

## Pharmacologic Strategies

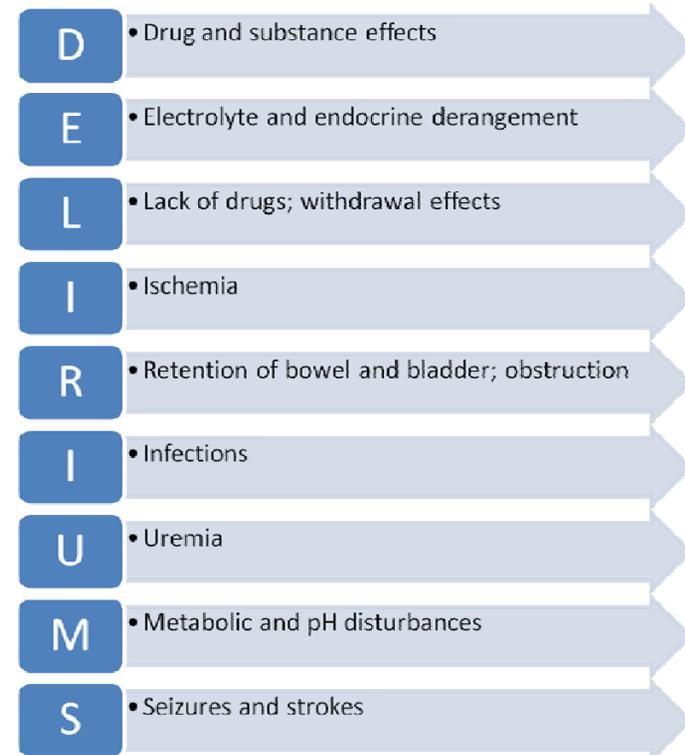
| Drug Class             | Agent       | Dosage                                 | Benefits  | Adverse Effects   |
|------------------------|-------------|--|---|---|
| Typical antipsychotic  | Haloperidol | 0.25 – 1 mg PO or IV Q4h prn agitation | Relatively nonsedating; typically the agent of choice                         | Extrapyramidal symptoms, often when > 3mg per day; prolonged QTc                  |
| Atypical antipsychotic | Olanzapine  | 2.5 – 10 mg PO daily                   | More sedating than haloperidol  | Extrapyramidal effects slightly less than haloperidol; prolonged QTc              |
|                        | Quetiapine  | 25 – 50 mg PO bid                      | Most sedating of the atypicals  | Extrapyramidal effects slightly less than haloperidol; prolonged QTc; hypotension |
|                        | Risperidone | 0.25 – 1 mg PO or IV prn agitation     | Relatively nonsedating with no hypotensive effects                            | Extrapyramidal effects slightly less than haloperidol; prolonged QTc              |
| Benzodiazepine         | Lorazepam   | 0.25 – 1 mg PO or IV tid prn agitation | Use with alcohol withdrawal or with history of neuroleptic malignant syndrome | Paradoxical excitation, respiratory depression                                    |
| Antidepressant         | Trazodone   | 25 – 150 mg QHS                        | Relatively well tolerated in elderly; sedating                                | Over sedation   |

- Pharmacologic mgt should be reserved for pts whose sx of delirium would threaten their own safety or the safety of others, or would result in interruption of essential therapy; none of these drugs are FDA approved for tx of delirium; several studies have concluded **risk of mortality with any agent is > placebo** — *Kales, Am J Psych, 2012*
- In a trial treating young pts with AIDS, haloperidol, chlorpromazine, and lorazepam were equally effective but haloperidol had fewer side effects — *Breitbart, Am J Psych, 1996;*
- Second generation agents not clearly more effective over haloperidol; **some reports suggest mortality risk may be highest with haloperidol; lowest with quetiapine** — *Campbell, JGIM, 2008; Huybrechts, BMJ, 2012*
- All atypical antipsychotics have been tested only in small equivalency trials with haloperidol — *Seitz, J Clin Psych, 2007; Lonergan, Cochrane DSR, 2007*
- Haldol** should be **avoided** in patients with **Lewy body disease and parkinsonism**
- Antipsychotics in higher doses are associated with QT prolongation, torsade de pointes, neuroleptic malignant syndrome, extrapyramidal symptoms, akathisia (motor restlessness), and withdrawal dyskinesias**
- The relationship between degree of QT prolongation and risk of sudden cardiac death is uncertain and **does not appear to directly correlate**

## Approach to Delirium in Hospitalized Patients

### Diagnostic Approach

The figure suggests an easily remembered mnemonic to aid with initial assessment of delirium in the hospitalized patient.



- Delirium affects an estimated 1/3 of hospitalized patients and carries the same morbidity and mortality risk as heart attacks — (1 year post-discharge mortality rates of 35-40%) — *Wilcox, JAMA, 2010*
- The elderly and infirm are always at risk, but don't overlook the less common cohorts — common non-traditional delirium patients include young diabetics and patients with adrenal insufficiency

### Definition of Delirium

An acute state of confusion marked by sudden onset, fluctuating course, inattention, and at times, an abnormal level of consciousness — *Inouye, NEJM, 2006*

Delirium manifestations range from acute agitation (~25%) to hypo-activity.

