| **Summary of Delirium Clinical Practice Guideline Recommendations** |
|-------------------|-------------------|
| **Post-Operative** | **Intensive Care Unit** |
| Clinical Practice Guideline for Postoperative Delirium in Older Adults; Postoperative Delirium in Older Adults: Best Practice Statement from the American Geriatrics Society; ACS NSQIP/AGS Best Practice Guidelines: Optimal Preoperative Assessment of the Geriatric Surgical Patient | Clinical Practice Guidelines for the Management of Pain, Agitation, and Delirium in Adult Patients in the ICU |
| American Geriatrics Society/ACS NSQIP | American College of Critical Care Medicine |

**Patient Population:**

- Post-operative adults age 65 and older *at risk of post-operative delirium
- Delirium occurs after surgery in 5% (low-risk patients undergoing low-risk operations) to 50% (high risk patients undergoing high-risk operations)
- Preventable in up to 40% of cases

*At risk = moderate to high risk based on risk stratification model (e.g. NICE guidelines – at risk with one or more of the following: age 65 and older, any cognitive impairment and/or dementia, current hip fracture, or severe illness)

**Aims of Guideline:**

- Non-pharmacologic and pharmacologic interventions pre-op for prevention
- Non-pharmacologic and pharmacologic interventions post-op for treatment

**Scope/Recommendations for:**

- All patients with delirium
- Some statements don’t apply to ICU, palliative care, and nursing home settings

Used studies on surgical and nonsurgical patients to create recommendations

**Risk Factors:**

- Impaired cognition
- Advancing age (greater than 65)
- Functional impairment
- Sensory impairment (hearing or vision)

**Risk Factors:**

- Pre-existing dementia (B)
- History of hypertension and/or alcoholism (B)
- High severity of illness at admission (B)

**Patient Population:**

- Adult ICU patients
- Delirium affects up to 80% of mechanically ventilated ICU patients

**Aims of Guideline:**

- Pharmacologic and non-pharmacologic approaches to manage delirium (also pain and agitation)
- Revision of “Clinical Practice Guidelines for the Sustained Use of Sedatives and Analgesics in the Critically Ill Adult” published in 2002 (Critical Care Magazine)

**Scope/Recommendations for:**

- Adult ICU patients (short and long-term management; intubated and nonintubated; medical, surgical, and trauma ICU)
- Higher illness severity
- Greater chronic disease burden
- Current hip fracture
- Presence of infection
- Inadequately controlled pain
- Depression
- Alcohol use
- Sleep deprivation or disturbance
- Renal insufficiency
- Anemia
- Hypoxia or hypercarbia
- Poor nutrition
- Dehydration
- Electrolyte abnormalities (hyper or hyponatremia)
- Immobilization or limited mobility
- Polypharmacy and use of psychotropic medications (benzos, anticholinergics, antihistamines, antipsychotics)
- Risk of urinary retention or constipation
- Presence of urinary catheter
- Aortic procedures

**Clinical Consequences/Outcomes:**
- Major post-operative complications
- Prolonged hospitalization
- Loss of functional independence
- Reduced cognitive function
- Incomplete recovery
- Delayed rehabilitation
- Death

- Coma (B-independent risk factor)

**Possible Risk factors:**
- Opioid use (B-conflicting data)
- Benzodiazepine use (B)
- Dexmedetomidine infusions administered for sedation may be associated with a lower prevalence of delirium compared to benzodiazepine infusions in mechanically ventilated pts at risk of developing delirium (B)

**Insufficient Data:**
- To determine relationship between propofol use and development of delirium (C)

- Increased mortality (A)
- Prolonged ICU and hospital LOS (A)
- Development of post-ICU cognitive impairment (B)

**Clinical Consequences/Outcomes:**

**Diagnosis/Monitoring:**
- Health care professionals caring for postsurgical patients should be trained to recognize and document signs and symptoms associated with delirium, include hypoactive presentation.
- Health care professionals should assess and clearly document preoperative cognitive function in older adults at risk of postoperative delirium.
- Health care professionals competent in diagnosing delirium should perform a full clinical assessment in any patient suspected of having delirium, found positive on a delirium screening test, or having an acute cognitive change on repeated cognitive testing (use recognized criteria - DSM, ICD-10, CAM, or delirium

