Delirium – Adult Inpatient

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

INITIAL PRESENTATION/ASSESSMENT

- Delirium screening by nursing on admission and every shift utilizing the 3D-CAM
- Critical Care Unit to screen at the end of each shift utilizing the ICDSC
- ACCC to screen at time of triage utilizing the DTS
- Screening for Supportive Care patients to be completed by the Supportive Care team utilizing the MDAS

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
  - 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

Positive screen?

- Notify Primary or on-call Team
- For ACCC, notify Clinical Coordinator or ACCC Provider
- See Appendix C for Safety and Environmental Interventions and implement as indicated

Yes

- Continue delirium screening
- See Appendix C for Safety and Environmental Interventions and implement as indicated

No

- Notify Primary or on-call Team

See Page 2

3D-CAM = three dimensional Confusion Assessment Method
ACCC = Acute Cancer Care Center
DTS = Delirium Triage Screen
ICDSC = Intensive Care Delirium Screening Checklist
MDAS = Memorial Delirium Assessment Scale

1 See Appendix A for clinical features of delirium
2 See Appendix B for risk factors and contributing factors
3 For P4 pilot only

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INTERVENTIONS

Patient with confirmed diagnosis of delirium1,2,3

Hypoactive2,3

Hyperactive2,7 or Mixed2,8

Potential medical emergency

● Correct contributing factors (see Appendix B)
● Continue with safety and environmental interventions (see Appendix C)
● Monitor airway, breathing, and risk of aspiration
● Consider specialty consultation4

Response5?

Yes

No

● Continue to assess and monitor as appropriate

EVALUATION AND INTERVENTIONS

● Select medications as appropriate (see Appendix D and E)
● Consider specialty consultation4

Response5?

Yes

No

● Continue interventions and monitor as appropriate
● Reduce pharmacologic treatment as indicated6

Consider specialty consultation4

● Select medications as appropriate (see Appendix E)
● Consider specialty consultation4

Response5?

Yes

No

● Continue interventions and monitor as appropriate
● Reduce pharmacologic treatment as indicated6

Consider specialty consultation4

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 Chronic use of antipsychotic therapy may not be indicated in the absence of underlying psychiatric conditions (e.g., schizophrenia)
7 Hyperactive clinical features include hallucinations, agitation, restlessness, combative ness, pulling at catheters and/or tubes
8 Mixed clinical features include fluctuations between hyperactive and hypoactive delirium

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Department of Clinical Effectiveness V2

Approved by the Executive Committee of the Medical Staff on 03/23/2021
APPENDIX A: Clinical Features of Delirium

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

### Patient Characteristics
- Age > 70 years
- Sensory impairment

### Metabolic Disturbance
- Hypoxia
- Hypercapnia
- Hypo or Hyperglycemia
- Hypo or Hypernatremia
- Hypercalcemia
- Impaired liver function and/or kidney function

### Drugs
- Polypharmacy
- Medications with anticholinergic effects\(^1,^2,^3\) (e.g., scopolamine, promethazine, prochlorperazine, diphenhydramine, hydroxyzine, oxybutynin, hycoscyamine, tricyclic antidepressants)
- Opioids
- Benzodiazepines
- Zolpidem, eszopiclone, zaleplon
- Cyclobenzaprine, baclofen
- Anticonvulsants (e.g., phenytoin, phenobarbital, levetiracetam)
- Corticosteroids (e.g., methylprednisolone, prednisone)
- Histamine-type 2 receptor antagonist (e.g., famotidine)
- Digoxin (particularly with elevated blood levels)
- Anti-Parkinson agents
  - Anticholinergics\(^1\) (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

### Pain Management
- Unrelieved pain

### 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
- Direct and indirect effects of primary brain tumors
- Central nervous system metastasis
- 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)
- History of cognitive impairment including dementia
- 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

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

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**APPENDIX C: Safety and Environmental Interventions**

