Delirium in Elderly

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- Definition
- Epidemiology
- Neuropathophysiology
- Causes
- Types
- Diagnosis
- Management
- Examples

Delirium - Definition

- Sudden onset, fluctuating impairment in cognitive function & consciousness
- Reversible

Delirium is also known as ……

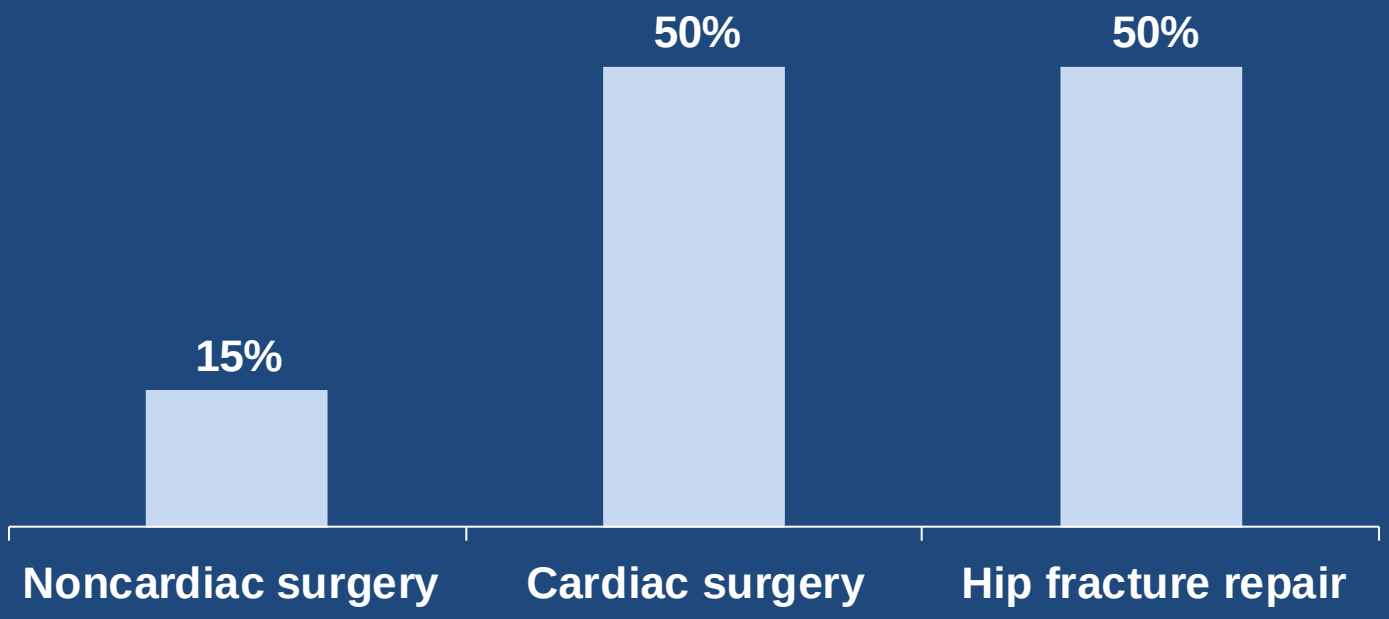
- Acute confusional state
- Acute mental status change
- Altered mental status
- Organic brain syndrome
- Reversible dementia
- Toxic or metabolic encephalopathy

Epidemiology of Delirium

- Very Common in hospitalized patients
  - 10-30% of medically ill patients (esp. in elderly)

