely to occur in a diphenhydramine-exposed group than in an unexposed group. Furthermore, the risk of cognitive decline was 70% higher in the diphenhydramine-exposed group.^[21] Potentially safer alternatives to diphenhydramine are less sedating second-generation antihistamines such as cetirizine and fexofenadine.

4.2 Benzodiazepine

Benzodiazepines have heterogeneous indications including seizures, alcohol withdrawal and anxiety with limited available alternatives. Adverse effects associated with this class of medications include drowsiness, confusion, dizziness, blurred vision, slurred speech, lack of coordination and respiratory depression. Except for necessary indications, it is best to limit exposure to benzodiazepines in the older person, especially when used for the treatment of insomnia, anxiety and agitation.^[5]

A study conducted in post-surgical patients found a more pronounced association of long-acting benzodiazepines with delirium compared with shorter-acting benzodiazepines.^[23] Moreover, higher doses of benzodiazepine medications during a 24-hour period appear to be associated with an increased risk of delirium compared with lower doses. If benzodiazepines cannot be avoided, a suggestion is to use the lowest dose and shortest acting formulation possible to re-

duce the risk of adverse effects such as delirium.

4.3 Muscle relaxants

Most muscle relaxants are poorly tolerated in older adults and should be avoided when possible due to anticholinergic side effects, sedation and risk of fractures.^[25] Furthermore, these drugs have not been proven to be superior to acetaminophen or non-steroidal anti-inflammatory drugs for acute low back pain. It is essential to balance a patient's intolerance with the aforementioned alternatives with the potential adverse effects from muscle relaxants. For the treatment of uncontrolled low back pain despite conservative approaches, these agents may be considered as an adjuvant therapy for a short term at the lowest effective dose.^[27]

4.4 Sedative hypnotics

Non-benzodiazepine hypnotics including zolpidem, eszopiclone, and zaleplon have adverse effect profiles similar to benzodiazepines. These medications should be avoided in older patients due to the risk of delirium, falls and fractures.^[25] A meta-analysis performed on the risk versus benefit of sedative hypnotics showed that the total sleep time increased by a mean of 25.2 minutes only. As expected, side effects were more common with sedatives, including psychomotor events and daytime fatigue. The authors concluded that although the benefits were statistically significant, they were not clinically significant and that the risks outweigh the benefits of these medications.^[25]

Ramelteon, a synthetic analogue of melatonin is associated with shortened sleep onset latency and no evidence of adverse cognitive effects. This agent may be considered as a potentially safer pharmacologic alternative for the treatment of insomnia in older patients. Moreover, the use of non-pharmacologic options such as quiet time and minimizing disturbances at night, having a proper awake-sleep cycle, and relaxing before bedtime is encouraged.^[28]

4.5 Opioids

Preventing pain is not an easy process. Pain is difficult to treat in older patients. There is a fine line between treating pain adequately and over-treating patients so that side effects, such as delirium, occur and can become evident. Older patients have decreased drug clearance; therefore, a high dose (e.g., > 10 mg of morphine) can have negative effects. On the other hand, inadequate treatment of pain is also a risk factor for delirium.^[4] It is important to know if the patient is opioid naïve or tolerant to help adjust medication doses. When treating pain, be cognizant of how the patient tolerates and reacts to the dose of medication. Alternating opioid and non-opioid pain medications can help decrease exposure, while staying ahead of the pain.

5. RECOGNITION OF DELIRIUM

Delirium is predominantly a clinical diagnosis and requires meticulous assessment of key features including disturbance in consciousness and impaired attention.^[5] Delirium has three subtypes based on psychomotor activity: hypoactive (lethargic, apathetic), hyperactive (restlessness, agitation), and a mix of both.^[29] Hypoactive delirium is the most common in older patients; it often goes unrecognized and usually is associated with a worse prognosis than the other motor subtypes.^[23,30,31] Patients presenting with mixed delirium can fluctuate between hypoactive and hyperactive manifestations. Early recognition is crucial because delirium may be the first sign of an underlying severe illness, and timely management may limit adverse outcomes.^[5] Routine screening of delirium in high-risk populations is feasible and recommended in clinical practice.^[9] The current standard for delirium diagnosis can be found in the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (see Table 2).

