Delirium in Late Life: A Review

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Disclosure

- I have no conflict of interests to disclose.

- There are no FDA approved medications for the treatment of Delirium and hence all medications discussed today are “Off Label” in their use.
Case

- Ms. B is a 66 yr old single Caucasian woman, a retired RN by profession.
- She was admitted on a Physician’s Emergency Certificate from Middlesex Hospital ER.
- She was sent there from a rehabilitation facility.
- Presenting symptoms were agitation, paranoia, hallucination, poor eating, medication non-compliance, confusion and physical aggression.
- She was also trying to pull out the peripherally inserted central line (PICC).
- The patient has recently been admitted to the rehab facility from Middlesex Hospital.
- She was at Middlesex Hospital for treatment of questionable osteomyelitis and discitis.
Electroencephalogram (EEG) showed possible seizure activity.

CT scan of the brain showed no acute intracranial abnormality.

She has a history of hypercholestrolemia, diabetes mellitus, hypertension, chronic kidney disease, spinal stenosis, valvular heart disease-and replacement, neuropathy.

Psychiatry history was significant for delirium, pain medication abuse and Ephedra abuse.

At admission, she was being treated with Cymbalta, lactulose, Keppra, Senna, Actos, Fragmin, Zocor, Lopressor, MS-Contin, IV Rocephin, Dilaudid, Zofran, Lidoderm.

At admission she was very confused, restless and agitated. She was not able to give much clinically meaningful information.


Abnormal lab work were, a creatinine of 2.6 mg%, creatinine clearence of 30.6, GFR of 24, albumin lvl of 3.3 gm% and HbA1c of 6.4%.

She was given IV fluids for 3 days.
Ms-Contin was discontinued and PRN Dilaudid was given at a higher dose of 2 mg po q4prn along with acetaminophen 1gm was given 3 times a day for pain.

Haloperidol 1mg po bid was started with 0.25 mg po q4prn for delirium. Cymbalta was continued at 30 mg po bid.

As per dieticians recommendation multiple vitamins, vitamin c and nutritional supplements for improving nutrition and wound healing of stage II ulcer of the coccyx.

Ms B. was followed by OT regularly. Initially she was wheelchair bound. At discharge, she was ambulating with a rolling walker, Fragmin was discontinued.

At discharge, the patient was calm, she was eating and drinking adequate amount of fluids was medication compliant, and was ambulating with a rolling walker.

Her Folstein MMSE score was 24/30 and the CAM was 0/4.

She was discharged to rehab facility after a 12 days stay.
Introduction

- The term “Delirium,” meaning “off-track,” was first used in the 2nd century AD.

- Delirium, as a concept, stretches back to the age of Hippocrates.

- Greek physicians called it “Phrenitis,” from which the word “frenzy” is derived.

- They thought that the pathophysiology involved the inflammation of the diaphragm, the putative seat of consciousness.

- They realized that delirium was a poor prognostic indicator.

- They also recognized a quiet form of the disturbance, which they termed “Lethargy.”
In the 19th century, French physicians Dupuytren, Bonhoeffer, and Chaslin first described a syndrome of confusion with core features of chaotic thinking, clouding of consciousness, and cognitive failure.

They also determined that delirium could be distinguished from dementia by its sudden onset and potential reversibility.

Dr. William Osler in his landmark text book “The Principles and Practice of Medicine” remarked that the disease was “uniformly fatal” and that “there was paucity of brain changes relative to the prominent features of brain failure”.

However, a fuller understanding of delirium has only been possible in the last 2 decades after a consensus was reached on diagnostic criteria for the disorder and clinical populations were studied systematically using tools of epidemiology.
Where do we stand today?

- Delirium has undergone repeated attempts at definition and redefinition over the last 2000 years.

- It is a relatively common disorder, especially in older people with physical illness.

- It has a high morbidity and mortality.

- It is often under-recognized and under-treated.

- It provides a unique opportunity to delve into acute and florid psychiatric symptomatology, which may aid our understanding of phenomenology.
Why is delirium such a big deal?

- Delirium contributes to poor patient outcomes irrespective of baseline patient characteristics and etiological factors.

- Agitation or lethargy occurring in delirium can increase the risk of aspiration, pressure ulcers, pulmonary emboli and decreased oral intake.

- A recent study by Fong et al showed a significant acceleration in the slope of cognitive decline occurring following an episode of delirium in a cohort of patients with Alzheimer disease (AD).

