

Delirium and Long-Term Cognitive Impairment after Critical Illness

Matthew F. Mart^{1,2,3}, Jayna M. Gardner-Gray⁴, and Shozab Ahmed⁵

¹ Critical Illness, Brain Dysfunction, and Survivorship Center, Nashville, Tennessee; ² Division of Allergy, Pulmonary, and Critical Care Medicine, Vanderbilt University Medical Center, Nashville, Tennessee; ³ Geriatric Research, Education, and Clinical Center, Tennessee Valley Healthcare System, Nashville, Tennessee; ⁴ Division of Pulmonary and Critical Care Medicine, Department of Emergency Medicine, Henry Ford Hospital, Detroit, Michigan; and ⁵ Division of Pulmonary, Critical Care and Sleep Medicine, Department of Internal Medicine, University of New Mexico, Albuquerque, New Mexico

ORCID IDs: 0000-0002-6727-8838 (M.F.M.); 0000-0002-7419-2899 (S.A.)

THE CASE

A 57-year-old man is in the intensive care unit (ICU) with respiratory failure requiring mechanical ventilation that is due to influenza. He is lethargic and inattentive, despite sedation interruptions, and is positive for delirium on screening with the Confusion Assessment Method for the ICU (CAM-ICU).

THE CHALLENGE

Delirium is common yet underdiagnosed in the ICU. It is characterized by acute deficits in cognition and attention, with patients experiencing changes in arousal from lethargy (“hypoactive delirium”) to agitation (“hyperactive delirium”) (1). Delirium is an independent predictor of poor outcomes, including long-term cognitive impairment (LTCI) in survivors (Figure 1) (2, 3).

DELIRIUM IN THE ICU

The prevalence of ICU delirium ranges from approximately 30% to 70%, with patients receiving mechanical ventilation

(Received in original form October 19, 2022; accepted in final form April 21, 2023)

This article is open access and distributed under the terms of the Creative Commons Attribution Non-Commercial No Derivatives License 4.0. For commercial usage and reprints, please e-mail Diane Gern.

Correspondence and requests for reprints should be addressed to Shozab Ahmed, M.B. B.S., Division of Pulmonary, Critical Care and Sleep Medicine, Department of Internal Medicine, University of New Mexico, 2211 Lomas Boulevard, MSC10 - 5550, Albuquerque, NM 87131. E-mail: saahmed@salud.unm.edu.

ATS Scholar Vol 4, Iss 3, pp 387–388, 2023
Copyright © 2023 by the American Thoracic Society
DOI: 10.34197/ats-scholar.2022-0115OT

at the greatest risk (1). Delirium may manifest with decreased arousal and motor activity (“hypoactive delirium”), exaggerated motor activity and hyperarousal (“hyperactive delirium”), or both (“mixed delirium”) (1). There are multiple validated screening tools for ICU delirium, such as the CAM-ICU (1). Patients with advanced age, preexisting neurocognitive disease, greater severity of illness, or visual or hearing impairment, as well as patients who require ventilatory support, are at highest risk of developing delirium. Benzodiazepine administration is among the most significant modifiable risk factors for ICU delirium and generally should be avoided (Figure 1) (1, 3). Delirium management consists of nonpharmacological strategies including sedation interruptions, early mobilization, and the use of eyeglasses and hearing aids to avoid sensory deprivation. Timely removal of catheters and avoidance of physical restraints, along with limiting interruptions during sleep, can help prevent or shorten the duration of delirium (1). Treatment with antipsychotics does not reduce delirium in patients with predominantly

ON THE FLY

- Delirium is common yet underdiagnosed in patients admitted in the ICU and is associated with long-term cognitive impairment.
- Patients should be routinely screened for ICU delirium using validated tools such as the CAM-ICU.
- Benzodiazepine administration is a strong modifiable risk factor for ICU delirium.
- Management of delirium consists of nonpharmacological management such as early mobilization, sedation interruptions, and early removal of catheters and restraints.
- Delirium is associated with LTCI, with longer duration of delirium associated with worse LTCI.

ON THE FLY

A collection of concise, mobile-friendly resources to help create quick teachable moments.

