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

Treatment Step Two

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

Treatment Step Three

- Initiate treatment with antipsychotic based on delirium type

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

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.)

CAM-ICU will be unable to assess until patient no longer requires goal RASS -4 to -5

- Titrate sedation per ICU-specific protocol to achieve goal RASS by next assessment

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

Hyperactive: emotionally labile and agitated; may pull at tubes / catheters

Hypoactive: flat affect, withdrawn, lethargic

Mixed: fluctuating between above two states

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**

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

- 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


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


Disclaimer: Clinical practice guidelines and algorithms at The Ohio State University Wexner Medical Center (OSUWMC) are standards that are intended to provide general guidance to clinicians. Patient choice and clinician judgment must remain central to the selection of diagnostic tests and therapy. OSUWMC’s guidelines and algorithms are reviewed periodically for consistency with new evidence; however, new developments may not be represented.

Copyright © 2016. The Ohio State University Wexner Medical Center. All rights reserved. No part of this document may be reproduced, displayed, modified, or distributed in any form without the express written permission of The Ohio State University Wexner Medical Center.
**Confusion Assessment Method (CAM-ICU) Assessment**

### Step 1: Sedation Assessment

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

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

-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 -4 or -5, STOP (patient unconscious), RECHECK later**
STEP 2 Delirium Assessment

1. Acute Change or Fluctuating Course of Mental Status:
   - Is there an acute change from mental status baseline? OR
   - Has the patient's mental status fluctuated during the past 24 hours?

2. Inattention:
   - "Squeeze my hand when I say the letter 'A'"
   - Read the following sequence of letters: A S A T U R D A Y A
   - Errors: No squeeze with 'A' and squeeze on letter other than 'A'

3. Altered Level of Consciousness:
   - Current RASS level

4. Disorganized Thinking:
   - Will a stone float on water?
   - Are there fish in the sea
   - Does one pound weight more than two?
   - Can you use a hammer to pound a nail?

   Command: "Hold up this many fingers" (hold up 2 fingers)
   "Now do the same thing with the other hand" (do not demonstrate)

CAM-ICU negative NO DELIRIUM
CAM-ICU positive DELIRIUM present
CAM-ICU negative NO DELIRIUM