- Delirium has also been shown to increase nursing time per patient, higher per-day hospital costs, and an increased length of hospital stay.

- A meta-analysis Witlox et al indicated that delirium is associated with an increased risk of dementia, institutionalization and death independent of age, sex, comorbid illness or illness severity and baseline dementia.

- Increased mortality (5-14 times in hospital, 25% die within 6 months, 39% within 2 years).
Economic burden

- The economic burden of delirium in the United States is also staggering with a total of approximately $6.9 billion in Medicare hospital expenditure (2004 figures).

- In a recent study, the average costs per day survived among patients with delirium were more than 2.5 times the costs among patients without delirium.

- The total cost estimates attributable to delirium ranged from $16,303 to $64,421 per patient.

- When translated, the national burden of delirium on the health care system ranged from $38 billion to $152 billion each year.

- When comparing the national annual health care costs for delirium, it is higher than the cost for hip fracture ($7 billion) and nonfatal falls ($19 billion) and comparable to the cost for diabetes mellitus ($91.8 billion).
Epidemiology

- Rates of delirium depend on the patients’ characteristics, setting of care, and sensitivity of detection method.

- In a Hospital Setting:
  1) Prevalence at admission: 14 - 24%
  2) Incidence during hospitalization: 6 - 56%
  3) Older post-op patients: 15 - 53%
  4) Intensive care patients: 70 – 87%

- In Nursing Homes/Post-Acute Care Settings: up to 60%

- Community Prevalence: 1-2%
Clinical Features

- Acute onset
- Fluctuating course
- Inattention
- Disorganized thinking
- Altered level of consciousness
- Cognitive deficits
- Perceptual disturbances
- Psychomotor disturbances
- Altered sleep-wake cycle
- Emotional disturbances
Clinical Subtypes

- Subtypes are classified on the basis of psychomotor activity level of the patient.

- There are 3 subtypes that have been identified.

- These 3 subtypes are:

  1. Agitated: Hyperactive and/or hypervigilant
     - Most commonly recognized form
     - Often associated with adverse effects of drugs, drug intoxication, or drug withdrawal states
2. Somnolent or Hypoactive:

- More prevalent than the agitated type

- Associated with metabolic conditions, especially hepatic and renal encephalopathy

3. Mixed hyper- and hypo-active:

- Accounts for approximately 50-70% of cases

- "Mixed delirium" patients are considered to be at highest risk for substantial morbidity and mortality
Other Subtypes

- **Subsyndromal delirium (SSD):**
  - Patients present with one or more delirium symptoms but do not meet the full criteria.
  - 21%-76% of older medical inpatients.
  - Longer acute care hospital stay, increased post-discharge mortality, more symptoms of delirium, and a lower cognitive and functional level at follow-up than patients.

- **Persistent delirium:**
  - Patients do not recover from an episode of delirium.
  - 40-50% of older patients.
  - Longer acute care hospital stay, increased post-discharge mortality, more symptoms of delirium, and a lower cognitive and functional level at follow-up than patients.
Nocturnal delirium:

- Disruptive behaviors worsening in the late afternoon or evening time are often seen in patients with cognitive impairment.

- These changes are consistent with the existence of circadian rhythm abnormalities that progressively worsen with cognitive and functional deterioration.

- Other theories describe the role of sleep fragmentation in sundowning.

- Increased caregiver stress/burnout and institutionalization for the patient
DSM-IV-(Text Revision) Criteria For Delirium

- Disturbance of consciousness (that is, reduced clarity of awareness of the environment) with reduced ability to focus, sustain, or shift attention.

- A change in cognition (such as memory deficit, disorientation, language disturbance) or the development of a perceptual disturbance that is not better accounted for by a pre-existing, established, or evolving dementia.

- The disturbance develops over a short period of time (usually hours to days) and tends to fluctuate during the course of the day.

- Where the delirium is due to a general medical condition – there is evidence from the history, physical examination, or laboratory findings that the disturbance is caused by the direct physiological consequences of a general medical condition.

Where the delirium is due to substance intoxication – there is evidence from the history, physical examination, or laboratory findings of either 1 or 2:

- The symptoms in criteria (a) and (b) developed during substance intoxication

- Medication use is etiologically related to the disturbance

- Where the delirium is due to substance withdrawal – there is evidence from the history, physical examination, or laboratory findings that the symptoms in criteria (a) and (b) developed during, or shortly after, a withdrawal syndrome.

