



October 2014 (updated May 2015)

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A Resource for Interprofessional Providers

Delirium in the ICU

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Delirium is a disturbance in consciousness characterized by an acute onset of impaired cognitive function with a fluctuating course. The pathophysiology is poorly understood but thought to be related to an imbalance of neurotransmitters. Delirium affects up to 50% of patients in an intensive care unit (ICU). It is particularly common among those requiring mechanical ventilation, affecting up to 80%. In spite of this, ICU delirium is frequently unrecognized.

Clinical Presentation

Delirium can present with agitation and unruly behavior, and hallucinations may occur. Frequently, however, signs of delirium are more subtle, including sleepiness, changes in sleep-wake cycle, or inability to focus or shift attention.

Underdiagnosis

Providers in the ICU rarely know the baseline status of their patients. Underdiagnosis commonly occurs when delirium signs and symptoms are misattributed to advanced age, dementia, or psychiatric disease. In addition, clinicians may be unaware that older adults with delirium are often hypoactive, demonstrating sleepiness or obtundation, and the diagnosis is missed because delirium is not recognized.

Significance

ICU delirium is associated with a number of adverse outcomes, including prolonged ICU and hospital stay. Delirium may continue following hospital discharge, and lead to long-term cognitive impairment. Delirium is independently associated with an increased risk of death, both during hospitalization and in long-term follow-up.

Risk Factors

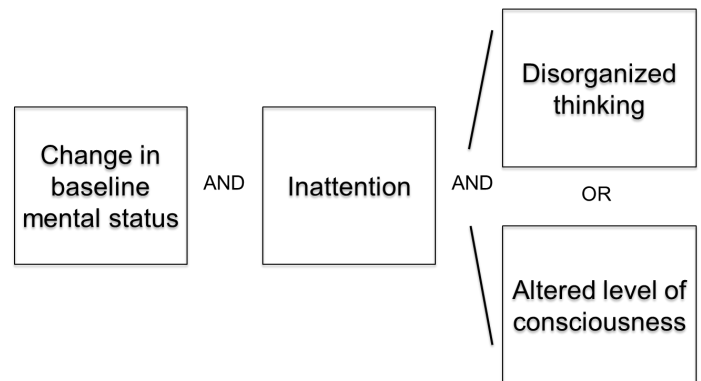
Numerous risk factors for delirium have been identified (Table 1). Among ICU patients, key risk factors that independently predict delirium include dementia, hypertension, alcoholism, coma, severity of illness, and mechanical ventilation. Benzodiazepines have also been associated with an increased risk of delirium. There is conflicting data about the risk of delirium in patients receiving opioids, and there are insufficient data regarding the risk of delirium in patients treated with propofol.

Table 1. Risk Factors for Delirium

Age >65	Malnutrition
Alcoholism	Pain
Anemia	Preexisting cognitive impairment
Chronic hepatic insufficiency	Preexisting depression
Chronic renal insufficiency	Prior history of delirium
Drugs given in ICU:	Respiratory disease
Anticholinergics	Sepsis
Benzodiazepines	Severity of illness
Opioids	Shock
Electrolyte abnormalities	Smoking
Hearing impairment	Terminal illness
HIV	Vision impairment
Hypertension	

Diagnosis

The diagnosis of delirium is based on the following clinical features: (1) acute change in mental status from baseline that fluctuates throughout the day, (2) inattention, and (3) the presence of disorganized thinking and/or altered level of consciousness (see Figure below).



The Society of Critical Care Medicine recommends routine screening for delirium in ICU patients. Without screening, delirium is missed in up to 75% of cases. Screening should be performed using a well-validated tool such as the Confusion Assessment Method in the ICU (CAM-ICU), which is described in Table 2 on the next page.

