

Module: Delirium

Learning Objectives

Attitudes

- Recognize the prevalence of delirium in advanced illness and at the end of life.
 - Appreciate the negative impact of delirium on the patient's quality of life and the distress it causes to family members.
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Knowledge

- List four clinical features (symptoms, signs) of delirium.
 - Understand key diagnostics that may be helpful in determining cause of delirium (for example, Na, Ca⁺⁺).
 - Describe treatment of delirium including nonpharmacologic measures and indications for initiating pharmacologic management of delirium.
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Skills

- Demonstrate the ability to conduct a structured assessment for delirium (Confusion Assessment Method [CAM]), including cognitive testing (for example, mini-mental state examination [MMSE]).
- Construct a differential diagnosis for at least three patients with delirium.
- Develop an initial treatment plan for at least three patients with delirium.
- Demonstrate communication skills to educate and reassure family members of patients with delirium.

Module: Delirium

Definition

Delirium (also known as acute confusional state) refers to an altered level of consciousness (ie, state of arousal) with associated features of reduced ability to shift, focus, or sustain attention and an acute onset or fluctuating course throughout the day. Other common features include perceptual disturbances (hallucinations and/or delusions), disorientation, incoherent speech, and altered sleep-wake cycle. Delirium occurs to some degree in virtually all patients before death and typically has an underlying medical cause. The cause is often multifactorial and cannot be established in 40% or more of patients. Unlike delirium in other situations (acute illness in geriatric patients, for example) delirium in patients close to death is often not reversible. Delirium is frequently underrecognized and, therefore, undertreated. There are two primary subsets of delirium: *agitated/hyperactive* delirium, with the person climbing out of bed and pulling out IV lines, or *hypoactive* delirium, in which the person is quiet and sleepy with mumbling speech. Hypoactive delirium may be mistaken for depression. Both subsets of delirium are considerable sources of distress for family members witnessing it.

Assessing Delirium

Older age, higher severity of illness, and pain are risk factors for developing delirium. One must approach these patients with an algorithm to minimize harm to self or others. First, perform an exam to determine if the patient is in danger of harming self or others and if the cognitive dysfunction is distressing to the patient or family. Follow this with a more structured assessment for delirium, using a validated tool (eg, MMSE; CAM) and/or structured cognitive testing (for example, list days of the week backward, serial 3s, 3-step command; clock draw). The CAM has been validated and includes two parts: a confusion assessment instrument that screens for overall cognitive impairment and a diagnostic algorithm that include the features that distinguish delirium or reversible confusion from other types of cognitive impairment such as dementia. In contrast to delirium, dementia refers to a loss of intellectual function with diminished memory, thinking, and judgment (also called executive functions).

When clinically appropriate, a complete evaluation will include examination of blood, urine, spinal fluid samples, and radiographic studies to evaluate for metabolic causes, infection, or CNS pathology. Evaluate first for the most easily reversible and common causes: hypoxia, drug effects, metabolic problems such as hypoglycemia, hypoxia, infections, and seizures. See below for other causes.

- Metabolic—hypoxia, hypercalcemia, hyponatremia or hypernatremia, hypoglycemia, liver or renal failure, dehydration
- CNS pathology—metastases, infarction, bleeding, infection, seizures
- Drug withdrawal—alcohol, benzodiazepines, barbiturates
- Drug toxicity—benzodiazepines, anticholinergics, opioids, steroids, illicit drugs, alcohol
- Other—systemic infections, fever, heart failure, imminent death, urinary retention or constipation, sleep deprivation

Treatment of Delirium

If possible and consistent with patient and family goals, the first step in treating delirium is to attempt to identify and correct underlying cause. Thus, start with clarifying the goals and expectations of care with the patient and/or family. Review current medications and consider discontinuing suspect medications (drugs associated with delirium that were recently started) or switching to less high-risk agents. Of note, opioids required for management of pain or dyspnea should **not** be discontinued abruptly. Consider switching to a different opioid or lowering the dose to see if the delirium improves, while closely monitoring the relief of pain or dyspnea.

Consider nonpharmacologic supportive therapy in initial treatment of delirium. Patients need frequent reminders of time and date to help with reorientation. A quiet, well-lit room, calming music, and night light will aid in setting patients' sleep-wake cycle. Physical restraints are rarely necessary and should be used only as a brief temporizing measure while instituting nondrug and drug treatments. The continuous presence of a family member or health professional will help to allay fears and provide patient support. In selected cases, correction of dehydration may improve delirium, especially when the delirium is caused by accumulation of medication metabolites.

A decision should be made as to whether the primary goal of therapy is to *clear the sensorium* (reverse or ameliorate the delirium) or to *provide symptomatic relief* for distress and agitation associated with delirium. Relatively nonsedating neuroleptics, such as haloperidol (contraindicated in Parkinson disease and can precipitate extrapyramidal effects), may help clear the sensorium. When the delirium is thought to be refractory to such efforts or when such efforts have not been successful, symptomatic relief with a sedating neuroleptic (eg, chlorpromazine) and anxiolytic agents is often appropriate. Overall, neuroleptics should be used as first-line drugs, and QTc should be serially monitored with initiation. There is no current data that newer antipsychotics are more effective at decreasing the length or severity of delirium compared with older drugs, nor have atypical antipsychotics been shown to have fewer extrapyramidal side effects in this population. Benzodiazepines are high-risk medications for causing delirium and may increase agitation in some patients. They are useful in this setting primarily for their sedating effects in patients with refractory agitation.