<table>
<thead>
<tr>
<th>Category</th>
<th>Interventions</th>
</tr>
</thead>
</table>
| Prevent accidental self harm            | • Implement Comprehensive Managed Fall Protection Program as per policy  
• Implement strategies to prevent self removal of lines, tubes, and drains. See interventions for close observation and physical environment.  
• Avoid catheterizations  
• Remove lines, tubes, and drains as soon as indicated  
• Physical restraints if other measures are unsuccessful |
| Close observation                       | • Family  
• Nurse  
• Sitter                                                                                                                                  |
| Physical agitation and physiological instability | • Reassess for consideration of transfer to next level of care                                                                                   |
| Physical environment                    | • Adequate, but not excessive, sensory stimulation  
• Sleep promotion strategies  
  ○ Minimize disruption of sleep-wake cycle  
  ○ Avoid long periods of daytime sleep  
• Lights on during day  
• Maximize mobility  
• Frequent reorientation (use of clocks, calendars, and updates on whiteboard)  
• Address sensory deficits (e.g., eyeglasses, other vision aids such as magnifiers and special lighting, hearing aids, amplifying devices)  
• Address language barriers as indicated through the use of Language Assistance program and provision of language specific patient education materials  
• Night: low level background light and sound (music or television) maintained  
• Family presence                                                                                                       |
| Provide reassurance and education to patient and caregivers | • Communicate and educate about delirium and delirium management  
• Encourage family members to take breaks                                                                   |
### 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>
<tbody>
<tr>
<td><strong>Typical Antipsychotics</strong></td>
<td>Haloperidol (Haldol®)</td>
<td>IV: Age ≥ 65 years: 0.5-2 mg every 6 hours PRN Age &lt; 65 years: 2.5-4 mg every 6 hours PRN PO: Age ≥ 65 years: 0.5-2 mg every 12 hours PRN Age &lt; 65 years: 2.5 mg every 12 hours PRN <strong>Loading regimen for hyperactive delirium:</strong> Age ≥ 65 years: 0.5 mg IV Age &lt; 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</td>
<td>IV: 30 mg/day PO: 30 mg/day</td>
<td>IV: ≤ 20 minutes PO: 1-2 hour(s)</td>
<td>● 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 &gt; 450 ms or increase by 25% or more from baseline ○ Not recommended if QTc &gt; 500 ms ● Extrapyramidal reactions may occur ● May lower seizure threshold ● Neuroleptic malignant syndrome has been reported with antipsychotic administration (manifests as hyperpyrexia, muscle rigidity, autonomic instability) ● May cause hyperglycemia; cases of diabetic ketoacidosis and hyperosmolar coma have been reported ● Orthostatic hypotension, especially upon initiation and titration of therapy ● 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</td>
</tr>
<tr>
<td></td>
<td>Quetiapine (Seroquel®)</td>
<td>PO: 25-50 mg every 12 hours Hepatic impairment: 12.5 mg every 12 hours Age &gt; 60 years: 12.5-25 mg every 12 hours</td>
<td>400 mg/day</td>
<td>1.5 hours</td>
<td>● Likely of greatest benefit as maintenance therapy for hyperactive/mixed delirium; can be considered for hyperactive delirium unresponsive to non-pharmacologic management ● May cause hyperglycemia; cases of diabetic ketoacidosis and hyperosmolar coma have been reported ● 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 &gt; 450 ms or increases by 25% or more from baseline ○ Not recommended if QTc &gt; 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</td>
</tr>
<tr>
<td></td>
<td>Olanzapine (Zyprexa®; Zyprexa Zydis®)</td>
<td>PO/O/T: 2.5-5 mg nightly Age &gt; 60 years: 2.5 mg nightly Parenteral formulation non-formulary</td>
<td>20 mg/day</td>
<td>6 hours</td>
<td>● Likely of greatest benefit as maintenance therapy for hyperactive/mixed delirium; can be considered for hyperactive delirium unresponsive to non-pharmacologic management ● May cause hyperglycemia; cases of diabetic ketoacidosis and hyperosmolar coma have been reported ● 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 &gt; 450 ms or increases by 25% or more from baseline ○ Not recommended if QTc &gt; 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</td>
</tr>
<tr>
<td></td>
<td>Ziprasidone (Geodon®)</td>
<td>PO: 20 mg every 12 hours IM: 10 mg every 2 hours PRN or 20 mg every 4 hours PRN</td>
<td>PO: 160 mg/day IM: 40 mg/day</td>
<td>PO: 6-8 hours IM: ≤ 60 minutes</td>
<td>● Likely of greatest benefit as maintenance therapy for hyperactive/mixed delirium; can be considered for hyperactive delirium unresponsive to non-pharmacologic management ● May cause hyperglycemia; cases of diabetic ketoacidosis and hyperosmolar coma have been reported ● 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 &gt; 450 ms or increases by 25% or more from baseline ○ Not recommended if QTc &gt; 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</td>
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**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 |
SUGGESTED READINGS

SUGGESTED READINGS - continued


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This practice consensus statement is based on majority opinion of the Delirium experts at the University of Texas MD Anderson Cancer Center for the patient population. These experts included:

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