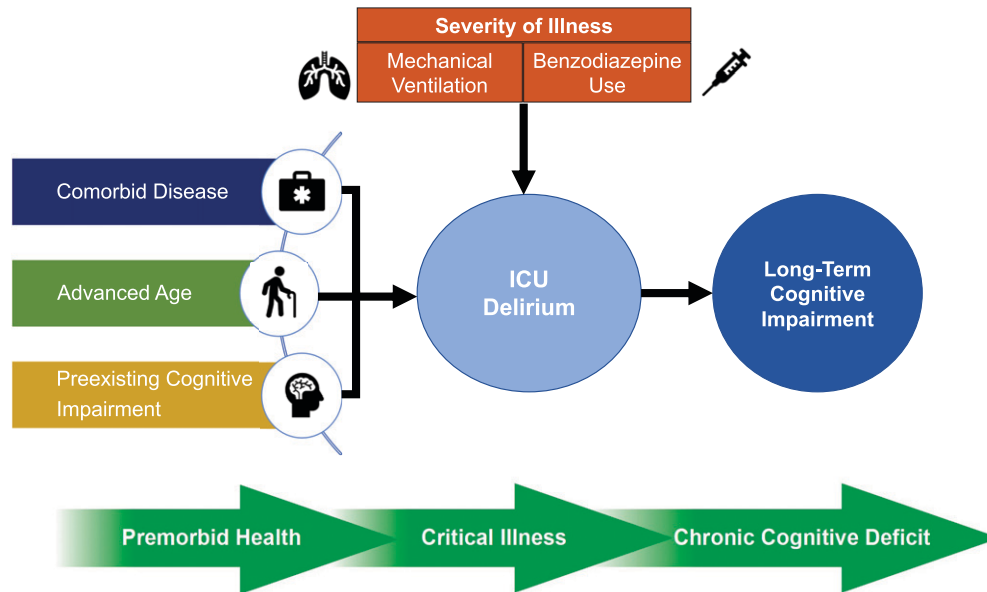


Figure 1. Risk factors for and progression of delirium in patients in the ICU. The risk of delirium is greater in patients with premorbid health conditions and those with greater severity of illness or requiring mechanical ventilation and benzodiazepines. Duration of delirium is an independent predictor of long-term cognitive impairment, a devastating form of neurocognitive dysfunction in survivors. ICU= intensive care unit.

hypoactive delirium, but haloperidol has been shown to be safe and can be used in patients with hyperactive delirium who are at risk for harm to themselves or staff (4, 5).

Delirium is among the strongest risk factors for the development of LTCl, which is defined as newly acquired neuropsychological deficits after critical illness. At 12 months

after ICU discharge, over one-quarter of the survivors have global cognition that is comparable with that of patients with moderate traumatic brain injury or Alzheimer’s disease (3), highlighting the importance of preventing and mitigating delirium.

REFERENCES

1. Wilson JE, Mart MF, Cunningham C, Shehabi Y, Girard TD, MacLulich AMJ, *et al.* Delirium. *Nat Rev Dis Primers* 2020;6:90.
2. Ely EW, Shintani A, Truman B, Speroff T, Gordon SM, Harrell FE Jr, *et al.* Delirium as a predictor of mortality in mechanically ventilated patients in the intensive care unit. *JAMA* 2004;291:1753–1762.
3. Pandharipande PP, Girard TD, Jackson JC, Morandi A, Thompson JL, Pun BT, *et al.*; BRAIN-ICU Study Investigators. Long-term cognitive impairment after critical illness. *N Engl J Med* 2013;369:1306–1316.
4. Girard TD, Exline MC, Carson SS, Hough CL, Rock P, Gong MN, *et al.*; MIND-USA Investigators. Haloperidol and ziprasidone for treatment of delirium in critical illness. *N Engl J Med* 2018;379:2506–2516.
5. Andersen-Ranberg NC, Poulsen LM, Perner A, Wetterslev J, Estrup S, Hästbacka J, *et al.*; AID-ICU Trial Group. Haloperidol for the treatment of delirium in ICU patients. *N Engl J Med* 2022;387:2425–2435.