DELIRIUM
AGS Geriatrics Evaluation and Management Tools (Geriatrics E&M Tools) support clinicians and systems that are caring for older adults with common geriatric conditions.

From the AMERICAN GERIATRICS SOCIETY
Geriatrics Evaluation & Management Tools

BACKGROUND
- Synonyms: acute confusional state, acute mental status change, toxic or metabolic encephalopathy
- Predictor for future cognitive and functional decline as well as diminished lifespan
- Found in 1/3 of hospitalized medical patients older than age 70
- Found in 15% of patients older than age 70 presenting to emergency departments
- Under-recognized: only 12%–35% of all cases recognized in routine care

DIFFERENTIAL DIAGNOSIS
- NOTE: The concept of "differential diagnosis of delirium/dementia/depression" can be misleading—conditions may coexist and are risk factors for one another.
- To distinguish between delirium, dementia, and depression, the clinician must ascertain the patient’s baseline status and the timeframe of cognitive changes. Information from family members and caregivers can be essential.

HISTORY OF PRESENT ILLNESS
- DSM-5 criteria for delirium highlight that it is an acute and fluctuating syndrome of impaired attention and awareness.
- Patients at risk for delirium should be screened at least daily.
- Time course of the changes in mental status and their association with other symptoms or events (eg, fever, shortness of breath, medication change) should be documented.
- Systematic reviews recommend the Confusion Assessment Method (CAM) as the most useful bedside assessment tool for delirium.
- 3D-CAM is a brief diagnostic tool that is highly sensitive and specific for diagnosing delirium in hospitalized patients.
- The CAM-ICU is an adaptation for intubated patients only that does not require verbal responses.
- The CAM-S is a validated delirium severity measure that does not diagnose delirium but can be used in conjunction with a CAM diagnostic tool to quantify the intensity of delirium symptoms.

Confusion Assessment Method (CAM): Diagnosis requires #1 and #2 and either #3 or #4.

1. Acute change in mental status and fluctuating course:
   - Is there evidence of an acute change in cognition from the patient’s baseline?
   - Does the abnormal behavior fluctuate during the day (tend to come and go, or increase or decrease in severity)?

2. Inattention: Does the patient have difficulty focusing attention? Can use one of the following tests for attention:
   - Digit span up to 5 forward, 4 backward
   - "World" backward
   - Days of the week backward, months of the year backwards
   - Continuous performance task such as "Vigilance A"

3. Disorganized thinking: Is the patient's thinking disorganized or incoherent (rambling or irrelevant conversation, unclear or illogical flow of ideas, unpredictable switching from subject to subject)?

4. Altered level of consciousness: Is the patient's mental status anything other than alert (vigilant, lethargic, stuporous, comatose)?

PREDISPOsing AND PRECIPITATING FACTORS
- As the number or severity of predisposing factors for delirium increase, a decreased number or reduced severity of precipitating factors are required to initiate delirium.
- Precipitating factors: advanced age, dementia, prior delirium, dependency in activities of daily living (ADLs), medical comorbidities, history of alcohol abuse, male gender, diminished vision and/or hearing

Precipitating Factors (Mnemonic for Some Causes of Delirium)

Drugs
- Any new additions, increased dosages, or interactions
- Consider over-the-counter drugs and alcohol
- Consider especially high-risk drugs (see "Medications," next page)

Electrolyte disturbances
- Especially dehydration, sodium imbalance
- Thyroid abnormalities

Lack of drugs
- Withdrawal from chronically used sedatives, including alcohol and sleeping pills
- Uncontrolled pain

Infection
- Especially respiratory, skin, and urinary tract infections

Reduced sensory input or mobility
- Poor vision, poor hearing
- Use of restraints, bedbound status

Intracranial
- Rare: consider only if new focal neurologic findings or suggestive history, or diagnostic evaluation is otherwise negative
- Infection, hemorrhage, tumor, stroke

Urinary, fecal
- Urinary retention ("cystocerebral syndrome")
- Urinary catheterization
- Fecal impaction

Myocardial, pulmonary
- Myocardial infarction, arrhythmia, exacerbations of congestive heart failure or COPD, hypoxia

Surgery
- Incidence of delirium:
  - 15% after elective noncardiac surgery
  - Up to 50% after cardiac bypass, abdominal aortic aneurysm or hip fracture repair

NOTE: Failure to diagnose/manage delirium leads to costly, life-threatening complications; loss of function and independence; and increased risk of death.

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FOLLOW-UP

- Symptoms of delirium may persist for weeks to months in a substantial portion of affected individuals.
- An episode of delirium is a risk factor for subsequent episodes: documentation is critical.
- A history of delirium is a risk factor for dementia: education and follow-up are important.

PHYSICAL EXAMINATION

- Vital signs, including oxygen saturation
- Thorough physical examination with focus on neurologic and mental status examination; both hyperactive and hypoactive subtypes are described.

MEDICATIONS

Alcohol, anticholinergics (oxybutynin, benztrapine), anticonvulsants (primidone, phenobarbital, phenytoin), antidepressants (amitriptyline, imipramine, doxepin), antihistamines (diphenhydramine), anti-inflammatory agents (prednisone), antiparkinsonian agents (levodopa-carbidopa, dopamine agonists, amantadine), antipsychotics, barbiturates, benzodiazepines (triazolam, alprazolam, diazepam, flurazepam, chloridazepoxide), H₂-antagonists (cimetidine, ranitidine), opioid analgesics (especially meperidin)

DIAGNOSTIC TESTS (BASED ON HISTORY AND PHYSICAL)

- Complete blood count
- Thyroid function test
- Serum drug levels
- Chest radiograph
- Cerebral imaging rarely helpful, except with head trauma or new focal neurologic findings.
- EEG and CSF analysis rarely helpful, except with associated seizure activity or signs of meningitis.

