Management of Delirium in Older Adults

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Disclosures

● None

Management of Delirium in Older Adults

● Learning Objectives
  ➢ Recognize & diagnose common causes of delirium
  ➢ Treat delirium in older adults
  ➢ Describe and implement measures to reduce delirium incidence
### Delirium Epidemiology

#### Prevalence, Incidence & Impacts

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>The most frequent complication among hospitalized elderly</td>
<td></td>
</tr>
<tr>
<td>● Up to 1/3 of older patients presenting to ED</td>
<td></td>
</tr>
<tr>
<td>● 10-33% general medical inpts, ~ ½ after admit</td>
<td></td>
</tr>
<tr>
<td>● Highest non-ICU rates are s/p hip fracture: 50-60%</td>
<td></td>
</tr>
<tr>
<td>● Assoc with: ↑ inpt complications, ↑ LOS, ↑ readmit rates, ↑ NHP, ↓ functional recovery &amp; ↑ mortality</td>
<td></td>
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</tbody>
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### Diagnosing Delirium: We know it when we see it --- or do we?

- Organic mental disorder characterized by the acute onset of altered level of consciousness, fluctuating course and disturbance in attention, orientation, memory, thought and behavior.

### Delirium: Clinical Presentation

- Hyperactive or agitated delirium
- Hypoactive delirium
  - less recognized
  - may be most common s/p hip fx, data mixed re: prognosis (possibly worse)
- Mixed
- Other features: emotional sxms, psychotic sxms, “sundowning”
Diagnosing Delirium

- Under-diagnosis is a problem
- Barriers to recognizing delirium
  - rapid pace & technological focus of current hospital care → ↓ time from bedside assessment
  - fragmented clinical care → ↓ awareness of MS Δs
  - fluctuating nature of delirium

Confusion Assessment Method (CAM)

1. Acute onset and fluctuating course
2. Inattention (difficulty focusing, distractible)
3. Disorganized thinking (rambling, unclear, illogical)
4. Altered level of consciousness (hyperalert, lethargic)

Delirium Dx requires both 1 and 2 plus either 3 or 4

CAM Sensitivity 94-100%, Specificity 90-95%

Ann Intern Med 1990;113:941

Delirium: Etiology

- Most often multifactorial
- Interaction of
  - Vulnerable host
  - Predisposing conditions
  - Precipitating factors
Delirium Epidemiology: Risk Factors

<table>
<thead>
<tr>
<th>Predisposing</th>
<th>Precipitating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (esp &gt; 80y)</td>
<td>&gt; 3 new meds/24 hrs</td>
</tr>
<tr>
<td>Dementia → 5x ↑ risk</td>
<td>Infection</td>
</tr>
<tr>
<td>Severe med dz</td>
<td>Metabolic Δ (esp dehydr)</td>
</tr>
<tr>
<td>Major surgery</td>
<td>Immobilization</td>
</tr>
<tr>
<td>Polypharm (≥ 4 meds)</td>
<td>Use of bladder catheter</td>
</tr>
<tr>
<td>Sensory impairment</td>
<td>Car/CNS events</td>
</tr>
</tbody>
</table>

Delirium: Etiologies

Which of the following is the most common single reversible cause of delirium?

1. Infection
2. Medications
3. Metabolic abnormalities
4. Cardio/cerebrovascular events

Delirium: Etiologies

- Etiologies: #1 single cause of delirium
  1. Infection (UTI, PNA) #2
  2. Medications (+ consider w/d meds/EtOH)
  3. Metabolic (glu, volume, Na+ ↓, ↓ O₂ sat) #3
  4. Car/CNS
<table>
<thead>
<tr>
<th>Drug Class</th>
<th>Relative Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticholinergic drugs</td>
<td>4.5-11.7</td>
</tr>
<tr>
<td>Sedative-hypnotics</td>
<td>3.0-11.7</td>
</tr>
<tr>
<td>Any antipsychotic</td>
<td>3.9</td>
</tr>
<tr>
<td>Narcotics</td>
<td>2.6</td>
</tr>
<tr>
<td>Number Drugs</td>
<td></td>
</tr>
<tr>
<td>2-3 rxes</td>
<td>2.7</td>
</tr>
<tr>
<td>4-5 rxes</td>
<td>9.3</td>
</tr>
<tr>
<td>6+ rxes</td>
<td>13.7</td>
</tr>
</tbody>
</table>

Am J Med 1999;106:565

<table>
<thead>
<tr>
<th>Medication</th>
<th>Anti-Ach activity (ng/ml atropine eq)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furosemide</td>
<td>0.22</td>
</tr>
<tr>
<td>Digoxin</td>
<td>0.25</td>
</tr>
<tr>
<td>Theophylline</td>
<td>0.44</td>
</tr>
<tr>
<td>Warfarin</td>
<td>0.12</td>
</tr>
<tr>
<td>Prednisolone</td>
<td>0.55</td>
</tr>
<tr>
<td>Nifedipine</td>
<td>0.22</td>
</tr>
<tr>
<td>Isosorbide</td>
<td>0.15</td>
</tr>
<tr>
<td>Codeine</td>
<td>0.11</td>
</tr>
<tr>
<td>Ranitidine</td>
<td>0.22</td>
</tr>
</tbody>
</table>