Where delirium is due to multiple etiologies – there is evidence from the history, physical examination, or laboratory findings that the delirium has more than one etiology (for example, more than one etiological general medical condition, a general medical condition plus substance intoxication, or medication side effect).

Delirium not otherwise specified – this category should be used to diagnose a delirium that does not meet criteria for any of the specific types of delirium described. Examples include a clinical presentation of delirium that is suspected to be due to a general medical condition or substance use but for which there is insufficient evidence to establish a specific etiology, or where delirium is due to causes not listed (for example, sensory deprivation).
## Comparative Features of Delirium and Dementia

<table>
<thead>
<tr>
<th>Delirium</th>
<th>Dementia</th>
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<tr>
<td>1. Develops abruptly</td>
<td>1. Insidious onset</td>
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<td>2. Brief duration</td>
<td>2. Progressive course</td>
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<td>3. Impaired attention</td>
<td>3. Normal attention except in severe state</td>
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<td>4. Reduced consciousness</td>
<td>4. Clear consciousness</td>
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<tr>
<td>5. Incoherent or disorganized speech</td>
<td>5. Organized speech, though severe cases show aphasia or anomia</td>
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<tr>
<td>6. Fluctuating course</td>
<td>6. Persistent deficits</td>
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Etiology and Risk Factors

- Often MULTIFACTORIAL

- Complex interrelationship between a vulnerable patient (one with PREDISPOSING FACTORS) and exposure to PRECIPITATING factors or noxious insults

- When predisposing and potentially precipitating factors are present together, the probability of developing delirium is very high, i.e., demented patient (predisposing) with an infection (precipitating)
Predisposing Factors

- Increasing age and a pre-existing cognitive deficit are thought to be the two most common predisposing factors for delirium.

- A study by Inouye found four predisposing factors:
  - Vision impairment
  - Severe illness
  - Cognitive impairment
  - BUN/Creatinine ratio

- The proportion of patients developing delirium increased progressively with the number of risk factors present at admission.
Inouye & Charpentier identified five independent precipitating factors:

- Use of physical restraints, adjusted relative risk (RR), 4.4
- Malnutrition RR, 4.0
- More than three medications added RR, 2.9
- Use of bladder catheter RR, 2.4
- Any iatrogenic event RR, 1.9

The delirium rates increased progressively from low-risk to high-risk groups in all directions (double-gradient phenomenon).

The contributions of baseline precipitating factors were documented to be independent and statistically significant.
Drugs That May Cause Delirium

- Cimetidine
- Benzodiazepines
- Diphenhydramine
- Prednisolone
- Narcotics
- Triprolidine (Actifed)
- Theophylline
- Antiparkinsonian agents (eg, L-dopa)
- Chlorpheniramine
- Tricyclic antidepressants
- Non-steroidal anti-inflammatory drugs
- Promethazine (Phenergan)
- Digoxin
- Laxatives
- Anti-diarrheal agents (containing belladonna)

- Nifedipine
- Antibiotics
- Antipsychotics
- Irritable bowel syndrome treatments with hyoscine (eg, Buscopan)
- Furosemide
- Ranitidine
- Isosorbide dinitrate
- Warfarin
- Dipyridamole
- Codeine
- Dyazide (triamterene with thiazide)
- Captopril
Neurobiology (Pathogenesis)

- Pathophysiology of delirium remains poorly understood.

- **Neuroanatomical:** More brain atrophy and increased white matter lesions.

- **EEG studies:** Diffuse slowing of cortical background activity, with no correlation to underlying causes.

- **Neuropsychological:** Widespread disruption of higher cortical function, with dysfunction in the prefrontal cortex, subcortical structures, thalamus, basal ganglia, frontal and temporoparietal cortex, fusiform cortex, and lingual gyri, particularly on the non-dominant side.
Cerebral metabolism:

Disorganization of cerebral metabolism and neurotransmission produce symptoms of delirium via:

- Abnormalities of cholinergic transmission, e.g. anti-cholinergic drugs, serum anticholinergic activity increased in delirium.

- Relative excess of dopamine, e.g. dopaminergic drugs.

- Perturbation of other neurotransmitters, such as norepinephrine, serotonin, GABA, glutamate, and melatonin.
**Inflammation:**

- Cytokines (interleukin-1, interleukin-2, tumor necrosis factor alpha, interferon) may increase permeability of blood-brain barrier and alter neurotransmission.