5.1 Differentiating delirium from dementia

Diagnosing delirium can be challenging in the setting of advanced age, dementia, or concomitant psychiatric conditions.^[32] Silverstein and colleagues synthesized current research regarding delirium and dementia. They noted that several studies suggested a causative relationship between delirium and dementia and proposed the proverbial chicken or egg question in patients investigated. Dementia has recently been shown to be a high risk factor for delirium, especially in hospitalized, older patients. However, recent literature has hypothesized that some patients without dementia, developed delirium while hospitalized and subsequently showed some form of permanent cognitive impairment.^[33] Perioperative neurotoxicity and inflammation have been shown to cause a downward, long-lasting cognitive dysfunction. Furthermore, delirium superimposed on dementia can make the dementia worse^[29] and can be an added challenge to the staff treating these patients. To adequately protect our vulnerable patients, diligence and persistence is required by the bedside clinician. This includes attention to the prevention, identification, investigation, and treatment of the cause of the delirium. The hallmark feature differentiating delirium from underlying dementia is inattention. Inattention, as described by Inouye, is the inability to focus, inability to sustain a conversation and the inability to follow commands.^[5]

For the nurse in the hospital setting, the task of differentiating delirium from dementia can be a challenge. The prevalence of dementia can be high as 89% in hospitalized patients.^[34] Unfortunately, delirium in patients with dementia is often not recognized owing to the similarities in presentation between delirium and dementia. To make matters worse, often,

when the bedside clinician is aware of the history of dementia, almost all unusual activity of the patient is attributed to the dementia and no other investigation is done.^[33] Given a complex patient scenario like delirium with dementia, the probability of delirium should always be considered until proven otherwise. Therefore, it is imperative that all health care providers be able to distinguish the two presentations and act accordingly when delirium, or the risk of delirium, is suspect.

Delirium is diagnosed with a combination of measurable symptoms, including acute altered mental status, inattention,

disorganization of thinking, and altered alertness. The onset of delirium is acute and fluctuates. This is in contrast with dementia, which progresses slowly and does not fluctuate.^[35] In addition, delirium’s acute onset will likely be associated with a change in the patient’s environment of physiology, such as hospitalization, surgery, or infection. The common symptom between dementia and delirium is disorganized thinking. Thus, knowledge of the patient’s history is very important and key when attempting to differentiate between dementia and delirium. Family and caregivers can be a great source of information on baseline cognitive function.

Table 2. DSM-V criteria

A.	Disturbance in attention (<i>i.e.</i> , reduced ability to direct, focus, sustain, and shift attention) and awareness (reduced orientation to the environment).
B.	The disturbance develops over a short period of time (usually hours to a few days), represents a change from baseline attention and awareness, and tends to fluctuate in severity during the course of a day.
C.	An additional disturbance in cognition (<i>e.g.</i> , memory deficit, disorientation, language, visuospatial ability, or perception).
D.	The disturbances in Criteria A and C are not better explained by a pre-existing, established or evolving neurocognitive disorder and do not occur in the context of a severely reduced level of arousal, such as coma.
E.	There is evidence from the history, physical examination or laboratory findings that the disturbance is a direct physiological consequence of another medical condition, substance intoxication or withdrawal, or exposure to a toxin, or is due to multiple etiologies.

When taking care of a hospitalized patient with dementia, the bedside clinician must have a high suspicion of the risk of delirium. Much of the recognition, prevention, investigation of source, and treatment of the patient with delirium is the same in a patient with dementia as in a patient without dementia.

5.2 Recognition tools

Several instruments have been developed for screening, diagnosis, or assessment of severity with varying sensitivities, specificities, and complexities based on the operational application of the DSM-IV diagnostic criteria.^[33] Common ex-

amples include the CAM, 4AT, Nursing Delirium Screening Scale (Nu-DESC), and NEECHAM Confusion Scale.^[4,36-38] These instruments are mostly designed to be completed by nurses and incorporate information obtained from patient observation, caregivers, or the medical record. The CAM tool is standardized and widely accepted owing to its brevity and reliability (see Figure 1). It has shown a sensitivity of 94% to 100%, specificity of 90% to 95%, and high interrater reliability when administered by trained interviewers.^[4] Several laboratory tests have been investigated for possible use in evaluating delirium; however, these test are currently experimental and are not routinely used in clinical practice.^[39]

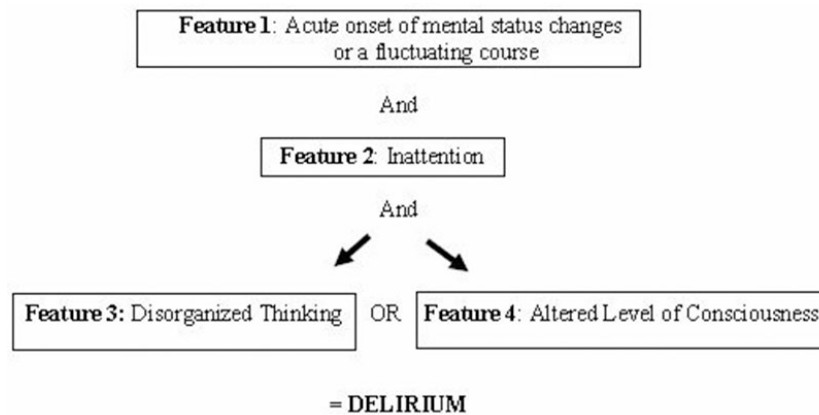


Figure 1. The CAM tool
Source: Inouye et al. (1990)^[4]