**Routine monitoring of delirium (+1B)**
- Confusion Assessment Method for the ICU (CAM-ICU) and Intensive Care Delirium Screening Checklist (ICDSC) are most valid and reliable delirium monitoring tools (A)
- Routine monitoring of delirium is feasible in clinical practice (B)
- Use validated screening instrument for optimal delirium detection.
- Consider daily postoperative screening for development of delirium in order to initiate treatment as early as possible.
- General screening instruments:
  - CAM
  - Delirium Symptom Interview (DSI)
  - Nursing Delirium Screening Scale (NuDESC)
- Intensive Care Unit screening instruments:
  - Confusion Assessment Method for the Intensive Care Unit (CAM-ICU)
  - Intensive Care Delirium Screening Checklist (ICDSC)

<table>
<thead>
<tr>
<th>Quality of Evidence:</th>
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<tbody>
<tr>
<td>High</td>
<td>High = A</td>
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<tr>
<td>Moderate</td>
<td>Moderate = B</td>
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<tr>
<td>Low</td>
<td>Low/very low = C</td>
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<thead>
<tr>
<th>Strength of Recommendation:</th>
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<tbody>
<tr>
<td>Strong</td>
<td>Strong = 1</td>
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<tr>
<td>Weak</td>
<td>Weak = 2</td>
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<tr>
<td>Insufficient</td>
<td>In favor of = (+)</td>
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<tr>
<td>Not applicable</td>
<td>Against = (-)</td>
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<thead>
<tr>
<th>Recommendations:</th>
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<tr>
<td><strong>Strong:</strong></td>
<td>Prevention:</td>
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<tr>
<td>- Multicomponent non-pharmacologic interventions by interdisciplinary team to prevent delirium</td>
<td>- Perform early mobilization whenever feasible to reduce incidence and duration of delirium (+1B)</td>
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<td>- Ongoing educational programs regarding delirium for health care professions</td>
<td>- No recommendation for using a pharmacologic delirium prevention protocol (0, C)</td>
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<td>- A medical evaluation should be performed to identify and manage underlying contributors to delirium</td>
<td>- No recommendation for using a combined nonpharmacologic and pharmacologic delirium prevention protocol (0, C)</td>
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<tr>
<td>- Pain management (preferably with non-opioid medications) should be optimized to prevent post-op delirium</td>
<td>- Do not suggest that either haloperidol or atypical antipsychotics be administered to prevent delirium (-2C)</td>
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<tr>
<td>- Medications with high risk for precipitating delirium should be avoided (anticholinergic, sedative-hypnotics, meperidine, polypharmacy-5 or more)</td>
<td>- No recommendation for use of dexmedetomidine to prevent delirium (0,C)</td>
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<td>- Cholinesterase inhibitors should not be newly prescribed to prevent or treat postop delirium</td>
<td><strong>Treatment:</strong></td>
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<tr>
<td>- Benzodiazepines should not be used as</td>
<td>- No evidence that treatment with haloperidol reduces the duration of</td>
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<tr>
<td>Recommendations</td>
<td>Insufficient Evidence</td>
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<td>Weak Recommendations:</td>
<td>Use of processed EEG monitors of anesthetic depth during IV sedation or general anesthesia may be used to prevent delirium</td>
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<td>Use of antipsychotics at the lowest effective dose for shortest possible duration may be considered to treat delirious pts who are severely agitated or threatening harm to self/others</td>
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<td>Multicomponent nonpharmacologic interventions by interdisciplinary team may be considered when postop delirium is diagnosed to improve clinical outcomes</td>
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<td>Injection of regional anesthetic at the time of surgery and postoperatively to improve pain control with goal of preventing delirium may be considered</td>
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<td>Do not recommend administering rivastigmine to reduce duration of delirium (-1B)</td>
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<td>Do not suggest using antipsychotics in patients at significant risk for torsades de pointes (-2C)</td>
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<td>In patients with delirium unrelated to alcohol or benzodiazepine withdrawal, suggest continuous IV infusions of dexmedetomidine rather than benzodiazepine infusions for sedation to reduce duration of delirium (+2B)</td>
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<td>Management for Improved Outcomes:</td>
<td>Daily sedation interruption or routine use of a light target level of sedation for mechanically ventilated patients (+1B)</td>
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<td>Analgesia-first sedation in mechanically ventilated patients (+2B)</td>
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<td>Promote sleep by optimizing environment using strategies to control light and noise, clustering patient care activities, and decreasing stimuli at night to protect sleep cycles (+1C)</td>
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<td>No recommendation for using specific modes of mechanical ventilation to promote sleep in mechanically ventilated patients (no evidence)</td>
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<td>Use interdisciplinary team approach that includes provider education, pre-printed and/or computerized protocols and order forms, and quality ICU rounds checklists to facilitate use of pain, agitation, and delirium management guidelines or protocols (+1B)</td>
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behaviors
• Nutritional and fluid repletion enhancement
• Sleep enhancement (daytime sleep hygiene, relaxation, nonpharmacologic sleep protocol, and nighttime routine)
• Medication review and appropriate medication management
• Daily rounding by an interdisciplinary team to reinforce the interventions