NEUROLEPTICS (*Caution when treating patients with active seizure disorders*)

Typical

- Haloperidol (Haldol), 0.5–2 mg po, IV, subcutaneously (SQ; SQ infusion, start at 1 mg/h)
- Chlorpromazine (Thorazine), 12.5–50 mg po, PR, IV, IM

Atypical

- Olanzapine (Zyprexa), 2.5–5 mg po/sublingual (SL) daily
- Risperidone (Risperdal), 0.25–0.5 mg po/SL BID
- Quetiapine (Seroquel), 12.5–25 mg po BID

Module: Delirium

Pre/Post Test Questions

1. List four cardinal features of delirium:
2. List three findings from the history and mental status examination that distinguish delirium from dementia:
3. List three nondrug measures that are helpful with a delirious patient:

Answers

1. Disturbance of consciousness with reduced ability to focus or sustain attention, acute onset or fluctuates during course of day, change in cognition or perceptual disturbance, and typically has underlying medical cause
2. Dementia: long history, normal state of arousal, and primary issue is loss of memory
3. Frequent reminders of date, lights on, and family at bedside

Module: Delirium

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Module: Delirium

Case 1

Mr. J. is at postoperative day 4 following an open reduction and internal fixation of the right hip for a pathologic fracture from metastatic lung cancer. He is now breathing comfortably with 3L oxygen and continues to receive 30 mg of extended-release morphine q 12 h. He has been receiving the extended-release morphine for 2 weeks with no side effects, except constipation. Tonight, the night before planned discharge to home with home hospice care, he becomes "confused." The house officer is called at 2:00 am and orders 1.0 mg of IV lorazepam and discontinues the morphine.

Questions

1. Describe an appropriate initial assessment for this patient.
2. Develop a rank-ordered differential diagnosis for this patient.
3. Do you agree with the stated treatment plan? If not, design a new plan.

Case 2

Mrs. Jones, an 89-year-old woman, presents to the emergency department after a traumatic ground-level fall at home. In her trauma workup, she is found to have multiple nondisplaced rib fractures and is admitted for pain control. On hospital day 5, she is more subdued and does not eat or talk with her family in the evening. Her family grows progressively more concerned and asks what can be done to help her and if these symptoms will inhibit her ability to be discharged home. You need to explain to them what your plan is for her hypoactive delirium and discuss goals of care with her family.

Questions

1. Discuss with the patient and her family the meaning of delirium, focusing on her functional status prior to getting injured and how her current trajectory can inform the likelihood of complete recovery and discharge to home.
2. Discuss her goals and expectations for quality of life in the future and clarify if she has a living will or medical power of attorney identified. Is she a patient for whom early palliative care involvement would be beneficial?


Module: Delirium
Appendix A: Mini-Mental State Examination (MMSE)



**MINI MENTAL STATE
 EXAMINATION
 (MMSE)**

Patient's name:

Hospital number:

ONE POINT FOR EACH ANSWER	DATE			
ORIENTATION				
Year Month Day Date Time	___/5	___/5	___/5	___/5
Country Town District Hospital Ward	___/5	___/5	___/5	___/5
REGISTRATION				
Examiner names 3 objects (eg apple, table, penny) Patient asked to repeat (1 point for each correct). THEN patient to learn the 3 names repeating until correct.	___/3	___/3	___/3	___/3
ATTENTION AND CALCULATION				
Subtract 7 from 100, then repeat from result. Continue 5 times: 100 93 86 79 65 Alternative: spell "WORLD" backwards - dlrow.	___/5	___/5	___/5	___/5
RECALL				
Ask for names of 3 objects learned earlier.	___/3	___/3	___/3	___/3
LANGUAGE				
Name a pencil and watch.	___/2	___/2	___/2	___/2
Repeat "No ifs, ands, or buts".	___/1	___/1	___/1	___/1
Give a 3 stage command. Score 1 for each stage. Eg. "Place index finger of right hand on your nose and then on your left ear".	___/3	___/3	___/3	___/3
Ask patient to read and obey a written command on a piece of paper stating "Close your eyes".	___/1	___/1	___/1	___/1
Ask the patient to write a sentence. Score if it is sensible and has a subject and a verb.	___/1	___/1	___/1	___/1
COPYING				
Ask the patient to copy a pair of intersecting pentagons:				
	___/1	___/1	___/1	___/1
TOTAL	___/30	___/30	___/30	___/30

<https://www.smartcjs.org.uk/wp-content/uploads/2015/07/Mini-Mental-State-Exam.pdf>

Module: Delirium**Delirium Learner Assessment Form**

Content Checklist: Make an "X" if the resident did this without prompting, mark with "□" if the resident did this only after prompting, and leave blank if this was not done.

- _____ Recognized and assessed delirium using an appropriate tool
- _____ Distinguished between delirium and dementia.
- _____ Evaluated for reversible causes of delirium.
- _____ Discussed care goals and ensured patient and family understanding of delirium
- _____ Coordinated interdisciplinary collaboration for patient-centered care

Please provide your overall assessment.

- _____ Competent to perform independently
- _____ Needs close supervision
- _____ Needs basic instruction

Do you believe the resident was able to integrate delirium assessment and treatment into the care of surgical patients?

Yes or No

If you believe additional training is needed, please indicate what problems need to be addressed (check all that apply):

- Knowledge of delirium assessment methods (inadequate understanding of delirium indicators, lack of familiarity with assessment tools, inability to interpret results effectively)
- Implementation of delirium care plans (difficulty in creating individualized care strategies, insufficient communication with the healthcare team regarding management, neglecting to involve patients in decision-making)
- Other

NOTES