Am J Psych 1992;149:1393

1. Find and treat underlying causes
2. Non-pharmacologic management
3. Non-pharmacologic management
4. Non-pharmacologic management
5. Pharmacologic management (often a double-edged sword)
Delirium Mnemonic

<table>
<thead>
<tr>
<th>D</th>
<th>Drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>Electrolytes, O2</td>
</tr>
<tr>
<td>L</td>
<td>Lack of drugs (withdrawal)</td>
</tr>
<tr>
<td>I</td>
<td>Infection</td>
</tr>
<tr>
<td>R</td>
<td>Reduced sensory input</td>
</tr>
<tr>
<td>I</td>
<td>Intracranial, injury/pain</td>
</tr>
<tr>
<td>U</td>
<td>Urinary retention</td>
</tr>
<tr>
<td>M</td>
<td>Myocardial</td>
</tr>
</tbody>
</table>

Evaluation: Laboratory, imaging, other

- Careful history and physical
- Include: U/A, CBC, basic metabolic panel, O2 sat
- Consider: LFTs, serum drug levels, chest x-ray, ECG, cultures, ABG (if CO2 retention concern)
- Cerebral imaging rarely helpful, except with head trauma or new focal neurologic findings
- EEG and CSF rarely yield helpful results, except w/associated seizure activity or signs of meningitis

Management of Delirium

1. Find and treat underlying causes
2. Non-pharmacologic management
3. Non-pharmacologic management
4. Non-pharmacologic management
5. Pharmacologic management (often a double-edged sword)
Delirium Management
Non-pharmacologic approaches

- Multifactorial approach is most successful because multiple factors contribute to delirium
  - frequent orientation (where they are, why, etc)
  - optimize sensory input (& windows/outside light)
  - reduce lines/catheters, etc
- Provide “social” restraints: sitter or family in room
- Avoid physical or pharmacologic restraints

J Gen Intern Med 2009;24(7):848

Management of agitated delirium in older pt

- An 83 yo M falls & fx’s hip. S/P ORIF confusion increases and pt c/o pain. APAP scheduled + oxycodone prn ordered. Agitation ↑ thru the night, pt striking out against sitter, pulled out IV and constantly trying to get OOB. The most appropriate intervention at this time is?
  1. Soft restraints
  2. Haloperidol
  3. Lorazepam
  4. Stop oxycodone
  5. Donepezil

Antipsychotics in older pts w/delirium

- The most appropriate intervention at this time is?
  1. Soft restraints – can ↑ agitation, safety risk
  2. Haloperidol
  3. Lorazepam – never 1st line unless benzo or etoh w/d
  4. Stop oxycodone – adequate pain control vital
  5. Donepezil – RCTs for prevention and/or tx (-)
AGS 2014 Guideline for Postoperative Delirium in Older Adults

- When to consider antipsychotics
  - to treat severely agitated or distressed pts who
  - are threatening substantial harm to self and/or others, and
  - behavioral interventions have failed or are not possible
- Use the lowest effective dose for the shortest possible duration — lets operationalize that

J Am Geriatr Soc 2015; 63:142

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Pharmacologic Treatment - ICU

Haldoperidol 2 mg q20 min
(while agitation persists)

OR

<table>
<thead>
<tr>
<th>Degree of Agitation</th>
<th>Initial Dose Haldoperidol PO, IM or IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>0.25-2mg</td>
</tr>
<tr>
<td>Moderate</td>
<td>2-4mg</td>
</tr>
<tr>
<td>Severe</td>
<td>4-8mg</td>
</tr>
</tbody>
</table>

Jacobi et al. Crit Care Med (2002); 30(1):119

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Pharmacologic Treatment - ICU

Haldol Maintenance Dosing Dose:
- 50% of total loading dose is the maintenance dose divided every 6-8 hours daily
- Continue maintenance dose for 24-48 hours before tapering
- Assess for akathisia and extrapyramidal effects

Taper:
- Taper maintenance dose by 20-30% daily to d/c
Pharmacologic Treatment - ICU

Haldoperidol Administration

<table>
<thead>
<tr>
<th>Control</th>
<th>Moderate Agitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00AM – 2mg IV</td>
<td></td>
</tr>
<tr>
<td>2:30AM – 2mg IV</td>
<td></td>
</tr>
<tr>
<td>3:00AM – 2mg IV</td>
<td></td>
</tr>
<tr>
<td>3:30AM – Agitation controlled</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maintain</th>
<th>Order 1mg TID IV or PO x 24 hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Keep daily dose for 24 – 48 hrs.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Taper</th>
<th>0.5mg PO TID for 24 hrs, then DC</th>
</tr>
</thead>
</table>

