

Assessment to determine the cause(s) of delirium

- Careful history with collateral information and a complete physical examination.
- Special attention should be paid to those conditions and treatments (including medications) that are most likely to contribute to delirium.
- Neuroimaging usually not required unless there is recent head trauma, fall, anticoagulant use, new focal neurologic findings, unexplained fever, signs of increased intracranial pressure (e.g., new headaches, vomiting, altered mental status, papilledema) or no cause found after a thorough evaluation.

Investigations to consider

- Complete blood count (CBC)
- Biochemistry – calcium, albumin, creatinine, urea, electrolytes, liver function tests, glucose
- Thyroid function tests (e.g., TSH)
- Blood culture
- Oxygen saturation or arterial blood gases
- Urine culture if there are lower urinary tract symptoms, suspected sepsis, advanced dementia, and/or indwelling catheter
- Chest X-ray
- Electrocardiogram (ECG)
- Other investigations may be indicated based on person’s presentation

Management

A. Treat underlying predisposing/precipitating causes

- Treat all correctable contributing causes.
- Withdraw with tapering if necessary drugs suspected of contributing to delirium whenever possible (if not, use lowest possible dose). See “High-Risk Meds” table.
- If infection suspected, start antibiotics promptly.
- Ensure cardiovascular stability, adequate oxygenation, and fluid/electrolyte balance.
- Ensure bowel and bladder are working well (e.g., urinary retention may increase agitation)
- Monitor nutrition and skin integrity.
- Identify and correct sensory deficits (e.g., hearing aids, eyeglasses).
- Assess and manage pain using safest interventions.
- Support normal sleep patterns and avoid the routine use of sedatives.
- Monitor the older person’s physiological condition/ mental status. Evaluate response to care provided and modify as indicated.
- Ensure the safety of the older patient by close observation if needed. This might be through one-on-one care from staff, hired caregiver, family member (if available), or a trained volunteer.

Select high-risk medications contributing to delirium:

Drug Class	Examples
Sedative – hypnotics	<ul style="list-style-type: none"> • Benzodiazepine Receptor Agonists (e.g., diazepam, zopiclone) • Barbiturates • Antihistamines (e.g., diphenhydramine)
Narcotics	<ul style="list-style-type: none"> • Any opioid can be implicated
Drugs with anticholinergic effects (this is not a comprehensive list)	<ul style="list-style-type: none"> • Antidepressants (e.g., amitriptyline) • Antihistamines (e.g., diphenhydramine) • Antimuscarinics (e.g., oxybutynin) • Antiparkinsonian agents (e.g., benzotropine) • Antipsychotics (e.g., olanzapine) • Antispasmodics (e.g., dicyclomine) • Skeletal muscle relaxants (e.g., cyclobenzaprine) • Cumulative effects of multiple agents
Anticonvulsants	<ul style="list-style-type: none"> • Primidone • Phenytoin
Antiparkinsonian medications	<ul style="list-style-type: none"> • Dopamine agonists • Levodopa-carbidopa • Amantadine

B. Communication/behavioural management

- Identify triggers to agitation and modify the person’s environment and/or delivery of care.
- Attempt to understand the patient’s experience especially if they exhibit psychotic features. Reassurance may help them cope with what they are going through.
- Optimize safety using the least restrictive measures. The use of restraints to control wandering or prevent falls is not justified.
- Encourage the presence of a family member/friend to help calm the patient.
- Mobilize the patient as appropriate.

- Consider the need for interpreters.
- Use clear and simple communication. Avoid confrontation and use distraction to minimize agitation. Provide your name, discipline, and reason for visit at the start of each encounter.
- Provide the affected older person and family with information about delirium.

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Delirium Prevention & Care with Older Adults PDF



C. Environmental considerations

- Minimize room transfers and strive for consistency in staffing.
- Re-orientate (e.g., clocks, calendars, verbally 3+ times/day) and reassure.
- Provide appropriate lighting to reduce misinterpretations and promote sleep.
- Provide objects familiar to the older person to reduce disorientation.
- Ensure the environment is safe for the patient and for others.

