

## Delirium in the ICU



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## Case

- A 76 year old women with history of COPD and CAD presents with community acquired pneumonia.
- She is Intubated on hospital day #2 for hypoxia, confusion, work of breathing.
- She is started on IV fentanyl and IV lorazepam continuous drips to keep her comfortable on the ventilator and to improve patient/ventilator synchrony.
- On hospital day 5 the patient's oxygenation is improved and her sedation is stopped. A spontaneous breathing trial (SBT) is initiated. She fails secondary to "agitation". Throughout the next 48 hours she has periods of confusion and is then calm but does not follow commands.

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## Case

- Which of the following is false
  - a) Critical care societies currently recommend screening for delirium at least daily
  - b) Delirium is associated with increased mortality in patients requiring mechanical ventilation.
  - c) Benzodiazepines are the drug of choice to control her agitation.
  - d) Haloperidol is recommended by the SCCM for treatment of delirium in critical illness but has not been proven to improve outcomes.

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## Topics: Overview

- 1) Impact of delirium in critical illness
- 2) Screen
- 3) Prevent
- 4) Treat

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## Definition

DSM-IV requires the following essential criteria for a diagnosis of delirium
<b>Disturbance of consciousness</b> (i.e. reduced clarity of awareness of the environment) with reduced ability to focus, sustain, or shift attention.
<b>Change in cognition</b> (e.g. memory deficit, disorientation, language disturbance and perceptual disturbance) that is not better accounted for by a pre-existing, established, or evolving dementia.
<b>Development over a short period of time</b> (usually hours to days) and disturbance <b>tends to fluctuate</b> during the course of the day.
There is <b>evidence</b> from the history, physical examination, or laboratory findings that the disturbance is caused by the <b>direct physiological consequences of a general medical condition</b> .

- Term **ICU psychosis** is falling out of favor

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## Pathophysiology Poorly Understood

- Critical Illness: Heart, Lungs, Kidney, Brain?
- Hippocrates: acute illness and delirium
- Neurotransmitter mechanisms
  - Acetylcholine plays a key role in pathogenesis
    - Anticholinergic drugs caused delirium in healthy volunteers, reversed by cholinesterase inhibitors
    - Serum anticholinergic activity correlated with severity of delirium.

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## Delirium in the ICU

- Incidence in critically ill patients range from 35-60%.
  - Up to 81.7% of mechanically ventilated pts developed delirium at some point
  - undiagnosed in >66% of patients
  - Increases
    - Days on Ventilator, Days in Hospital, Mortality
  - \$20-60 billion in costs annually in US alone
  - SCCM and ATS rec daily minimum of assessment for delirium but 2002 survey only 6% clinicians follow this rec.

- Ely EW et al. Delirium as a predictor of mortality in mechanically ventilated patients in the ICU. *JAMA* 2004; 291: 1753-62  
- Ely EW et al. The impact of delirium in the intensive care unit on hospital length of stay. *Intensive Care Med* 2001; 27: 1892-1900  
- Inouye SK et al. Nurses' recognition of delirium and its symptoms. *Arch Intern Med* 2001; 161: 2467-2473.

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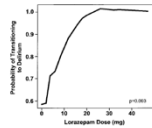
## Delirium and Benzodiazepines

Marc-Jacques Dubois  
Nicolas Bergeron  
Marc Dumont  
Sandra Dall  
Yvanne Skrobek

### Delirium in an intensive care unit: a study of risk factors

Dubois et al Int Care Med 2000

### Lorazepam Is an Independent Risk Factor for Transitioning to Delirium in Intensive Care Unit Patients



Ely et al Anesthesiology 2004

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## Subtypes of Delirium

- **Hyperactive** - paranoid, agitated
  - Readily recognized, best prognosis
  - Purely hyperactive: 1.6% of delirium episodes
- **Hypoactive** - withdrawn, quiet, paranoid
  - “Quiet delirium”
  - Often not well recognized, misdiagnosed
  - Purely hypoactive episodes 43.5%
- **Mixed** - combination
  - Most common in ICU patients 54.9%
  - Worst prognosis

Peterson JF, et al. Delirium and Its Motoric Subtypes: A Study of 614 Critically Ill Patients. *J Am Geriatr Soc* 54: 479-484, 2006.

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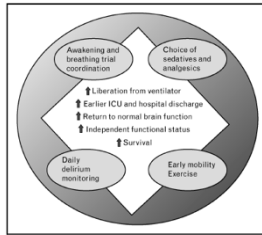






**Sedation, delirium and mechanical ventilation: the 'ABCDE' approach**  
Alessandro Morandi<sup>a,b,c</sup>, Nathan E. Brummel<sup>a,b</sup> and E. Wesley Ely<sup>a,b,c,d</sup>

Figure 1 The 'ABCDE' of critical care



Morandi et al. Cur Opin Crit Care 2011

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### Case

- Which of the following is false
  - a) Implementation of a "sedation protocol" would decrease her risk of delirium and her days of mechanical ventilation.
  - b) Delirium is associated with increased mortality in patients requiring mechanical ventilation.
  - c) Benzodiazepines are the drug of choice to control her agitation.
  - d) Haloperidol is recommended by the SCCM for treatment of delirium in critical illness but has not been proven to improve outcomes.

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### Key Points Delirium in the ICU

- Delirium is common in the ICU and is associated with worse outcomes
- Assess for Delirium in ICU patients:
  - CAM-ICU or other
- Minimize sedation when possible:
  - benzodiazepines in particular
- Sedation Protocol:
  - Wake up, Wake up and Breathe, ABCDE
- Haloperidol for management (Grade 2c)
  - Poorly supported by evidence

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