Once the diagnosis is established, initial assessment should focus on investigating potential causes of delirium to deliver targeted interventions to patients. A useful mnemonic for re-

membering possible causes of delirium is I WATCH DEATH (see Table 3).

Table 3. Useful mnemonic to identify causes of delirium

I	Infections (urinary tract infection, pneumonia, encephalitis)
W	Withdrawal (alcohol, benzodiazepines, sedatives-hypnotics)
A	Acute metabolic (alcohol, benzodiazepines, sedatives-hypnotics)
T	Toxins, drugs (opiates, steroids, anticholinergics, psychotropics)
C	CNS pathology (stroke, tumor, seizures, hemorrhage, infection)
H	Hypoxia (anemia, pulmonary/cardiac failure, hypotension)
D	Deficiencies (thiamine [with alcohol abuse], B-12)
E	Endocrine (thyroid, hypo/hyperglycemia, adrenal insufficiency)
A	Acute vascular (shock, hypertensive encephalopathy)
T	Trauma (head injury, postoperative, falls)
H	Heavy metals

Note. CNS: central nervous system. Source: <http://pda.mao.ca/content/causes-delirium>.^[40]

6. MANAGEMENT OF DELIRIUM

As stated above, management of delirium is first, a concentrated effort in prevention. Prevention of delirium is key in avoiding negative side effects and outcomes. Adequate prevention strategies should be implemented upon recognition of a high-risk patient. Prevention methods are often multifactorial and multidisciplinary. Many hospitals are adapting innovative methods to recognize and combat this devastating syndrome. Once the high-risk patient is identified, strategies such as continued orientation, adequate nutrition, hydration and sleep, promoting mobility, limiting exposure to high risk medications and correcting sensory impairments are important to prevent delirium. These are recommendations from the Hospital Elder Life Program (HELP), which has many suggestions and resources for caring for the elderly in the hospital.^[41]

Enhancing delirium awareness is essential to combat delirium. When the health care team is aware and vigilant of signs of delirium, actions can be taken with the first sign of delirium, which, in turn, can prevent a full-blown delirious state and the sequelae afterwards. Studies have shown that prevention of delirium in postsurgical patients is improved with early involvement of a geriatric team.^[21] Additional studies have shown decreases in delirium in postsurgical patients who have early sleep protocols and appropriate pain management.^[42] Despite adequate prevention in the at-risk patient population, patients may still develop delirium. When prevention switches to treatment of delirium, the prevention strategies should continue, with the addition of safety interventions and investigation into possible causes of the delirium.

Evidence-based, best practices for management recommended by Tullman *et al.* are the same as prevention strategies but include safety and treatment measures.^[43] One recommendation found in many articles is to consult with a geriatric specialist. This could be done either for prevention or treatment and would depend on the risk of the patient for delirium. Patients at higher risk include patients with dementia, patients with extended intensive care unit stays, and postoperative patients, especially those with hip fracture repair and coronary artery bypass grafting.

Recommendations to reduce risk factors include minimizing excessive medication administration as much as possible and, when possible, avoiding high-risk medications.^[43] Treating any sign that is a suspicious cause of delirium is a recommendation and can be decided upon with a good-quality history and physical assessment. Treating infection, dehydration, and electrolyte disturbances are beyond the scope of a bedside nurse practice, but can easily be discussed and recommended to the treating provider such as the attending physician or advanced practice provider. Many of the suggestions or recommendations for treatment require a multidisciplinary approach. The nurse may be the first to recognize the possible causes of the delirium. For example, pain control is recommended to treat and prevent delirium. If the nurse recognizes or suspects pain in the elderly patient, both non-pharmacological and pharmacological interventions can be tried depending on the orders. If no orders are present, collaboration with the provider to obtain the needed order would be the first step in controlling the patient's pain. Other helpful strategies to prevent and treat delirium can include additional oxygen, blood pressure support, and mobilization.^[43] Col-

laborating with the providers, family, and nursing assistants to ensure adequate nutrition, sensory aids, and toileting are important factors in the prevention and treatment of delirium.