Pharmacologic Treatment - Ward

General Recommendation:
Haldoperidol 1-2 mg q2-4 hrs PRN
May be administered PO/IM/IV

For Elderly Patients:
Haldoperidol 0.25-0.5mg q4hrs PRN

Practice Guideline for Treatment of Patients with

Delirium Management

Pharmacologic approaches

- If med rx absolutely necessary, use haloperidol
- Exception: PD or EPS, quetiapine 25-100mg 1-2x/d
  - General rule: 1mg haloperidol = 100mg quetiapine
- Gen NOT benzos (lorazepam 0.5 mg q6-12hr prn)

BMJ 2010;341:247-9
J Gen Intern Med 2009;24(7):848
### The Best Management is Prevention

- Delirium portends worse prognosis
- Rapid detection and intervention may limit adverse effects
- Persistent delirium can be problematic
- Ideally prevent onset if/when possible

*Ann Intern Med 2011;154:746*

### AGS 2014 Guideline for Postoperative Delirium in Older Adults

**Key points**

- Optimize pain management (preferably w/nonopioids)
- Antipsychotics should be avoided for tx of hypoactive delirium
- Multicomponent nonpharmacologic interventions should be administered to all at-risk older adults to prevent delirium — lets operationalize that

*J Am Geriatr Soc 2015; 63:142*

### Delirium Prevention

<table>
<thead>
<tr>
<th>Multi-Component Interventions To Prevent Delirium</th>
<th>Six EBM Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Factors</td>
<td>Cognitive Impairment</td>
</tr>
<tr>
<td>Sleep Deprivation</td>
<td>Sleep enhancement</td>
</tr>
<tr>
<td>Immobility</td>
<td>Early mobility, ↓ lines/foley</td>
</tr>
<tr>
<td>Visual Impairment</td>
<td>Glasses, vision correction</td>
</tr>
<tr>
<td>Hearing Impairment</td>
<td>Hearing protocol</td>
</tr>
<tr>
<td>Dehydration</td>
<td>Hydration protocol, close f/u</td>
</tr>
</tbody>
</table>

*JAMA Intern Med 2015:175:512*
### Closing Pearl: Sleep problems in hospitalized older adults

- 81 yo M is hospitalized w/PNA. PMH: CLL on chlorambucil. Pt c/o poor sleep despite no VS after 10p, quiet environment, & hs milk last night. He requests med rx be available for use tonight

Which of the following sleeping meds might lower this pt’s risk of developing delirium?
1. Ramelteon
2. Diphenhydramine
3. Melatonin
4. Suvorexant
5. a & c

### Sleep problems in hospitalized older adults

Which of the following sleeping meds might lower this pt's risk of developing delirium?
1. Ramelteon
2. Diphenhydramine
3. Melatonin
4. Suvorexant
5. a & c

### Sleep problems in hospitalized older adults

- Non-pharmacologic approach best
  - limited VS, quiet environment, sleep hygiene
- Pharmacologic rx that likely ↑s delirium
  - diphenhydramine, short-acting benzo
- Melatonergic pathway may be r/t delirium
  - RCTs melatonin mixed, largest in hip fx pts (-)
    - s/p hip fx (-): 30% melatonin 3mg vs 26% plcbo
    - med ward pts (+): 11% mltn 0.5mg vs 31% plcbo
    - elective THA (+): 9% melatonin 5mg vs 33% plcbo

CMAJ 2014;186:E547  Mol Neurobiol July 2015 PMID 26189834
Sleep problems in hospitalized older adults

- **Ramelteon 8mg**
  - Melatonin agonist
  - FDA approved tx insomnia (difficulty falling asleep)

- **RCT to prevent delirium**
  - 67 med ward/med ICU pts, mean age 78
  - Delirium incidence: 3% vs 32%, ARR 29%, RR 0.09
  - No clinical outcome data
  - MOA? – no clear improvement in sleep

  JAMA Psychiatry 2014;71(4):397

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Sleep problems in hospitalized older adults

- Which, if any, medications for insomnia might be considered and which should be avoided in older hospitalized pts?
  - Non-pharm strategies best
  - Med Rx: Ramelteon 8mg or melatonin 0.5-5mg
  - Avoid: benzo's & diphenhydramine > trazodone

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Algorithm Approach to Delirium

1. Hx and Exam, verify baseline cognitive funx
2. Practice Prevention Strategies
3. Monitor regularly for early recognition/diagnosis
4. Review Medications (minimize psychoactive rx\(^n\))
5. Evaluate for new medical conditions (infection, metabolic \(\Delta^l\), Car/CNS events)
6. Tx underlying causes, non-pharm + drug tx if needed
ANY Questions!