Although delirium and dementia often co-exist, the former is characterized by acute onset and a waxing/ waning picture, the latter, by a slow insidious progression

## Screening

- Authoritative references indicate delirium — particularly hypoactive delirium — is **often overlooked** particularly in **demented, intubated, and sedated patients**; screening is suggested for hospitalized patients at risk for delirium
- The briefest **screening tool** is the **Confusion Assessment Method (CAM)** — see box for algorithm — *Inouye, Annals, 1990*
- The **clinical features** of delirium include ✓acute onset, ✓fluctuating course, ✓inattention, ✓disorganized thinking, ✓altered consciousness, ✓cognitive deficits, ✓perceptual disturbances, ✓psychomotor disturbances, ✓altered sleep-wake cycle, and ✓emotional disturbances — *Inouye, NEJM, 2006*
- The **risk factors** for delirium include ✓age > 65, ✓cognitive impairment or prior delirium, ✓poor functional status, ✓sensory impairment, ✓decreased oral intake, ✓polypharmacy, and ✓multiple co-existing chronic medical conditions

### CAM Algorithm

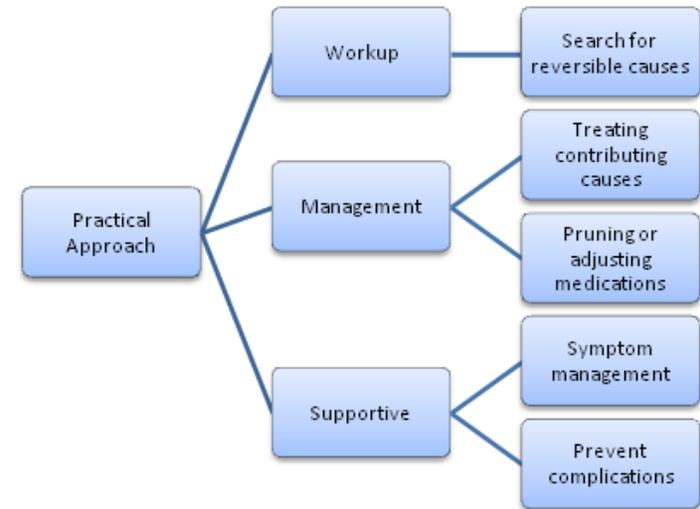
- **Feature 1:** Acute change in mental status with fluctuating course
- **Feature 2:** Inattention
- **Feature 3:** Disorganized thinking
- **Feature 4:** Abnormal level of consciousness

Diagnosis of delirium requires features 1 and 2 and either 3 or 4

## Diagnosis and Etiology

- Delirium is **typically a manifestation of another process** that needs to be identified and addressed — much of the focus is on addressing underlying precipitants
- When searching for a cause, be aware of the **possibility of occult or atypical presentations** of common diseases in the elderly including myocardial infarction, infection, and respiratory failure (i.e. hypoxia)
- A reasonable systematic approach is suggested using the mnemonic on the first page of the handout
- A more comprehensive differential is included at right

- **Drugs**
  - Sedatives, narcotics
  - Anticholinergics
  - Illicit, alcohol, withdrawal
- **Primary neurologic diseases**
  - Stroke, intracranial bleed
  - Meningitis or encephalitis
- **Intercurrent illness**
  - Infections
  - Hypoxia or ischemia
  - Anemia
  - Dehydration and malnutrition
  - Fever or hypothermia
  - Metabolic derangement
- **Surgery**
- **Environmental**
  - Pain
  - Catheters and lines
  - Sensory deprivation
- **Sleep deprivation**



## Medication Adjustment and Review

- Carefully review medications paying particular attention to **benzodiazepines, sedative-hypnotics, medications with strong anticholinergic properties, opioid analgesics, and pro-dopaminergic agents** — *Marcantonio, Annals, 2011*
- **Antihistamines and histamine-2 blocking agents** have anticholinergic properties and should be substituted with alternative agents
- **Antiarrhythmics** interfere with neuronal metabolic physiology
- Try to reduce doses of drugs wherever possible

## Non-Pharmacologic Management Strategies

- Several non-pharmacologic strategies are useful in treatment
- Reorient patient frequently and provide orienting information in room (e.g. clocks, calendars, and familiar objects)
- Use sitters, focus rooms, or cardiac chairs in monitored areas
- Ensure patient has assistive devices like eyeglasses and hearing aids
- Try to optimize mobility using nursing and rehab services
- Normalize sleep-wake cycles by avoiding daytime sleeping and aiming for uninterrupted periods of sleep at night
- Try reassurance, relaxation techniques, massage, and music to reduce agitation

## Supportive Care to Prevent Complications

- Minimize indwelling catheters and other “tethers”
- Mobilize patient as soon as possible and provide skin care to prevent sores
- Monitor I/O to avoid retention or impaction
- Address nutritional and fluid needs
- Protect airway and implement aspiration precautions
- Implement elopement and fall precautions