PREVENTION/ MANAGEMENT STRATEGIES

- Strategies to prevent and manage delirium are often the same, but prevention of delirium leads to better patient outcomes than management once delirium has occurred.
- There is insufficient evidence to recommend for or against the use of antipsychotic medications prophylactically in older patients to prevent delirium.
- Multifactorial approach to management is most successful because multiple factors contribute to delirium; thus, multiple interventions, even if individually small, can yield marked clinical improvement.

<table>
<thead>
<tr>
<th>Step</th>
<th>Key Issues</th>
<th>Proposed Treatment</th>
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<tbody>
<tr>
<td>1. Identify and treat reversible contributors</td>
<td>Medications</td>
<td>Reduce or eliminate offending medications, or substitute less psychoactive medications.</td>
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<td></td>
<td>Infections</td>
<td>Treat common infections: urinary, respiratory, soft tissue.</td>
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<td></td>
<td>Fluid balance disorders</td>
<td>Assess and treat dehydration, heart failure, electrolyte disorders.</td>
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<td>Impaired CNS oxygenation</td>
<td>Treat severe anemia (transfusion), hypoxia, hypotension.</td>
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<td>Severe pain</td>
<td>Assess and treat; use local measures and scheduled pain regimens that minimize opioids; avoid meperidin.</td>
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<td>Sensory deprivation</td>
<td>Use eyeglasses, hearing aid, portable amplifier; clear cerumen.</td>
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<td></td>
<td>Elimination problems</td>
<td>Assess and treat urinary retention and fecal impaction. Prevent constipation.</td>
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<tr>
<td>2. Maintain behavioral control</td>
<td>Pharmacologic interventions</td>
<td>Teach hospital staff appropriate interaction with delirious patients; encourage family visitsations.</td>
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<tr>
<td>3. Anticipate and prevent or manage complications</td>
<td>Behavioral interventions</td>
<td>Implement scheduled toileting program; avoid physical restraints; mobilize with assistance; use physical therapy.</td>
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<td>Mobilize; reposition immobilized patient frequently and monitor pressure points.</td>
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<td>Implement a nonpharmacologic sleep protocol; avoid sedatives.</td>
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<td>Assist with feeding; use aspiration precautions; provide nutritional supplementation as necessary.</td>
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<td>4. Restore function in delirious patients</td>
<td>Hospital environment</td>
<td>Reduce clutter and noise (especially at night); provide adequate lighting; have familiar objects brought from home.</td>
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<td>Cognitive reconditioning</td>
<td>Have staff reorient patient to time, place, person at least three times daily.</td>
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<td>Ability to perform ADLs</td>
<td>As delirium clears, match performance to ability.</td>
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<td>Family education/support/participation</td>
<td>Provide education about delirium, its causes and reversibility, how to interact, and family's role in restoring function.</td>
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<td>Discharge</td>
<td>Because delirium can persist, provide for increased ADL support; follow mental status changes as &quot;barometer&quot; of recovery.</td>
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PHARMACOLOGIC THERAPY OF AGITATED DELIRIUM

- Treatment with pharmacologic agents (eg, antipsychotics) should only be employed in patients who are severely agitated or distressed, and are threatening substantial harm to self and/or others when behavioral interventions have failed or are not possible.
- The lowest dose of the least toxic pharmacologic agent should be used for the shortest possible time and discontinued when target symptoms are no longer present.
- Indications for pharmacologic interventions should be clearly identified and documented, and need for ongoing use should be reassessed daily with in-person examination of patients.
- Cholinesterase inhibitors should not be newly prescribed to prevent or treat delirium.

<table>
<thead>
<tr>
<th>Agent</th>
<th>Class of Action</th>
<th>Dosage</th>
<th>Benefits</th>
<th>Adverse Events</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haloperidol</td>
<td>Antipsychotic</td>
<td>0.25–1 mg po, IM, or IV q4h prn agitation</td>
<td>Relatively nonseating; few hemodynamic effects</td>
<td>EPS, especially if &gt;3 mg/d</td>
<td>Usually agent of choice</td>
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<tr>
<td>Olanzapine</td>
<td>Antipsychotic</td>
<td>2.5–5 mg po or IM q12h, max dosage 20 mg q24h</td>
<td>Fewer EPS than haloperidol</td>
<td>More sedating than haloperidol</td>
<td>Small case series only; oral formulations less effective for acute management</td>
</tr>
<tr>
<td>Quetiapine</td>
<td>Antipsychotic</td>
<td>25–50 mg po q12h</td>
<td>Fewer EPS than haloperidol</td>
<td>More sedating than haloperidol; hypotension</td>
<td>Small case series</td>
</tr>
<tr>
<td>Risperidone</td>
<td>Antipsychotic</td>
<td>0.25–1 mg po q4h prn agitation</td>
<td>Similar to haloperidol</td>
<td>Might have slightly fewer EPS</td>
<td>Case series only</td>
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<tr>
<td>Lorazepam</td>
<td>Benzodiazepine</td>
<td>0.25–1 mg po or IV q8h prn agitation</td>
<td>Use in sedative and alcohol withdrawal, and history of neuroleptic malignant syndrome</td>
<td>More paradoxic excitation, respiratory depression than haloperidol</td>
<td>Second-line agent, except in specific cases noted</td>
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</tbody>
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NOTE: EPS = extrapyramidal symptoms; OL = off-label use

a The FDA requires a “black box” warning for all second-generation antipsychotics because of the increased risk of cerebrovascular events and mortality in patients with dementia. First-generation antipsychotic agents also have an FDA “black box” warning regarding an increase in all-cause mortality among patients with dementia.