Delirium – Adult Inpatient

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Note: This algorithm is not intended for patients with alcohol withdrawal related delirium.

INITIAL PRESENTATION/ASSESSMENT

Presence of clinical features or positive screen for delirium?

- Yes
  - Notify Primary or on-call Team
  - See Appendix C for Safety and Environmental Interventions and implement as indicated

- No
  - See Appendix C for Safety and Environmental Interventions and implement as indicated

CLINICAL EVALUATION

- History and Physical and chart review
  - Confirm history with family/caregivers
  - Physical examination with attention to neurological status
  - Review current and home medications
    - Confirm home medication use with family/caregivers
    - Consider drug overdose versus withdrawal, serotonin syndrome and/or neuroleptic malignant syndrome
    - Review for correct dosing based on age and clinical condition
    - Avoid abrupt discontinuation of medications with potential for dependence and/or withdrawal syndrome
    - Consider ongoing need for medications that may contribute to delirium (see Appendix B)
  - Review history for alcohol and substance use/misuse
    - Clinical interview and mental status exam
    - Consider evaluation using standardized tools (CAM and/or MDAS)
  - Consider the following as clinically indicated:
    - CBC with differential, basic metabolic panel with calcium, liver function tests, oxygen saturation/arterial blood gas, troponin T, albumin, thyroid function tests, ammonia, cortisol
    - Urinalysis, urine culture, blood cultures, cerebral spinal fluid studies
    - Serum/urine drug screen
    - Chest x-ray and EKG
    - EEG, CT head, MRI brain
  - Consultations as appropriate
  - Treat acute severe causes such as pain, sepsis, hypoxia, electrolyte disturbances, and medication toxicities

1 See Appendix A for clinical features of delirium
2 See Appendix B for risk factors and contributing factors
3 Routine screening in the Critical Care Unit performed with the Intensive Care Delirium Screening Checklist (ICDSC) and screening for Supportive Care patients performed with the Memorial Delirium Assessment Scale (MDAS)
Delirium – Adult Inpatient

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Note: This algorithm is not intended for patients with alcohol withdrawal related delirium.

INTERVENTIONS

Patient with confirmed diagnosis of delirium

- Correct contributing factors (see Appendix B)
- Continue with safety and environmental interventions (see Appendix C)
- Monitor airway, breathing, and risk of aspiration
- Consider specialty consultation

Potential medical emergency

- Ensure safety for patient, family, and staff
- Correct contributing factors (see Appendix B)
- Continue with safety and environmental interventions (see Appendix C)
- Consider medications as appropriate for short-term management of severe agitation and/or patient discomfort (see Appendix D and E)
- Consider specialty consultation

EVALUATION AND INTERVENTIONS

- Continue to assess and monitor as appropriate
- Consider medications as appropriate for short-term management of severe agitation and/or patient discomfort (see Appendix D and E)
- Consider specialty consultation

- Continue interventions and monitor as appropriate
- Reduce pharmacologic treatment as indicated

Consider specialty consultation

- Continue interventions and monitor as appropriate
- Reduce pharmacologic treatment as indicated

Consider specialty consultation

- Continue to assess and monitor as appropriate
- Reduce pharmacologic treatment as indicated

Consider specialty consultation

1 Consider Social Work consult to determine Legal Next of Kin and/or Medical Power of Attorney status
2 Follow algorithm based on delirium type at time of evaluation
3 Hypoactive clinical features include withdrawal, flat affect, lethargy, and/or diminished responsiveness
4 Consider specialty consultation with Pharmacy, Psychiatry, Neurology, Supportive Care and/or Anesthesiology as indicated
5 Response to interventions should be based on continuous evaluation over a period of time and not on a single evaluation
6 Specialty specific management of delirium may include dexmedetomidine (ICU setting), combination of haloperidol and lorazepam (palliative care setting or patients with severe agitation) or combination of other psychotropics as deemed appropriate by consultants
7 Chronic use of antipsychotic therapy may not be indicated in the absence of underlying psychiatric conditions (e.g., schizophrenia)
8 Hyperactive clinical features include hallucinations, agitation, restlessness, combativeness, pulling at catheters and/or tubes
9 Mixed clinical features include fluctuations between hyperactive and hypoactive delirium