A therapeutic environment is recommended as well by best practices.^[43] Reassurance and orientation for the patient can be very helpful and can be accomplished by all professionals, sitters and nursing assistants as well as family members. Low stimulation and adequate sleep should be promoted throughout the patient’s hospital stay. Avoiding urinary catheters and restraints are recommended if at all possible. Although once commonplace, these two interventions have been shown to be a common trigger for delirium and may also do physical harm to the patient.

Another factor for management that is highly recommended

in multiple sources is mobility. The bedside nurse is usually the first to evaluate patients for mobility. When the patient is not able to mobilize independently, the nurse can request physical therapy evaluation and then collaborate with physical therapy for the patient’s needs. Recommendations from the therapist may include mobility devices, such as walkers or canes, and would also require collaboration with the health care provider as well as a case manager to obtain recommended devices.

Nonpharmacological methods of prevention simply involve being more attuned to high-risk patients. When high-risk patients are identified, special considerations should be taken to ensure proper cognitive function is intact. Table 4 lists different measures to help high-risk patients.

Table 4. Methods to prevent delirium in high-risk patients

Reorient patients as needed to person, time, and place
Provide a comfortable physical environment
<ul style="list-style-type: none"> • Example: clocks, natural light, stimulate day/night, quiet times for rest
Avoid the use of hypnotics. Use non-pharmacological measures
Provide activities to stimulate the brain
<ul style="list-style-type: none"> • Example: crossword puzzles, word games, books to read, conversation
Provide eyeglasses, hearing aids, and amplifiers for sensory orientation
Monitor for signs of infections, lab abnormalities, fluid imbalance
<ul style="list-style-type: none"> • Example: offer a variety of healthy foods and snacks; avoid caffeine and extra sugar

Note. Source: Inouye, 2004.^[44]

7. INTERVENTION AND TREATMENT

The highest priority with delirium management is prevention. However, when delirium does develop, then prevention switches to identification and treating the underlying cause of delirium as promptly as possible. This would include infection and fluid and electrolyte imbalance which are two of the most common causes of delirium. Pharmacological treatment should be avoided unless necessary, such as when a patient’s agitation is making an unsafe environment for the patient, family members, and health care providers.^[4]

Delirium can actually be a manifestation of a possibly life threatening insult to the patient. Therefore, treatment of delirium involves treatment of the underlying cause. Infection is a common cause for delirium and two of the most common causes are pneumonia and urinary tract infection. The bedside clinician should be aware that older people sometimes do not have a typical immune response to infection and thus, delirium may be the only presentation seen.^[5] Diagnostic testing such as a chest x-ray or a urine culture would be the easiest diagnostics to confirm suspicion of these infections. Appropriate antibiotics could then be ordered by the health care provider. Delirium caused by electrolyte imbalances is

easily diagnosed with common lab work. Appropriate electrolyte replacement or treatment can then be ordered by the health care provider and initiated by the bedside clinician.

One of the first interventions is to ensure that all team members are aware of the patient’s change in mental status. Other team interventions include frequent reorientation, fall prevention measures, bed and chair alarms, hourly mental status reassessment, frequent toileting, increasing vital sign assessment, and monitoring blood glucose and oxygen saturation levels. For suspicion or diagnosis of dehydration as a cause of delirium, replacement of volume by intravenous fluids or encouragement of intake is appropriate when patients are not confused. Reviewing the patient’s medication profile and removing potential harmful medication can be done with partnership with pharmacy and prescriber(s). Another intervention is to increase mobility as well as to use sensory aids in patients with difficulty seeing or hearing. To address these concerns, physical therapy could be consulted for mobility concerns, and hearing aids or amplifiers, glasses, and communication tools should be provided to appropriate patients. Other useful tools are to have familiar objects in the patient’s rooms as well as objects that can occupy the patients’ time,

such as puzzles and stuffed animals.^[43]

8. CONCLUSION

In conclusion, prevention of delirium is key to avoiding negative side effects and outcomes. One key element of delirium to remember, is that the presentation can vary between periods of confusion and clarity. Optimizing interventions during periods of clarity can be both safe and beneficial to the patient. Certain medications should be avoided or appropriately spaced out to prevent delirium. The causes of delirium can be multifactorial and may impact both outcomes and costs for hospitalized patients. These outcomes include length of

stay, avoidable readmissions, increased morbidity and mortality, and institutionalization. Many hospitals are adapting innovative methods to combat the devastating syndrome of delirium. Health care facilities are also incorporating the use of screening tools. These tools need to be chosen according to each institution's situation and the usefulness and reliability of the tool. When the health care team is aware of the signs of delirium, vigilant actions can be taken at the first sign of any significant change in the patient. These patients and families need additional support with prevention and treatment strategies.

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