

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

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)?

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Inouye SK, vanDyck CH, Alessi CA, et al. Clarifying confusion: the confusion assessment method. A new method for detection of delirium. *Ann Intern Med.* 1990;113(12):941–948.

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.
- **Predisposing 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ Especially dehydration, sodium imbalance ▪ Thyroid abnormalities
Lack of drugs	<ul style="list-style-type: none"> ▪ Withdrawal from chronically used sedatives, including alcohol and sleeping pills ▪ Uncontrolled pain
Infection	<ul style="list-style-type: none"> ▪ Especially respiratory, skin, and urinary tract infections
Reduced sensory input or mobility	<ul style="list-style-type: none"> ▪ Poor vision, poor hearing ▪ Use of restraints, bedbound status
Intracranial	<ul style="list-style-type: none"> ▪ Rare: consider only if new focal neurologic findings or suggestive history, or diagnostic evaluation is otherwise negative ▪ Infection, hemorrhage, tumor, stroke
Urinary, fecal	<ul style="list-style-type: none"> ▪ Urinary retention ("cystocerebral syndrome") ▪ Fecal impaction ▪ Urinary catheterization
Myocardial, pulmonary	<ul style="list-style-type: none"> ▪ Myocardial infarction, arrhythmia, exacerbations of congestive heart failure or COPD, hypoxia
Surgery	<ul style="list-style-type: none"> ▪ Incidence of delirium: <ul style="list-style-type: none"> ▪ 15% after elective noncardiac surgery ▪ Up to 50% after cardiac bypass, abdominal aortic aneurysm or hip fracture repair

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, benzotropine), 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, chlordiazepoxide), H₂-antagonists (cimetidine, ranitidine), opioid analgesics (especially meperidine)

DIAGNOSTIC TESTS (BASED ON HISTORY AND PHYSICAL)

- Complete blood count
- Thyroid function test
- Serum drug levels
- Chest radiograph
- Complete metabolic panel
- Urinalysis
- Arterial blood gases
- ECG
- Serum calcium
- Blood cultures
- Ammonia
- Blood alcohol levels
- 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:

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

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.

Agent	Class of Action	Dosage	Benefits	Adverse Events	Comments
Haloperidol ^{OL}	Antipsychotic	0.25–1 mg po, IM, or IV q4h prn agitation	Relatively nonsedating; few hemodynamic effects	EPS, especially if >3 mg/d	Usually agent of choice ^a
Olanzapine ^{OL}	Antipsychotic	2.5–5 mg po or IM q12h, max dosage 20 mg q24h (cannot be given by IV infusion)	Fewer EPS than haloperidol	More sedating than haloperidol	Small case series only ^a ; oral formulations less effective for acute management
Quetiapine ^{OL}	Antipsychotic	25–50 mg po q12h	Fewer EPS than haloperidol	More sedating than haloperidol; hypotension	Small case series ^a
Risperidone ^{OL}	Antipsychotic	0.25–1 mg po q4h prn agitation	Similar to haloperidol	Might have slightly fewer EPS	Case series only ^a
Lorazepam ^{OL}	Benzodiazepine	0.25–1 mg po or IV q8h prn agitation	Use in sedative and alcohol withdrawal, and history of neuroleptic malignant syndrome	More paradoxical excitation, respiratory depression than haloperidol	Second-line agent, except in specific cases noted

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.

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.