

# Delirium in hospitalized older adults

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## Abstract

Delirium is a serious and common yet underdetected syndrome characterized by acute deterioration of mental status. Patients show attentional deficits and commonly also altered levels of arousal and psychotic features. The underlying mechanisms remain poorly understood. Delirium is associated with multiple adverse outcomes including patient and carer distress, increased length of hospital stay, risk of future dementia, new institutionalization and death. Old age and existing dementia are the main predisposing factors, but there are a number of modifiable risk factors that are important within hospital environments. Treatment involves identifying acute causes (often multiple) and optimizing conditions for the brain. Distress should be detected and managed. The risk of developing delirium in hospital can be reduced by a third through a targeted multicomponent set of actions.

**Keywords** Confusion; delirium; dementia; elderly; older; prevention

## Introduction

Delirium is a serious acute neuropsychiatric syndrome and a common medical emergency. There has been an exponential increase in research interest in this area, stimulated by clear evidence of poor outcomes. These include increased mortality, greater length of hospital stay, loss of independent living and evidence of increased dementia risk.<sup>1,2</sup>

## Definition

Delirium is an acute deterioration in mental status. Many domains can be affected, including attention, other aspects of cognition, level of arousal, perception and mood. However, the cardinal mental abnormality of status is inattention, ranging from patients being barely responsive to external verbal stimuli (i.e. severely reduced level of arousal), to being unable to engage in simple conversation and follow simple commands, to more subtle difficulties in maintaining focus over periods of 10–15 seconds. The time-course of delirium is highly distinctive, in that the onset is hours or days and it commonly fluctuates. Most cases are transient, resolving after a few days, but some persist for weeks or months.

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## Key points

- Delirium is a common and harmful condition that is grossly under-recognized in hospitalized older adults
- It is characterized by acute alterations in arousal and attention that often fluctuate over time
- Routine hospital screening of older patients is recommended, especially as hypoactive delirium is often missed
- Delirium is a risk factor for future dementia and accelerated cognitive decline in existing dementia
- Multidisciplinary multicomponent interventions reduce the risk of developing delirium in hospital
- Treatment of delirium involves identifying acute causes, optimizing conditions for the brain and addressing patient distress
- Antipsychotics may be helpful in those with distress or who are at risk of harm from delirium; use cautiously

The diagnostic criteria of the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5), are shown in [Table 1](#). Delirium can also be classified by psychomotor disturbance, with hyperactive (agitated), hypoactive (drowsy) and mixed forms recognized. Hypoactive delirium is the most common, particularly among elderly patients. Delirium should be distinguished from dementia and depression, which share some features ([Table 2](#)). Consistent use of the word 'delirium', rather than synonyms such as 'acute confusional state' or 'acute-on-chronic confusion', is strongly encouraged to ensure coherent therapeutic approaches and communication among healthcare staff, patients and carers.

## Epidemiology

Delirium is very common in acute hospitals, affecting around 1 in 7 patients. Particular groups are at higher risk, with approximately one-third of postoperative patients and up to 80% of intensive care patients developing delirium. Two-thirds of elderly patients who develop delirium have underlying dementia.<sup>2</sup>

## Risk factors

Increasing age, dementia, stroke disease and multiple comorbidities are non-modifiable chronic risk factors for delirium. However, potentially reversible risk factors should be assessed in every patient ([Table 3](#)). There are multiple potential acute causes, including infections, trauma, surgery, constipation and adverse drug effects, often co-occurring.

## Pathophysiology

The pathogenesis of delirium is not fully understood but is an area of active research interest. There are likely to be multiple

### DSM-5 criteria for delirium

- Disturbance of attention (i.e. reduced focus or concentration) and awareness (i.e. reduced orientation to the environment)
- Acute change from baseline (developing over hours to days) with fluctuation across the course of a day
- An additional disturbance in cognition (e.g. memory deficit, hallucinations) not accounted for by pre-existing dementia
- Not better explained by an existing neurocognitive disorder or coma
- Evidence from history, physical examination or laboratory investigations that the disturbance is a consequence of a general medical condition, substance intoxication or withdrawal, exposure to a toxin or multiple aetiologies

**Table 1**

mechanisms rather than a ‘final common pathway’. Direct brain insults such as hypoxia, hypercapnia, hypoglycaemia and drug intoxication can cause widespread brain dysfunction and delirium. However, the routes from peripheral infections (e.g. urinary tract) to delirium are unclear. Several pathways have been proposed, such as an acute stress model in which impaired feedback regulation prolongs high cortisol concentrations predisposing to delirium. Other theories include central nervous system (CNS) inflammation and neurotransmitter imbalances. Cholinergic deficiency has been linked to delirium, and common anticholinergic medications appear to be important modifiable risk factors.

### Diagnosis

Delirium is often overlooked in hospital settings. Hypoactive patients, who may be quiet and apathetic, are at particularly high risk of delay in diagnosis and management. Admission assessment for delirium in hospitalized older patients is therefore recommended. The 4AT ([www.the4AT.com](http://www.the4AT.com)) is a rapid tool in wide use that can administered without specific training and identifies delirium in patients who may be ‘unstable’ using other tools. Several other tools are also available.<sup>3</sup>

### Clinical features

By definition, all delirium is of acute onset. Establishing baseline cognition and behaviour by collateral history (or prior

### Potentially modifiable risk factors in delirium

Risk factor	Comment
Intercurrent illness/stress	Any significant physiological insult including: <ul style="list-style-type: none"> <li>• Infection</li> <li>• Vascular compromise (e.g. stroke, myocardial infarction)</li> <li>• Surgery</li> <li>• Anaemia, etc.</li> </ul>
Sensory deprivation	Visual
Metabolic disturbance	Auditory
	Dehydration
	Electrolyte derangement
	Malnutrition
Pain	Often missed in patients unable to communicate symptoms
Medications	Anticholinergics
	Opiates
	Sedatives
	Corticosteroids and others
	Consider drug withdrawal
	Polypharmacy is a risk factor
Constipation	Often missed in patients unable to communicate symptoms
Environment	Sustained sleep deprivation
	Physical restraint
	Emotional distress (e.g. from not understanding what is happening to them)
	Urinary catheterization and immobilization
	Repeated exposure to new environments (e.g. moving wards)

**Table 3**

knowledge of a patient) is important in documenting acute change and fluctuation; however, it is often not available and is not always essential for a working diagnosis. Inattention is a core feature in all patients, although mild cases can temporarily lack this because of fluctuation. Inattention can be evident in conversation, a patient losing track of a topic or being easily distractible. Bedside cognitive testing, such as stating the months

### Features distinguishing between delirium, dementia and depression

Feature	Delirium	Dementia	Depression
Onset	Rapid (hours, days)	Slow	Slow
Course	Often fluctuates	Slowly progressive	Often chronic but can be episodic
Duration	Hours to days (but can be months)	Years	Months
Arousal	Altered (hyperactive, hypoactive, mixed)	Usually normal	Normal
Attention	Significantly impaired	Can be mildly impaired	Can be mildly impaired
Hallucinations	Common (usually visual)	Rare, but can occur (e.g. Lewy body dementia)	Rare
Thought processes	Disorganized	Impoverished	Normal
Reversibility	Often	Rare	Often (but can recur)

**Table 2**

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