- Chronic stress activates the hypothalamic-pituitary-adrenocortical axis, increasing cytokine and cortisol levels.

- Chronic hypercortisolism has deleterious effects on hippocampal serotonin receptors.
Recognizing Delirium

- Often assessed on the basis of disorientation and inappropriate behavior.

- Commonly overlooked, misdiagnosed as a primary depressive or psychotic disorder, or misattributed to dementia.

- Studies indicate that 1/3 - 2/3 of cases of delirium are unrecognized by physicians.

- Role for standardized tools such as Confusion Assessment Method.
CONFUSION ASSESSMENT METHOD (CAM)

1. ACUTE ONSET/FLUCTUATING COURSE
Is there a history of an acute change in mental status with evidence of fluctuation in the degree of symptoms?  

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<th>YES</th>
<th>NO</th>
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2. INATTENTION
Does the patient have difficulty focusing attention (e.g., being easily distractible, or failing to focus on the discussion or sustain an effort)?

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<th>YES</th>
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3. DISORGANIZED SPEECH
Is the patient's speech disorganized or incoherent, such as rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching of subjects?

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<th>YES</th>
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4. ALTERED LEVEL OF CONSCIOUSNESS
Is the patient's level of alertness either hyperalert (e.g., vigilant, overly sensitive to environmental stimuli, easily startles); or hypoalert (e.g., lethargic, stuporous, drowsy, difficult to arouse)?

<table>
<thead>
<tr>
<th>YES</th>
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</table>
Most commonly used tool to detect delirium.

Four Items:

1. Acute onset and Fluctuating course
2. Inattention
3. Disorganized Thinking
4. Altered Level of Consciousness

Needs 1, 2 and 3 or 4

Sensitivity: 94% - 100%

Specificity: 90% - 95%

Positive Predictive Value: 91% - 94%

Negative Predictive Value: 90% - 100%
Prevention

- It is estimated that 30–40% of cases of delirium are preventable.

- Prevention is the most effective strategy for minimizing the occurrence of delirium and its adverse outcomes.

- Inouye et al, Multicomponent Targeted Risk Factor Intervention (MTI), targeted 6 risk factors:
  - Cognitive impairment
  - Sleep deprivation
  - Immobility
  - Visual impairment
  - Hearing impairment
  - Dehydration
Multicomponent Targeted Risk Factor Intervention (MTI) showed:

- Delirium developed in 9.9% of the intervention group as compared with 15% of the usual-care group, matched odds ratio, 0.60, 95% CI, 0.39-0.92.

- The total number of days with delirium (105 vs. 161, P= 0.02) and the total number of episodes (62 vs. 90, P= 0.03) were significantly lower in the intervention group.

- However, the severity of delirium and the recurrence rates were not significantly different between the two groups.

- Short-term cost savings of $831 per hospitalization with long-term cost savings approaching $10,000 per year from the prevention of long-term nursing home days.
Other Strategies

- A recent controlled trial indicated that home rehabilitation after acute hospitalization in elderly individuals was associated with a lower risk of delirium, and greater patient satisfaction.

- Meta-analysis by Siddiqi et al showed that:
  - Program of proactive geriatric consultation may reduce delirium incidence and severity in patients undergoing surgery for hip fracture.
  - Prophylactic low dose haloperidol may reduce severity and duration of delirium episodes and shorten length of hospital admission in hip surgery.

- A recent systematic review showed MTI is effective and should be implemented through synergistic cooperation between the various healthcare disciplines.

- A recent structured-analysis showed that interventions to prevent delirium are generally effective.
Simple Strategies

- Reorientation: time, place, and person

- Proper sleep hygiene:
  1. Avoid pharmacological approaches
  2. Keep night-time interruptions at a minimum
  3. Herbal teas, relaxing music, massage

- Adequate stimulation:
  1. Use proper hearing aid or other devices
  2. Use proper glasses

- Mobility:
  1. Avoid bedrest orders
  2. Mobilize ASAP
  3. Avoid the use of restraints

- Proper nutrition
  1. Appropriate dentures
  2. Staff assistance during meals
Treatment

- Delirium is a MEDICAL EMERGENCY!

- Prompt attention to obvious precipitating factors should be the first aim in management.