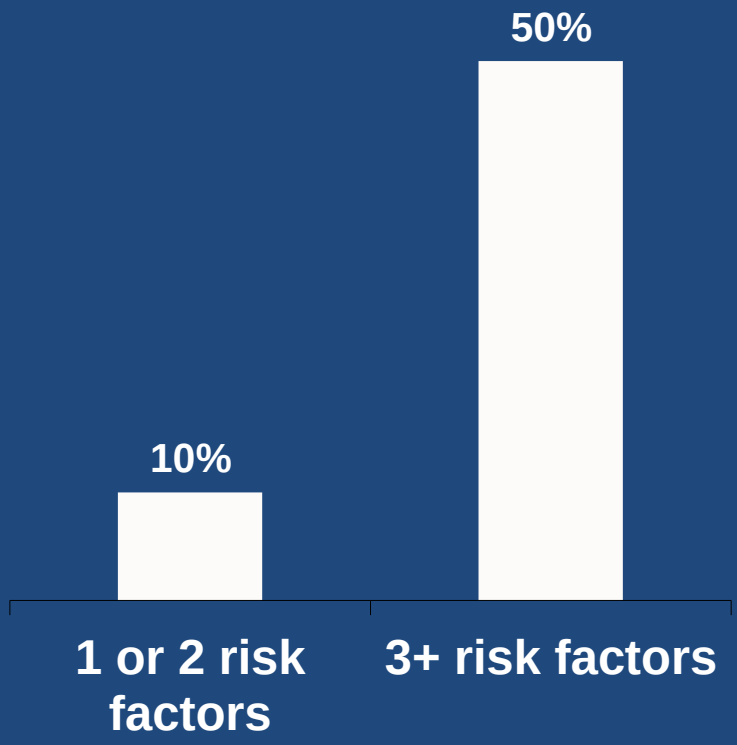
- Incidence of delirium among elderly patients is high
- 1/3 of inpatients aged 70+ on general medical units, half of whom are delirious on admission
- In ICU: more than 75%
- At end of life: up to 85%

Post operative delirium incidence



Increased risk with preoperative risk factors:

- Age over 70
- Cognitive impairment
- Physical functional impairment
- History of alcohol abuse
- Abnormal serum chemistries
- Intrathoracic and aortic aneurysm surgery



Neuropathophysiology

Cholinergic deficiency

- Delirium is caused by anticholinergic drug overdose, reversed by physostigmine
- Acetylcholine is an important neurotransmitter for cognitive processes
- Scales available to measure anticholinergic burden of drug regimens
- Cholinesterase inhibitors have not been effective in preventing/treating delirium

Inflammation

- Especially important in postoperative, cancer, and infected patients
- ↑ C-reactive protein, ↑ interleukin-1β, and ↑ TNF
- Inflammation can break down blood-brain barrier, allowing toxic medications and cytokines access to CNS
- Neuroinflammation may damage neurons, lead to long-term cognitive effects

Causes of Delirium

D Drugs and toxins

E Eyes, ears

L Low O_2 states (MI, ARDS, PE, CHF, COPD, Stroke, Shock)

I Infection

R Retention (of urine or stool), Restraints

I Ictal

U Underhydration, Under nutrition

M Metabolic (hypo/hyper glycemia, calcemia, uremia, liver failure, thyroid disorders)

Other Causes

- Foley catheter
- Invasive procedure
- Sleep deprivation
- Pain

Eight signs of delirium

- **D** disordered thinking
- **E** euphoric, fearful, depressed or angry
- **L** language impaired
- **I** illusion, delusion, hallucination
- **R** reversal of sleep-awake cycle
- **I** inattention
- **U** unaware/ disorientated
- **M** memory deficits

