THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

Management of Delirium in the ICU

Note: Delirium prevention begins with **non-pharmacologic** measures

- Assess RASS q4 hours and titrate sedation to goal (e.g., 1 to +1)
- Perform CAM-ICU at least once every a.m. and p.m. (and when patient exhibiting altered mental status)

CAM-ICU Positive

Consider alternate reasons for delirium, including neurologic injury, seizures, traumatic brain injury, stroke, infection, metabolic processes, etc.

- Consider non-pharmacologic measures
- Consider stopping deliriogenic medications

Consider initiating pharmacologic therapy

Treatment Step One

- Consider 1X dose of IV/PO haloperidol to assess efficacy of antipsychotics (may be repeated if necessary)
- Obtain baseline EKG if none in past 48 hours

- **QTc > 440** – consider lower doses of antipsychotics and removal of other QTc prolonging medications; recheck EKG several hours after starting drug and after each dosage increase
- **QTc > 500** – consider if benefits outweigh risks

Treatment Step Two

- Determine patient's delirium type to assist with treatment selection

- **Hyperactive:** emotionally labile and agitated; may pull at tubes / catheters
- **Hypoactive:** flat affect, withdrawn, lethargic
- **Mixed:** fluctuating between above two states

Treatment Step Three

- Initiate treatment with antipsychotic based on delirium type

- Consider more sedating medication for patients with hyperactive delirium (see Pharmacologyic treatment)
- Consider use of scheduled antipsychotics in patients with hypoactive delirium AND/OR those using multiple PRNs daily
- PRN antipsychotic should always be available to limit use of benzodiazepines for acute agitation

Treatment Step Four

- Continue monitoring CAM-ICU status at least once each a.m. and p.m.
- Monitor for side effects / adverse reactions of antipsychotics

- Titrate medications every 1-2 days based on symptoms (see Pharmacologic Treatment, next page)
- Consider trial off or down titration of antipsychotics if patient CAM-ICU negative for ≥ 48 hours

CAM-ICU Negative

No action required

Cannot Assess
(RASS -4 or -5)

Does the patient require pharmacologic therapy to maintain a goal RASS -4 to -5? (Seizures, traumatic brain injury, paralyzed, etc.)

- Yes: CAM-ICU will be unable to assess until patient no longer requires goal RASS -4 to -5
- No: Titrate sedation per ICU-specific protocol to achieve goal RASS by next assessment

See **page 2** for:
- Alternate Reasons for Delirium
- Non-Pharmacologic Measures
- Potentially Deliriogenic Medications
- Pharmacologic Treatment – Clinical Pearls

See **Appendix** for:
- Performing a CAM-ICU assessment

KEY: RASS = Richmond Agitation Sedation Scale; CAM = Confusion Assessment Method; QTc = corrected QT interval

Alternate Reasons for Delirium / Agitation

- Drug withdrawal (benzodiazepines, alcohol, SSRIs, gabapentin, baclofen, opioids, etc.)
- Uremia
- Hepatic encephalopathy
- Hypoxia
- Uncontrolled pain
- Baseline dementia
- Over-sedation
- Underlying psychiatric condition
- Constipation
- Urinary retention

Potentially Deliriogenic Medications

- Benzodiazepines
- Metoclopramide
- Histamine-1 blockers (promethazine, diphenhydramine)
- Steroids

Non-Pharmacologic Measures

Orientation

- Provide visual and hearing aids
- Have familiar objects from patient's home in the room
- Attempt consistency in nursing staff
- Have staff introduce themselves and re-orient patient upon each entry into patient's room
- Non-verbal music

Environment

- Sleep hygiene: lights off at night, on during day
- Sleep aids (trazodone, mirtazapine, melatonin)
- Control excess noise (staff, equipment, visitors) at night
- Ambulate or mobilize patient early and often
- Avoid restraints if possible. See Restraint and Seclusion Policy

Clinical Parameters

- Optimize hemodynamic parameters (BP, oxygen saturation)