Pharmacological management of delirium symptoms

- Management should be individualized with nonpharmacological strategies used first whenever possible.
- Current evidence does not support routine use of antipsychotics for delirium symptoms. Short-term use may be considered in circumstances such as: severe psychological distress; for essential investigations or treatment; or imminent risk of the patient harming themselves or others.
- Use only after carefully assessing potential harms. Because of QTc prolongation risk, an ECG prior to and then during treatment is recommended.

- Prescribe single agent at lowest appropriate dose for the shortest possible duration.
- Document a plan for proposed duration of use with criteria for cessation.
- Choice should be guided by side effect profile and patient comorbidities (see Table).
- Cautious use of low dose quetiapine recommended in those with Parkinson’s disease or Lewy Body Dementia who cannot be managed with non-pharmacological measures.
- Benzodiazepines can exacerbate delirium and should be reserved for those with delirium from alcohol or sedative/hypnotic withdrawal.

Comparison of commonly prescribed antipsychotics used for hyperactive delirium in older adults

Drug	Class	Starting Doses	Routes	Sedation	Risk of EPS	Anticholinergic activity
Quetiapine	Second Generation	6.25 - 12.5 mg	Oral	High	Low	Moderate ¹
Risperidone	Second Generation	0.25 - 0.5 mg	Oral	Low	Moderate	Moderate
Olanzapine	Second Generation	1.25 - 2.5 mg	Oral, IM	High	Moderate	High
Haloperidol	First Generation	0.25 - 0.5 mg	Oral, IM, IV [‡]	Low	High	Low
Loxapine	First Generation	10 mg	Oral, IM	High	Moderate	Moderate

IM=intramuscular, IV= intravenous, EPS= extrapyramidal symptoms. ¹At high doses (>100 mg) not typically used for delirium. [‡]Substantial risk of QT prolongation with IV use
 Adapted from Reppas-Rindlisbacher C, Wiesenfeld L, Stall NM. Antipsychotic medications for older adults with delirium admitted to hospital. CMAJ 2023. doi: 10.1503/cmaj.230227. (Appendix 1)

Delirium Assessment and Treatment of Older Adults

Based on: CCSMH National Guidelines: The Assessment and Treatment of Delirium (2006, updated 2014)

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Key Messages

- Delirium is a common medical emergency encountered by older persons.
- It has multiple potential causes with predisposing, precipitating and perpetuating factors.
- Delirium can be prevented. Awareness of modifiable risk factors is key to this.
- Delirium is often not recognized or is misdiagnosed as dementia or depression.
- Even with early detection, proper assessment, and management delirium can persist for weeks to months if not longer.
- Consider non-pharmacologic interventions first for delirium symptoms - antipsychotics should not be routinely used. They do not prevent or reduce the duration of delirium, can precipitate delirium, and have serious adverse effects.
- The use of physical restraints should be minimized as they can increase agitation and precipitate delirium.
- An interdisciplinary approach is required for effective management.

Canadian Coalition for Seniors' Mental Health
(www.ccsmh.ca)

Download free copies of the National Guideline on the Assessment and Treatment of Delirium and other evidence-based delirium resources.

[Sources are available upon request.]



Part 1: Diagnosis, Prevention, Screening, Common Causes

Core features of delirium based on the DSM-V-TR are:

- Disturbance in attention (i.e., reduced ability to direct, focus, sustain, and shift attention) and awareness (reduced orientation to the environment).
- The disturbance develops over a short period of time (usually hours to a few days), represents an acute change from baseline attention and awareness, and tends to fluctuate in severity during the course of a day.
- An additional disturbance in cognition (e.g., memory deficit, disorientation, language, visuospatial ability, or perception).

Delirium can occur as a consequence of another medical condition, substance intoxication, substance withdrawal, medication side effect, or due to multiple etiologies. It is not always possible to establish the specific etiology in an older person.

Delirium subtypes

- Hyperactive:** individuals are restless, agitated, hyperalert, often psychotic (delusions, hallucinations), and can resist care.
- Hypoactive:** individuals appear lethargic, drowsy, apathetic, quiet, respond slowly to questions and have decreased spontaneous movement. This type can be easily missed.
- Mixed:** individuals present with a mixture of hyperactive and hypoactive characteristics.