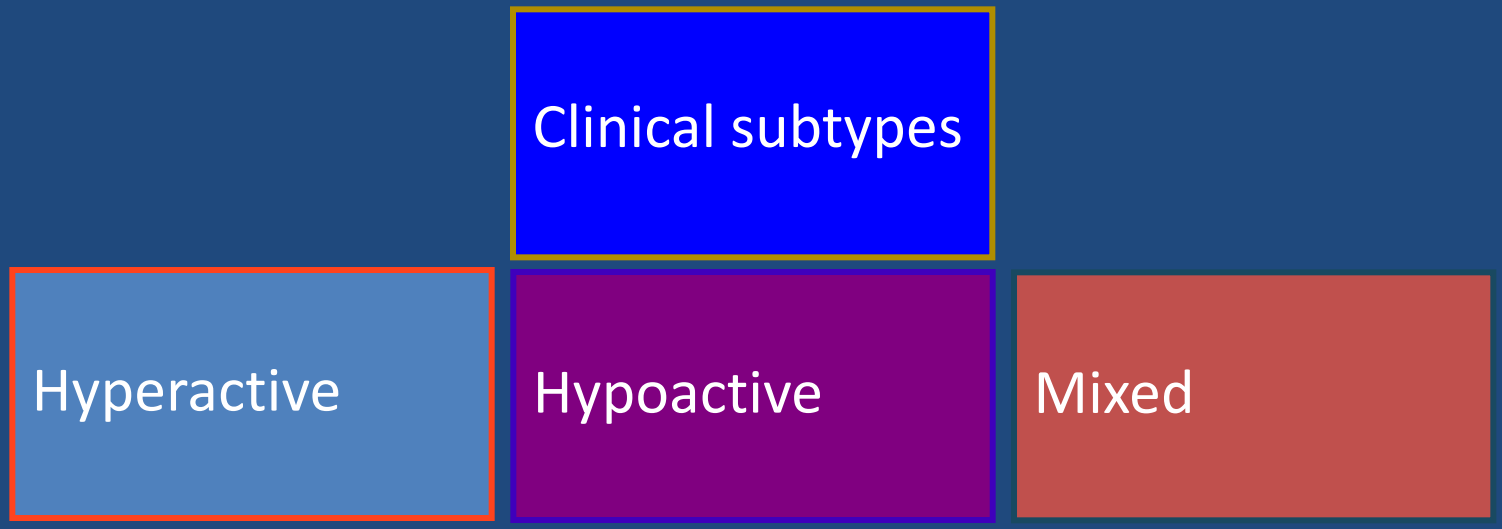
Delirium Vs Dementia

Characteristic	Acute confusional state	Dementia
Onset	Sudden	Insidious
Course over 24 h	Fluctuating, nocturnal exacerbation	Stable
Consciousness	Reduced	Clear
Attention	Globally disordered	Normal, except in severe cases
Orientation	Usually impaired	Often impaired
Cognition	Globally impaired	Globally impaired
Hallucinations	Usually visual, or visual and auditory	Often absent
Delusions	Fleeting, poorly systematised	Often absent
Psychomotor activity	Increased, reduced or shifting unpredictably	Often normal
Speech	Often incoherent, slow or rapid	Difficulty finding words, perseveration
Involuntary movements	Often asterixis or coarse tremor	Often absent
Physical illness or drug toxicity	One or both present	Often absent

Types of delirium

- Hyperactive or hyperalert
  - More easily recognized
  - Tends to be more severe & associated with worse outcomes
- Hypoactive
  - Less recognized but more common
- Can coexist in a single patient overtime

Delirium: Clinical Presentation



Delirium….Why should I care?

- Mortality rate in hospitalized patients 22-76%
- One year mortality rate is 35-40%
- Prolonged hospital course
- Increased cost of care in hospital
- Increases likelihood of disposition to nursing home, functional decline and loss of independence

More reasons to care

- Strong association with underlying dementia
- Frequently, patient may never return to baseline or take months to over a year to do so
- Delirium is often the sole manifestation of serious underlying disease

Diagnosis of Delirium
DSM - IV criteria

- Disturbance of consciousness with reduced ability to focus, sustain, or shift attention
- Change in cognition or a perceptual disturbance not better accounted for by existing dementia
- Development over a short time (hours to days) and fluctuation during the day
- Evidence from history, physical, or labs that the disturbance is a direct physiologic consequence of a medical condition or a drug

- *DSM-IV* criteria precise but difficult to apply
- Confusion Assessment Method (CAM)
  - Clinically more useful
  - >95% sensitivity and specificity
  - Used 10× more frequently than DSM

Confusion Assessment Method (CAM)

1. Acute onset and fluctuating course (mental status changes from hours to days)
2. Difficulty in focusing (easily distracted, unable to follow interview)
3. Disorganized thinking (rambling, irrelevant conversation)
4. Altered level of consciousness (from hyperalert to decreased arousal)

A positive CAM test for delirium requires items 1 & 2 plus either item 3 or item 4.

- Version of CAM for non-verbal patients
- Uses same 4 features as CAM
  - Attention: Vigilance A, Attention Screening Exam
  - Disorganized thinking: Yes/no questions
- Excellent in ICU/non-verbal patients
  - Lower sensitivity in verbal patients

Diagnosis

- Drugs -- for 30% of all cases
- Common culprits
  - Anti-histamines
  - Anti-cholinergics
  - Antibiotics
  - Some antidepressants
  - Dopamine agonists
  - Hypoglycemics
  - Benzodiazepines
  - Opiates

MEDICATIONS

Current drug regimen, doses, frequency

- SE of diuretic causing hyponatremia
- SE of anticholinergic or dopa agonist or steroid causing confusion
- Digoxin, lithium or opiate toxicity
- Addition of new drugs
- Abrupt withdrawal of medication (benzodiazepine , opiate)

Patient

- Poor vision or hearing
- Evidence of old and recent strokes
- Infection – UTI, RTI
- Restrained
- Multiple medications
- ESRD
- Hypoxia