- Four key steps in the management are:
  1. Identifying and treating the underlying causes
  2. Environmental and supportive measures
  3. Prescribing medications to manage behavioral/psychiatric symptoms
  4. Regular clinical review and follow-up
Evaluation of Underlying Causes

- Evaluate history and perform a careful physical examination
- Review the causes of delirium
- Order basic investigations, i.e., CBC with diff, Chem20, U/A, ECG, CXR, Arterial blood gases (or oxygen saturation)
- Consider additional tests, as indicated by clinical condition (e.g. urine and blood cultures, urine drug screen, serum levels of medications, VDRL, B12 and folate levels, heavy metal screen, ammonia, HIV)
- CT/MRI of the brain are only useful if there are neurological symptoms or signs
- Lumbar Puncture is only needed when clinically indicated
- Review investigations
- EEG may be helpful in identifying certain diagnoses such as epilepsy, metabolic conditions like uremia, and focal infections
General Rules of Engagement

- Treatment of delirium is the treatment of underlying conditions
- Utilize environmental and supportive measures
- Medications are only useful for symptomatic management
- Avoid polypharmacy
- Start low, go slow (particularly in older patients)
- Use medications that have proven efficacy
- Avoid benzodiazepines when possible
- Monitor closely and ensure frequent follow-up
- Aim for prevention
Pharmacotherapy

- Pharmacotherapy in delirium is mainly targeted towards the treatment of its underlying causes.

- However, it may also be needed when the patient’s behaviors cannot be controlled by non-pharmacological means.

- They are prescribed when the patient exhibits agitation, aggression, paranoia and hallucinations that place them and those caring for them at risk of imminent harm.

- Recent data indicates that the evidence base for effective drug treatment of delirium is restricted by the limitations in many of the studies that have been conducted to date.
<table>
<thead>
<tr>
<th>Type of drug</th>
<th>Name of study</th>
<th>Type of study</th>
<th>Comparators</th>
<th>Outcomes</th>
<th>Side-effects</th>
<th>Limitations</th>
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<tbody>
<tr>
<td><strong>Antipsychotics</strong></td>
<td>Lonergan et al</td>
<td>Metaanalysis</td>
<td>Haloperidol with risperidone, olanzapine, and quetiapine</td>
<td>Haloperidol in low dosage has similar efficacy in comparison with the atypical antipsychotics olanzapine and risperidone in the management of delirium.</td>
<td>There is no greater frequency of adverse effects with haloperidol in low doses compared to the other drugs. Higher doses haloperidol was associated with a greater incidence of side effects, mainly parkinsonism, than the atypical antipsychotics.</td>
<td>Only 3 studies met the inclusion criteria.</td>
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<tr>
<td><strong>Cholinesterase Inhibitors</strong></td>
<td>Overshott et al</td>
<td>Meta-analysis</td>
<td>Blinded randomized controlled trials with cholinesterase inhibitors compared with alternative interventions</td>
<td>One trial of donepezil found no significant difference between the treatment and placebo groups was found in the duration of delirium.</td>
<td>Donepezil was well tolerated.</td>
<td>Only 1 study met the inclusion criteria.</td>
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<tr>
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<tr>
<td>Benzodiazepines</td>
<td>Lonergan et al</td>
<td>Meta-analysis</td>
<td>Lorazepam versus dexmedetomidine, alprazolam versus neuroleptics and lorazepam versus haloperidol and chlorpromazine</td>
<td>Dexmedetomidine had greater efficacy than lorazepam, no advantage of alprazolam compared to neuroleptics and decreased effectiveness of lorazepam and increased adverse effects when compared with neuroleptics.</td>
<td>Benzodiazepines have higher side effects than comparators compounds.</td>
<td>No adequately controlled trials could be found to support the use of benzodiazepines in the treatment of non-alcohol withdrawal related delirium.</td>
</tr>
<tr>
<td>Various drugs</td>
<td>Campbell et al</td>
<td>Systematic review</td>
<td>Second-generation antipsychotics, first-generation antipsychotics, cholinergic enhancers, an antiepileptic agent, an inhaled anesthetic, injectable sedatives and a benzodiazepine.</td>
<td>No superiority for second-generation antipsychotics over haloperidol in managing delirium.</td>
<td>No significant difference between the various compounds.</td>
<td>Data available is limited.</td>
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<tr>
<td>Medication group</td>
<td>Dosage</td>
<td>Side-effects</td>
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<td><strong>Typical antipsychotics</strong></td>
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<tr>
<td>Haloperidol</td>
<td>0.25–1.0 mg PO BID/TID 0.25–1.0 mg PO or IM; can repeat every 30-60 minutes if needed</td>
<td>Extrapyramidal symptoms, sedation, prolonged QTc interval</td>
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<td><strong>Atypical antipsychotics</strong></td>
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<td>Risperidone</td>
<td>0.25 mg-0.5 mg PO BID/TID 0.25–0.5 mg PO; can repeat every 30-60 minutes if needed</td>
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<tr>
<td>Olanzapine</td>
<td>2.5–5.0 mg PO BID 2.5–5.0 mg PO or IM; can repeat every 30-60 minutes if needed</td>
<td>Metabolic dysfunction, extrapyramidal symptoms hyperglycemia, prolonged QTc interval</td>
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<tr>
<td>Quetiapine</td>
<td>25-50 mg BID/TID 25-50 mg PO; can repeat every 30-60 minutes if needed</td>
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<tr>
<td>Lorazepam</td>
<td>0.25–1.0 mg PO BID/TID 0.25–1.0 mg PO or IM; can repeat every 30-60 minutes if needed</td>
<td>Paradoxical agitation, sedation, motor incoordination, worsening confusion, respiratory depression</td>
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<tr>
<td><strong>Cholinesterase inhibitors</strong></td>
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<tr>
<td>Donepezil</td>
<td>5-10 mg PO once daily</td>
<td>Gastrointestinal disturbances</td>
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Haloperidol- Gold Standard?