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<tr>
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<tr>
<td><strong>Geriatric Trauma</strong></td>
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<td>ACS TQIP Geriatric Trauma Management Guidelines</td>
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**Patient Population:**
• Geriatric patients with traumatic injury

**Aims of Guideline:**
• Better risk assessment, adherence to key preventive strategies, active surveillance, and prompt recognition and treatment of complications to reduce mortality and morbidity

**Scope/Recommendations for:**
• All geriatric trauma patients

**Risk Factors:**
• Cognitive impairment and dementia
• Depression
• Alcohol use
• Polypharmacy and psychotropic medications
• Poor nutrition
• Hearing and vision impairment

**Reversible causes of delirium:**

**Clinical Consequences/Outcomes:**
• Not specifically addressed for delirium

**Diagnosis/Monitoring:**
• A comprehensive geriatric assessment (CGA) followed by appropriate treatment and follow up
- Concentrate care of geriatric patient with care pathways (e.g. G-60 geriatric trauma service)

**Quality of Evidence:**
- Not addressed

**Strength of Recommendation:**
- Not addressed

**Recommendations:**
- Effective pain management to mitigate delirium
  - Use elderly-appropriate medications and dose
  - Avoid benzodiazepines
  - Monitor use of narcotics; consider early implementation of patient-controlled analgesia
  - Consider early use of nonnarcotics, including NSAIDs, adjuncts, and tramadol
  - Epidural analgesia may be preferable to other means for patients with multiple rib fractures to avoid respiratory failure
- Establish past history of elderly-specific comorbidities, including:
  - Pulmonary disease
  - Chronic renal failure
  - Chronic anemia
  - Depression
  - Baseline cognitive impairment
  - Baseline functional impairment
  - Baseline frailty scores
  - Baseline nutritional status
  - Alcohol, tobacco, drug abuse or dependence (benzodiazepines, oxycodone)
  - Thyroid dysfunction
  - Glucose intolerance
  - Decubitus ulcer
- Hold family meeting within 72 hours of admission to discuss goals of care
  - Delirium is common after injury and associated with increased morbidity and mortality
- Assess baseline cognitive function, risk factors for delirium, and monitor for signs/symptoms of delirium on a daily basis (Mini-Cog)

- Regularly evaluate and address delirium risk factors:
  - Cognitive impairment and dementia
  - Depression
  - Alcohol use
  - Polypharmacy and psychotropic medications
  - Poor nutrition
  - Hearing and vision impairment

- Regularly monitor for reversible causes of delirium:
  - Wake-sleep cycle disturbances and sleep deprivation
  - Immobilization
  - Hypoxia
  - Infection
  - Uncontrolled pain
  - Renal insufficiency, dehydration, and electrolyte abnormalities
  - Urinary retention or presence of urinary catheter
  - Fecal impaction or constipation
  - Use of restraints