Physical Examination

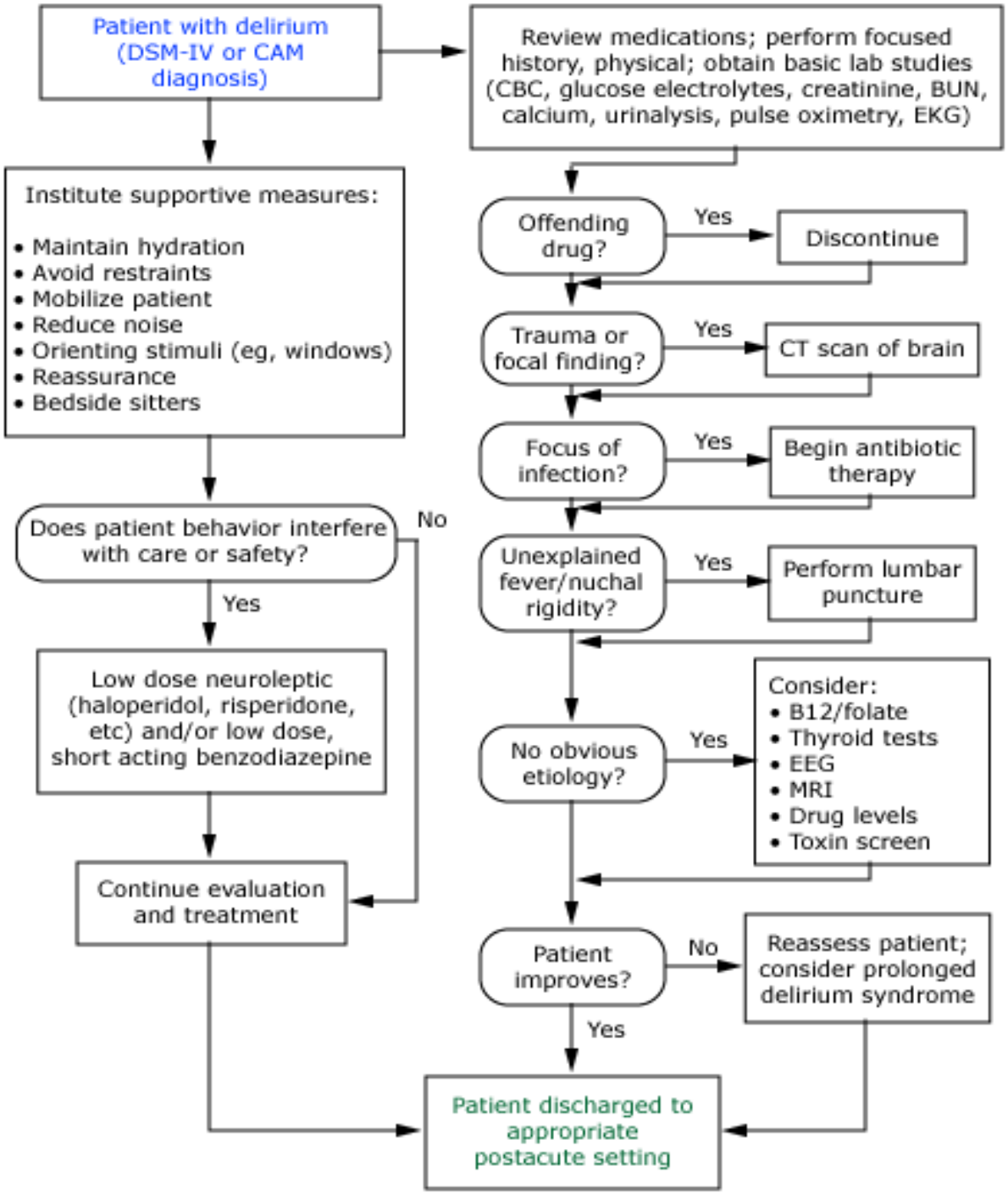
- Exclude
  - Signs of systemic illness
  - Focal neurological abnormalities
  - Meningism
  - Increased ICP
  - Extra cranial cerebrovascular risks
  - Head trauma
- The presence of hyperactivity of ANS may be life threatening because of possible dehydration, electrolyte disturbances or tachyarrhythmias