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Approved by the Executive Committee of the Medical Staff on 05/16/2023
## APPENDIX A: Clinical Features of Delirium

<table>
<thead>
<tr>
<th>Acute onset</th>
<th>Sleep-wake cycle disruption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confusion, disorientation, impaired reality testing</td>
<td>Fluctuating course, lucid intervals</td>
</tr>
<tr>
<td>Inability to pay attention (distractibility)</td>
<td>Autonomic dysfunction</td>
</tr>
<tr>
<td>Psychomotor agitation or retardation</td>
<td>Fear and anxiety</td>
</tr>
<tr>
<td>Illusions (misperceptions) and hallucinations (usually visual)</td>
<td>Delusions, especially with paranoid themes</td>
</tr>
<tr>
<td>Diurnal variation (worse at night, early AM)</td>
<td></td>
</tr>
</tbody>
</table>
# APPENDIX B: Risk Factors and Contributing Factors for Delirium

## Patient Characteristics
- Age > 64 years
- Sensory impairment (visual and/or hearing)
- Drugs:
  - Polypharmacy
  - Medications with anticholinergic effects\(^1\,2\,3\) (e.g., scopolamine, promethazine, prochlorperazine, diphenhydramine, hydroxyzine, oxybutynin, hyoscymamine, tricyclic antidepressants)
  - Opioids
  - Benzodiazepines
  - Zolpidem, eszopiclone, zaleplon
  - Cyclobenzaprine, baclofen
  - Anticonvulsants (e.g., phenytoin, phenobarbital, levetiracetam)
  - Corticosteroids (e.g., methylprednisolone, prednisone)
  - Histamine-type 2 receptor antagonists (e.g., famotidine)
  - Digoxin (particularly with elevated blood levels)
  - Anti-Parkinson agents
    - Anticholinergics\(^3\) (e.g., cogentin)
    - Adjunctive agents (e.g., amantadine, selegiline)
    - Dopamine agonists (e.g., bromocriptine, ropinirole)
    - Carbidopa/levodopa
  - Sympathomimetics (e.g., methylphenidate, amphetamine, dextroamphetamine)
  - Select antimicrobials including beta-lactams (penicillins, cephalosporins, carbapenems), fluoroquinolones (e.g., ciprofloxacin), and voriconazole

## Metabolic Disturbance
- Hypoxia
- Hypercapnia
- Hypo or Hyperglycemia
- Hypo or Hypernatremia
- Hypercalcemia
- Impaired liver function and/or kidney function
- Thyroid disorders
- Hypo or Hyperthermia
- Hypo or Hyperosmolarity
- Hyperkalemia

## Drugs\(^1\)
1. Consider Pharmacy consult for medication review
2. List is not all inclusive
3. Seek specialty consultation in patients with toxicity

## Cancer Therapies
- Chemotherapy agents (e.g., ifosfamide, methotrexate, cytosine arabinoside)
- Biotherapy agents [e.g., interleukin-2 (IL-2), interferon-alpha, blinatumomab]
- Chimeric antigen receptor (CAR) T-cell therapy
- Supportive therapy agents (e.g., opioids, benzodiazepines, corticosteroids)

## Disease/condition Related
- History of cognitive impairment including dementia
- Direct and indirect effects of primary brain tumors
- Central nervous system conditions (e.g., metastasis, stroke, seizures)
- Paraneoplastic syndromes (rarely)
- Terminal stages of disease/end of life
- Alcohol or drug (e.g., opioids, benzodiazepines) intoxication or withdrawal
- History of alcohol or substance misuse
- Hypertensive crisis
- Posterior reversible encephalopathy syndrome (PRES)
- Urinary retention and/or fecal impaction
- Depression
- Frailty
- Infection

## Other
- Use of restraints
- Use of indwelling urinary catheters
- Recent discharge from acute hospital
- Patient with recent history or undergoing anesthesia/surgery
- Immobility
- Lack of sleep

