Perioperative Delirium Prevention and Treatment Pathway

General principles

1. Use non-pharmacologic prevention measures
2. Avoid polypharmacy when possible
3. Communicate with preop/PACU nurses and surgical team

Delirium risk stratification and prevention

If patient is ≥ 65 years or has a cognitive screening test risk of delirium ≥ 5%

- Intraop
  - Implement Intraop bundle (see next page)
  - Order “Delirium Prevention Interventions” and antiemetics for patients with high delirium risk in PACU orderset
  - Sign out delirium risk to PACU nurse

- PostOp

Delirium treatment

1. Evaluate for underlying contributors to delirium
   - Physical exam: check surgical wound, check tubes/lines/drain
   - Brief neuro exam
   - Vital signs, oxygen saturation, pain assessment
   - Targeted Workup: Consider ABG, UA, CBC, BMP, TSH, LFTs, U&O, culture, EKG, Chest X-ray

2. Evaluate for reversible precipitating or contributing factors
   - Drugs/medications/polypharmacy
   - Electrolytes (Na, Ca, acid-base disorders), Environment change
   - Lack of drugs (withdrawal), Lack of sleep
   - Infection, Immobility (catheters, feeding tubes), Iatrogenic
   - Restraints, Reduced sensory input (vision, hearing), Respiratory (hypoxemia/hypercarbia)
   - Intracranial (stroke, bleed, seizure, meningitis)
   - Urinary retention, constipation, Uncontrolled pain
   - Metabolic (hypoxemia, hypercarbia, glucose, uremia, hepatic encephalopathy, thyroid dysfunction)

3. Review medications
   - Discontinue contributing medications (ex: Beers Criteria) when possible

All phases

General recommendations

- Enable the patient to wear glasses and hearing aids as for as long as possible
- Provide frequent reorientation when awake
- Keep it simple: avoid polypharmacy when possible

PONV management

- Preventive measures: prophyactic
  - Infusion, aspirin (if very high risk)
  - Ondansetron (4 mg IV q8h)
  - Metoclopramide (10–15 mg IV q8h)

- Avoid (when possible)
  - Dexmedetomidine (especilly doses > 4 mg)
  - Diphenhydramine (Benadryl)
  - Hydroxyzine (Vistaril)
  - Lorazepam (Ativan)
  - Promethazine (Compazine)
  - Scopolamine

Medication management

<table>
<thead>
<tr>
<th>Medication Class</th>
<th>Examples</th>
<th>Precautions</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSAIDs</td>
<td>Ketorolac, Diclofenac, Ibuprofen</td>
<td>Avoid when GFR &lt; 30 (Stage IV – V CKD) or in AKI</td>
<td>Increased risk of GI bleeding, increased risk of AKI (for ketorolac, specifically)</td>
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<tr>
<td>Sedative Hypnotics</td>
<td>Benzodiazepines</td>
<td>Avoid (except for specific indications such as seizure)</td>
<td>Increased risk of delirium, cognitive impairment, falls, fractures</td>
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<tr>
<td>Gabapentin</td>
<td></td>
<td>Avoid (dose decreased to 500 mg if GFR &lt; 60)</td>
<td>Increased risk of sedation- related neurotoxicity, including delirium</td>
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<tr>
<td>Meperidine</td>
<td>Avoid, especially in patients with CKD</td>
<td>Higher risk of neurotoxicity including delirium</td>
<td></td>
</tr>
<tr>
<td>Antihistamines</td>
<td>Diphenhydramine (Benadryl), Promethazine (Phenergan), Scopolamine (Compazine)</td>
<td>Avoid</td>
<td>Increased risk of sedation- related anti-cholinergic side effects (including delirium)</td>
</tr>
<tr>
<td>Other psychoactive medications</td>
<td>Dexamethasone</td>
<td>Avoid or use cautiously</td>
<td>Increased risk of delirium</td>
</tr>
</tbody>
</table>

Preop

If patient is ≥ 65 years or has an ACWLS predicted risk of delirium ≥ 5%:
- Administer PO acetylcysteine
- Use caution with Potentially Inappropriate Medications (refer to table)
- Keep glasses, hearing aids, and dentures in a separate bag within patient belongings for easy access

Intraop

Patient safety and risk mitigation
- Consider age-related alterations in physiology when choosing anesthetic technique
- Account for reduction in GFR in medication dosing
- Consider fluid management strategy targeting euclorria
- Provide pre-warming and active warming to target normothermia
- Consider depth of anesthesia monitoring when available

Pain management
- Use multimodal (opioid sparing) analgesia
- Consider non-opioid adjuncts when appropriate (ex: acetaminophen, lidocaine infusion, low-dose ketamine infusion, magnesium infusion)
- Use neuromod or regional techniques when appropriate

Postop

- Use Delirium Risk PACU order set to order delirium prevention interventions and antiemetics for patients with high delirium risk
- Sign out delirium risk to PACU nurse and surgical team
- Monitor for signs of active delirium and treat accordingly

Adapted with permission from the University of California San Francisco