- Less specific findings of delirium
  - Action or postural tremor of high frequency (8 to 10 Hz)
  - Asterixis
  - Multifocal myoclonus or shock like jerks from diverse sites
  - Choreiform movements
  - Dysarthria
  - Gait instability

- Base on history and physical examination
- Include CBC, electrolytes, renal function tests
- Also helpful: UA, LFTs, serum drug levels, arterial blood gases, chest x-ray, ECG, cultures
- Cerebral imaging rarely helpful, except with head trauma or new focal neurologic findings
- EEG and CSF rarely helpful, except with associated seizure activity or signs of meningitis

Management

- Requires interdisciplinary effort by physicians, nurses, family, others
- Multifactorial approach is most successful because multiple factors contribute to delirium
- Failure to diagnose and manage delirium → costly, life-threatening complications; loss of function


Patient with delirium (DSM-IV or CAM diagnosis)
Review medications; perform focused history, physical; obtain basic lab studies (CBC, glucose electrolytes, creatinine, BUN, calcium, urinalysis, pulse oximetry, EKG)
Institute supportive measures:
• Maintain hydration
• Avoid restraints
• Mobilize patient
• Reduce noise
• Orienting stimuli (eg, windows)
• Reassurance
• Bedside sitters
Offending drug?
Yes
Discontinue
Trauma or focal finding?
Yes
CT scan of brain
Focus of infection?
Yes
Begin antibiotic therapy
Unexplained fever/nuchal rigidity?
Yes
Perform lumbar puncture
No obvious etiology?
Yes
Consider:
• B12/folate
• Thyroid tests
• EEG
• MRI
• Drug levels
• Toxin screen
Does patient behavior interfere with care or safety?
No
Yes
Low dose neuroleptic (haloperidol, risperidone, etc) and/or low dose, short acting benzodiazepine
Continue evaluation and treatment
Patient improves?
No
Reassess patient; consider prolonged delirium syndrome
Yes
Patient discharged to appropriate postacute setting

Social issues in elderly people

- Enquire about premorbid functional status (mobility & level of independence)
- Determine extent of functional deterioration
- Alcohol consumption & recent attempt at cessation

Prognosis

- Variable
- If causative factor is rapidly corrected, recovery can be complete, with average duration of 2 days to 2 weeks
- A partial delirium, with some but not all criteria for delirium, may persist in many elderly patients

Take Home Message

- Delirium is common and associated with substantial morbidity for older people
- Delirium can be diagnosed with high sensitivity and specificity using the CAM
- A thorough history, physical, and focused labs will identify the underlying cause(s) of delirium

- A careful medication review is mandatory; discontinue any agent likely to contribute to delirium, if possible
- Managing delirium involves treating the primary disease, avoiding complications, managing behavioral problems, providing rehabilitation
- The best treatment for delirium is prevention

Example 1

- An 89-year-old woman is admitted to the hospital with a urinary tract infection and change in mental status.
- History includes type 2 diabetes mellitus, depression, and anxiety.
- She moved in with her daughter 8 months ago because of worsening confusion. Her family notes that her short-term memory is impaired and that she has vivid visual hallucinations of children in the house. They are unaware of any specific diagnosis regarding her cognition.

- On examination, temperature is 38°C (100.5°F), BP is 132/78 mmHg, heart rate is 86 beats per minute, and oxygen saturation is 96% on room air.
- Examination is unremarkable except that the patient is unable to recite the months of the year or days of the week forward.
- Although nonpharmacologic treatment is initiated for delirium, the patient becomes severely agitated overnight.

Which of the following is the most appropriate treatment for this patient's agitation?

A. Haloperidol
B. Rivastigmine
C. Quetiapine
D. Trazodone
E. Physical restraints

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Example 2

- A 78-year-old man is admitted to the hospital for elective left total-knee arthroplasty. History includes hypercholesterolemia, obesity, and osteoarthritis.
- He tolerates the surgery without difficulty, but 3 days later he appears somnolent. He falls asleep during breakfast and, even though the nurse converses with him, dozes off during his dressing change. When he is awake, he stares out his window.
- Vital signs and laboratory findings are stable. Neurologic examination is otherwise normal. His surgical wound shows no evidence of infection.

Which of the following is most likely to help establish the diagnosis?

A. Orientation to person, place, and time

B. Orientation to person, place, and time and ability to draw a clock

C. Ability to recite the months of the year or days of the week forward

D. Score on Geriatric Depression Scale

E. Score on visual analogue pain scale

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thank you!