## Metabolic Disturbance
- Hypoxia
- Hypercapnia
- Hypo or Hyperglycemia
- Hypo or Hypernatremia
- Hypercalcemia
- Impaired liver function and/or kidney function
- Thyroid disorders
APPENDIX C: Safety and Environmental Interventions

<table>
<thead>
<tr>
<th>Category</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevent accidental self harm</td>
<td>● Implement Comprehensive Managed Fall Protection Program as per policy</td>
</tr>
<tr>
<td></td>
<td>● Implement strategies to prevent self removal of lines, tubes, and drains.</td>
</tr>
<tr>
<td></td>
<td>See interventions for close observation and physical environment.</td>
</tr>
<tr>
<td></td>
<td>● Avoid catheterizations</td>
</tr>
<tr>
<td></td>
<td>● Remove lines, tubes, and drains as soon as indicated</td>
</tr>
<tr>
<td></td>
<td>● Physical restraints if other measures are unsuccessful</td>
</tr>
<tr>
<td>Close observation</td>
<td>● Nurse ● Sitter</td>
</tr>
<tr>
<td>Physical agitation and physiological</td>
<td>Reassess for consideration of transfer to next level of care</td>
</tr>
<tr>
<td>instability</td>
<td></td>
</tr>
<tr>
<td>Physical environment</td>
<td>● Adequate, but not excessive, sensory stimulation</td>
</tr>
<tr>
<td></td>
<td>● Sleep promotion strategies</td>
</tr>
<tr>
<td></td>
<td>○ Minimize disruption of sleep-wake cycle</td>
</tr>
<tr>
<td></td>
<td>○ Avoid long periods of daytime sleep</td>
</tr>
<tr>
<td></td>
<td>● Lights on during day</td>
</tr>
<tr>
<td></td>
<td>● Maximize mobility</td>
</tr>
<tr>
<td></td>
<td>● Frequent reorientation (use of clocks, calendars, and updates on whiteboard)</td>
</tr>
<tr>
<td></td>
<td>● Address sensory deficits (e.g., eyeglasses, other vision aids such as magnifiers and special lighting, hearing aids, amplifying devices)</td>
</tr>
<tr>
<td></td>
<td>● Address language barriers as indicated through the use of Language Assistance program and provision of language specific patient education materials</td>
</tr>
<tr>
<td></td>
<td>● Night: low level background light and sound (music or television) maintained</td>
</tr>
<tr>
<td></td>
<td>● Family presence</td>
</tr>
<tr>
<td>Provide reassurance and education to</td>
<td>● Communicate and educate about delirium and delirium management</td>
</tr>
<tr>
<td>patient and caregivers</td>
<td>● Encourage family members to take breaks</td>
</tr>
</tbody>
</table>

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## APPENDIX D: Medications for Management of Delirium For All Inpatient Care Areas