Delirium duration

- Acute:** lasting a few hours or days.
- Persistent:** lasting weeks or months

Screening instruments

The **3D-CAM** (flowchart follows) as a delirium screening instrument and diagnostic aid is recommended. A positive UB-CAM can be used to determine if the full 3D-CAM should be administered (UB-CAM is positive if the older person is unable to provide the correct day of the week and/or correctly list the months of the year backwards).

To help assess alcohol withdrawal delirium:

- The Clinical Institute Withdrawal Assessment for Alcohol (CIWA-Ar)

Screening tools must be interpreted within a clinical context and do not in themselves diagnose delirium. In more complex cases, consider additional measures to evaluate neurocognitive status and/or a referral to a specialist.



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The UB-CAM



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The Clinical Institute Withdrawal Assessment for Alcohol (CIWA-Ar)

Feature 1: Acute Change/Fluctuating Course

Any **ONE** of the following present?*

Assessment questions: Self report of confusion OR disorientation OR hallucinations

Observed fluctuations in: Consciousness OR attention OR speech

3D-CAM Flow Diagram

YES/NO

Feature 2: Inattention

Any **ONE** of the following present?

Assessment questions incorrect: Digit Span 3 backwards OR 4 backwards OR days of the week backwards OR months of the year backwards

Observed: Trouble keeping track of interview or inappropriately distracted

NO

Delirium not present

YES

Feature 3: Disorganized thinking

Any **ONE** of the following present?

Assessment questions incorrect: Orientation to the year, day of week, type of place

Observed: Flow of ideas unclear/illogical, conversation rambling/off target or abnormally sparse

YES

Delirium present (only if the first box feature 1 is a yes. If not, see last box).

NO

Feature 4: Altered Level of Consciousness

Any **ONE** of the following present?

Observed: Patient sleepy, stuporous, comatose and/or hypervigilant

YES

Delirium not present

***Feature 1 Supplementary Questions:** To be asked only if feature 2 is present and either feature 3 or feature 4 is present, but feature 1 is uncertain:

Contact a family member, friend or health care provider and ask, "Is there evidence of acute (sudden) change in mental status (memory or thinking) from the patient's baseline?" **OR**
If 2nd day of hospitalization or later and previous 3D-CAM ratings are available: Has there been an acute change in performance, based on ANY new "positive" items?

YES

Delirium present

Common Causes of Delirium

Vulnerable individuals (e.g., those with dementia or severe underlying illness) may develop delirium with a relatively benign insult. Those at low vulnerability would require a more noxious one.

Cause	Example
Drug-induced	(See "High-Risk Meds" table)
Alcohol and drug withdrawal	Alcohol, sedative-hypnotics (see "High-Risk Meds" table)
Post-operative delirium	Cardiac surgery, orthopedic surgery
Infections	Lower respiratory tract infection, symptomatic urinary tract infection
Fluid-electrolyte disturbance	Dehydration/hypovolemia
Metabolic/endocrine	Uremia, hepatic encephalopathy, hypo/hyperglycemia, hypo/hyperthyroidism, adrenal insufficiency, hypercalcemia
Cardiogenic hypoperfusion and/or hypoxia	Congestive heart failure/pulmonary edema, shock, respiratory failure
Intracranial	Stroke, head injury, cerebral edema, hematoma, meningitis, seizures
Sensory/environmental	Visual/hearing impairment, physical restraint use, bladder catheter use, setting (ED, ICU)

Reproduced with permission from Palihnich K, Gallagher, J, Inouye SK, Marcantonio ER. The 3D CAM Training Manual for Research. Version 4.1. 2016; Boston: Hospital Elder Life Program. The 3D-CAM Training Manual is available from the American Delirium Society

Interventions to Prevent Delirium:

- Avoid adding/cautiously tapering certain meds (e.g., opioids and psychotropics) and discontinue inappropriate or unnecessary medications.
- Use a standardized and staged approach to control pain.
- Support normal sleep patterns and avoid the use of sedatives.
- Regulate bowel/bladder function; avoid indwelling catheters.
- Promote early detection and management of post-operative complications.
- Follow *least restraint* approach to minimize the use of restraints.
- Encourage safe mobility.
- Maintain hydration and promote early recognition of dehydration.
- Provide oxygen for hypoxia.
- Ensure adequate nutritional intake.
- Provide reorientation and/or cognitively stimulating activities.
- Use aids if needed to optimize vision and hearing.



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