Pharmacologic Treatment – Clinical Pearls

Medication	Dosage Range	Sedation	EPS	QTc Prolongation	Comments
Haloperidol IV/IM/PO/NG	***Initial Dose:*** 2.5-5 mg (lower doses in elderly or those with QTc prolongation risk) >20 mg/day increases risk for QTc prolongation	+	+++	+++	• **PO** haloperidol may have **less QTc prolongation but more EPS** • May be scheduled or PRN **for breakthrough agitation** • Avoid IM use if on full anticoagulation
Risperidone PO/NG/ODT	***Initial Dose*:** 0.25-0.5 mg Q12h (lower doses in elderly or those with QTc prolongation risk) ***Max Dose*:** 2 mg q12h	+	++	+	• Consider for **hypoactive delirium** • **Less sedating** and less likely to cause hypotension due to no histamine receptor activity
Quetiapine PO/NG	***Initial Dose*:** 12.5-50 mg q12h (lower doses in elderly or those with QTc prolongation risk) ***Max Dose*:** 200 mg q12h	++	+	++	• Consider for **hyperactive delirium** or **agitated mixed delirium** • **Larger PM vs. AM doses** may be beneficial for **healthy sleep cycle**
Olanzapine PO/NG/ODT	***Initial Dose*:** 2.5-5 mg at bedtime ***Max Dose*:** 20 mg/day	++	++	++	• **Increased metabolic side effects & EPS** compared to quetiapine • Consider in patients with **hyperactive delirium and no enteral access**

- EKG should be obtained at baseline and at least once weekly – more frequent monitoring may be necessary initially or when patient is on additional QTc prolonging medications or has an underlying arrhythmia.
- Atypical antipsychotics may be up-titrated daily based on patient response.
- Consider use of both scheduled and PRN antipsychotics to guide dose increases and limit use of benzodiazepines.
- See Composite List of All QT Drugs and List of Drugs to Avoid for Patients with Congenital LQTS

References

- Barr J, et al. (2013). Clinical Practice Guidelines for the Management of Pain, Agitation, and Delirium in Adult Patients in the Intensive Care Unit. *Critical Care Medicine*, 41(1): 263-306.
- Ely EW, et al. (2001). Delirium in mechanically ventilated patients: Validity and reliability of the confusion assessment method for the intensive care unit (CAM-ICU). *JAMA*, 286(21):2703-2710.
- Ely EW, et al. (2004). Delirium as a predictor of mortality in mechanically ventilated patients in the intensive care unit. *JAMA,* 291(14):1753-1762.
- Sessler CN, et al. (2002). The Richmond Agitation-Sedation Scale: Validity and reliability in adult intensive care unit patients. *Am J Respiratory and Critical Care Med,* 166 (10):1338-44.

Quality Measures

- Proportion of patients with ICU delirium.
- Percent of patients with at least one documented pain score each shift.
- Percent of patients with documented coma.
- Percent of patients with documented delirium screening.
- Percent of patients with documented RASS scores every 4 hours.
- Total number of patients with CAM-ICU score:
    - Total number of patients deemed "unable to assess".
        - Total number of patients who had a RASS score of -3 or above documented at the same time as the CAM-ICU.

Guideline Authors

- Daniel Eiferman, MD
- Claire Murphy, PharmD, BCPS
- Bruce Doepker, PharmD, BCPS
- Jennifer MacDermott, CNS
- Ellin Gafford, MD

Guideline Approved

May 31, 2016. Second Edition.

Appendix

Confusion Assessment Method (CAM-ICU) Assessment

Richmond Agitation-Sedation Scale (RASS)

STEP 1 Sedation Assessment

Scale	Label	Description
+4	Combative	Combative, violent, immediate danger to staff
+3	Very Agitated	Pulls to remove tubes or catheters; aggressive
+2	Agitated	Frequent non-purposeful movement, fights ventilator
+1	Restless	Anxious, apprehensive, movements not aggressive
0	Alert and Calm	Spontaneously pays attention to caregiver
- 1	Drowsy	Not fully alert, but has sustained awakening to voice (eye opening & contact >10 sec)
- 2	Light Sedation	Briefly awakens to voice (eyes open & contact <10 sec)
- 3	Moderate Sedation	Movement or eye opening to voice (no eye contact)
- 4	Deep Sedation	No response to voice, but movement or eye opening to physical stimulation
- 5	Unarouseable	No response to voice or physical stimulation

If RASS is ≥ -3, proceed to Step 2 CAM-ICU

If RASS is -4 or -5, STOP (patient unconscious), RECHECK later

Sessler, et al., Am J Respir Crit Care Med 2002, 166: 1338-1344
Ely, et al., JAMA 2003, 286: 2983-2991