**Note:** Oral formulations should be avoided in patients who cannot safely swallow or who are at risk for aspiration.

<table>
<thead>
<tr>
<th>Therapeutic Class</th>
<th>Medication</th>
<th>Typical Initial Dose</th>
<th>Recommended Maximum Dose</th>
<th>Onset of Action</th>
<th>Comments/Cautions/Adverse Reactions</th>
</tr>
</thead>
</table>
| **Typical Antipsychotics** | Haloperidol (Haldol<sup>®</sup>) | IV: Age ≥ 65 years: 0.5-2 mg every 6 hours PRN Age < 65 years: 2-5 mg every 6 hours PRN PO: Age ≥ 65 years: 0.5-2 mg every 12 hours PRN Age < 65 years: 2-5 mg every 12 hours PRN **Loading regimen for hyperactive delirium:** Age ≥ 65 years: 0.5 mg IV Age < 65 years: 2 mg IV Repeat dose every 20-30 minutes until patient is calm, then schedule 25% of total loading dose IV every 6 hours | IV: 30 mg/day PO: 30 mg/day **IV:** ≤ 20 minutes **PO:** 1-2 hour(s) | PO: 1-2 hour(s) | ● Likely of greatest utility in acute management of hyperactive delirium *(i.e., establishing initial control and PRN for breakthrough agitation)*  
● QTc prolongation (dose dependent)/risk of torsades de pointes:  
  ○ Obtain 12-lead EKG at baseline and consider repeating every 48-72 hours  
  ○ Caution with QTc > 450 ms or increases by 25% or more from baseline  
  ○ Not recommended if QTc > 500 ms  
● Extrapyramidal reactions (acute dystonia, akathisia, parkinsonism, tardive dyskinesia) – higher incidence relative to atypical antipsychotics  
● Hypotension, particularly with IV administration  
● Neuroleptic malignant syndrome has been reported with antipsychotic administration *(manifests as hyperpyrexia, muscle rigidity, autonomic instability)*  
● May lower seizure threshold |
| **Atypical Antipsychotics** | Quetiapine (Seroquel<sup>®</sup>) | PO: 25-50 mg every 12 hours Hepatic impairment: 12.5 mg every 12 hours Age > 60 years: 12.5-25 mg every 12 hours | 400 mg/day | 1.5 hours | ● Likely of greatest benefit as maintenance therapy for hyperactive/mixed delirium; can be considered for hypoactive delirium unresponsive to non-pharmacologic management  
● May cause hyperglycemia; cases of diabetic ketoacidosis and hyperosmolar coma have been reported  
● Orthostatic hypotension, especially upon initiation and titration of therapy  
● QTc prolongation (dose dependent)/risk of torsades de pointes:  
  ○ Obtain 12-lead EKG at baseline and consider repeating every 48-72 hours  
  ○ Caution with QTc > 450 ms or increases by 25% or more from baseline  
  ○ Not recommended if QTc > 500 ms  
● Neuroleptic malignant syndrome has been reported with antipsychotic administration *(manifests as hyperpyrexia, muscle rigidity, autonomic instability)*  
● May lower seizure threshold  
● Extrapyramidal reactions may occur, but are less common than with typical antipsychotics  
● Metabolized by CYP450 enzyme system; caution with concomitant use of CYP450 inhibitors and inducers  
● IM administration contraindicated in patients with thrombocytopenia |
|  | Olanzapine (Zyprexa<sup>®</sup>; Zyprexa Zydis<sup>®</sup>) | PO/ODT: 2.5-5 mg nightly Age > 60 years: 2.5 mg nightly Parenteral formulation non-formulary | 20 mg/day | 6 hours |  |
|  | Ziprasidone (Geodon<sup>®</sup>) | PO: 20 mg every 12 hours IM: 10 mg every 2 hours PRN or 20 mg every 4 hours PRN | PO: 160 mg/day IM: 40 mg/day | PO: 6-8 hours IM: ≤ 60 minutes |  |

ODT = oral disintegrating tablet
APPENDIX E: Medications for Management of Delirium in Critical Care Unit Only

<table>
<thead>
<tr>
<th>Therapeutic Class</th>
<th>Medication</th>
<th>Typical Initial Infusion Rate</th>
<th>Recommended Maximum Infusion Rate</th>
<th>Onset of Action</th>
<th>Comments/Cautions/Adverse Reactions</th>
</tr>
</thead>
</table>
| Alpha Agonist     | Dexmedetomidine (Precedex®) | IV infusion: 0.2 mcg/kg/hour  | 1.4 mcg/kg/hour                  | Immediate       | ● Refer to Critical Care Sedation for Mechanically Ventilated Adult Patients order set for treatment of delirium in mechanically ventilated patients  
● Refer to ICU Dexmedetomidine for Non-Mechanically Ventilated Patients order panel for treatment of delirium in non-mechanically ventilated patients  
● Caution with use of > 0.7 mcg/kg/hour in non-mechanically ventilated patients  
● Bradycardia, hypotension  
● Do not use if heart rate < 60 bpm or MAP < 65 mmHg |
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SUGGESTED READINGS


Continued on next page
SUGGESTED READINGS - continued


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