TIPS FOR PREVENTING AND TREATING ICU DELIRIUM

- Screen for delirium during a patient's ICU stay using a validated tool like the CAM-ICU.
- Use sedation strategies that limit benzodiazepine exposure (e.g., "analgesia first").
- Consider non-pharmacologic strategies for treating ICU delirium before initiating pharmacologic therapy. These strategies include frequent orientation, environmental interventions to promote sleep, and early mobilization.

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The CAM-ICU takes about 2 minutes, has excellent psychometric properties, and was designed specifically for use in critically ill patients, including those receiving mechanical ventilation.

Prevention

Sedation Special attention to sedation employed in ICU patients may reduce the risk of delirium. In particular, consider use of an “analgesia-first” sedation strategy, thereby limiting exposure to benzodiazepines and other sedatives. Moreover, the use of bolus or “prn” sedation administration is preferred to continuous infusion of a sedative drug. It is also recommended that clinicians target a light level of sedation and institute daily interruption of sedation to minimize sedative exposure.

The Society of Critical Care Medicine recommends the use of dexmedetomidine rather than benzodiazepines when continuous intravenous sedative infusions are necessary in ICU patients. Dexmedetomidine has been shown to reduce delirium duration compared with benzodiazepines in adult ICU patients who have delirium unrelated to benzodiazepine or alcohol withdrawal. However, it is unclear if this is because benzodiazepines increase delirium risk or dexmedetomidine reduces delirium risk.

Orientation and Sleep ICU patients should be routinely re-oriented to their surroundings by clinicians, friends, and family. Environmental interventions to promote sleep including clustering patient care activities to avoid frequent interruptions, exposure to natural light in the daytime and

avoidance of light during sleeping hours, and control of sound to maintain usual day/night sleep cycles (e.g., ear plugs), may also help prevent delirium. For patients with eyeglasses or hearing aids, these should be used during the ICU stay to minimize sensory impairment.

Mobilization Early mobilization of critically ill patients has been shown to reduce the rate of ICU delirium. Therefore, admission orders to encourage “activity as tolerated” should be used instead of “strict bed rest” whenever appropriate, and early physical therapy consultation is advised.

Pharmacotherapy There is currently no evidence to support the use of pharmacotherapy for prevention of ICU delirium.

Treatment

The same non-pharmacologic strategies that are employed to prevent ICU delirium are also useful for treatment. Most notably, early mobilization has been shown to reduce the duration of delirium.

If non-pharmacologic strategies alone are ineffective in treating ICU delirium, clinicians may consider adjunctive pharmacotherapy. While low dose haloperidol is the gold standard, limited data indicate that the newer antipsychotics, such as quetiapine, may reduce duration of delirium in critically ill adults, though large placebo-controlled trials are needed to establish whether these drugs are truly beneficial. If used, these agents should be discontinued upon resolution of delirium to minimize the risk that patients are discharged from the hospital on these medications that were intended only for short-term use.

Table 2. Confusion Assessment Method in the ICU (CAM-ICU)

Assessment Feature	Assessment Method	Diagnose Delirium if
1. Acute onset of mental status changes with fluctuating course	Assess clinically for acute change in mental status with fluctuation, or use serial Glasgow Coma Scores or sedation ratings within 24-hour periods.	<ul style="list-style-type: none">• Features 1 and 2 are both present AND• Either feature 3 or 4 is present
2. Inattention	Read patient a short list of random letters and ask patient to squeeze your hand whenever the letter “A” is heard.	
3. Disorganized thinking	Hold up a certain number of fingers on your hand and ask patient to do the same.	
4. Altered level of consciousness	Rate level of consciousness. Score positive for anything other than “calm and alert”.	

For more information about the CAM-ICU, see: http://www.icudelirium.org/docs/CAM_ICU_worksheet.pdf

References and Resources

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Supported by: Donald W. Reynolds Foundation, Arizona Geriatric Education Center and Arizona Center on Aging

This project was supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number UB4HP19047, Arizona Geriatric Education Center. This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS or the U.S. Government.