- Haloperidol is usually considered to be the first-line drug in the treatment of behavioral disturbances in delirium.

- American Psychiatric Association (APA) recommends Haloperidol be started at 1-2 mg every 2-4 hours, with lower starting dosages for elderly patients (0.25-0.50 mg every 4 hours).

- **Advantages:**
  1. Can be given orally, IM, or intravenously
  2. Less sedating at therapeutic doses and does not suppress respiratory drive
  3. Few anticholinergic side effects
  4. No active metabolites

- **Disadvantages:**
  1. Extrapyramidal symptoms, particularly at higher doses
  2. Prolonged corrected QT interval on ECG
  3. Sedating at high doses
Are Atypical Antipsychotics better than Typicals?

- The jury is still out on this issue.

- Atypical antipsychotics have less propensity to cause extra-pyramidal side-effects, but are now known to cause metabolic problems, i.e., weight gain, hyperglycemia, and hyperlipidemia.

- The duration of treatment of delirium with antipsychotic drugs is much less compared to primary psychotic disorders, hence the risk of developing EPSE with typical drugs is reduced.

- Haloperidol is less expensive and can be given IM or IV.

- One way to resolve this issue is to use a typical drug like haloperidol as first line and for people who cannot take medications orally.

- Use atypical antipsychotic drugs for patients at higher risk of EPSE, i.e. the frail, elderly, and patients with Parkinson’s disease or other neurodegenerative disorders.
Algorithm for the diagnosis of delirium

**Obtain history**
(Medical, Psychiatric, Medications, Pre-morbid personality, Cognition, Functions)

↓

**Complete a physical examination**
(Rule out underlying medical or neurological disorders)

↓

**Order investigations**
(Blood tests, Urine examination & drug screen, Vitamin B 12 & Folate levels, VDRL, EEG, Lumbar Puncture, Neuroimaging)

↓

**Complete CAM or CAM-ICU**

↓

**Confirm diagnosis with DSM- IV-TR criteria**
Algorithm for treating delirium

Treat underlying disorder (s) ← Medical/Neurological disorders

↓

Treat with benzodiazepines ← Withdrawal± ← Drug effect → Intoxication → Remove offending drug (s)

↓

Use non-pharmacological methods
(Frequent reorientation, making eye contact, frequent touching, using clear verbal instructions, treat sensory impairments including vision and hearing loss, minimal physical restraints, reduce noise levels, provide soft lighting, minimize room and staff changes)

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Severe agitation, aggression, delusions, hallucinations

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Treat with typical or atypical antipsychotic medications
± For sedative hypnotic withdrawal
Final Thoughts

- Delirium is a geriatric psychiatric syndrome with multiple potential causes
- It is common and costly
- It is often preventable
- Recognition is poor, but it can be improved by using standardized tools like CAM
- Evidenced based guides may help reduce the prevalence and severity of delirium
Thank You!