Management of Delirium in the Non-ICU Geriatric Population

A presentation for HealthTrust members
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Speaker Disclosures

• The presenter has no real or perceived conflicts of interest related to this presentation.

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Learning Objectives

• **Discuss** the prevalence of and contributing factors associated with delirium

• **Differentiate** symptoms of delirium from dementia

• **Identify** a management strategy for patients diagnosed with delirium
Meet the Patient
Patient Case

• A 78-year-old man is admitted to the surgical service for elective hernia repair. The hernia has been enlarging and becoming more painful in the past year, interfering with his appetite.

• PMH:
  - Hypertension
  - BPH
  - Alzheimer’s Disease
  - Insomnia
  - Depression
  - Diabetes
  - Parkinson’s Disease
  - Degenerative Joint Disease
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Patient Case

• **ROS:** (+) Knee pain, memory loss, constipation, urinary frequency and incontinence
• Denies chest pain or shortness of breath
• Alert
• Hard of hearing, but refuses a hearing aid
• Answers simple questions with short phrases. His wife does most of the talking
• Low health literacy – only completed 3rd grade
• Cognition has declined over the past couple months from baseline
Patient Case

Labs:
• BMP/CBC: within normal limits
• Serum creatinine: 1.1 mg/dL
• HbA1c: 6.0
Patient Case

• The patient undergoes the hernia repair with no intra-operative problems

• He is back in the surgical unit by the evening and has a quiet night
Delirium Management: Why is it Important?

• **Common** complication that affects the geriatric population
• Occurs in **10 – 40%** of all hospitalized elderly patients
• Average cost per day is **2.5 times more** than those who do not develop delirium
• Delirium is associated with:
  – Increase mortality
  – Longer hospitalization
  – Slower recovery
  – More re-admissions
  – Increased risk of developing dementia

Delirium Management:
Why is it Important?

DELIRIUM
DSM-V Diagnosis of Delirium:

Acute

Cognitive Dysfunction

Subtypes:

1. Hyperactive

2. Hypoactive

3. Mixed

DELIRIUM: CONTRIBUTING FACTORS

- Drugs
- Electrolyte imbalances
- Lack of medications
- Infection
- Reduced sensory input
- Intracranial
- Urinary retention/constipation
- Myocardial
- Surgery

<table>
<thead>
<tr>
<th></th>
<th>Delirium</th>
<th>Dementia</th>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Onset</strong></td>
<td>Hours to days (quick)</td>
<td>Months to years</td>
<td>Weeks to months</td>
</tr>
<tr>
<td><strong>Mood</strong></td>
<td>Fluctuates</td>
<td>Fluctuates</td>
<td>Low/apathetic</td>
</tr>
<tr>
<td><strong>Course</strong></td>
<td>Acute – responds to treatment</td>
<td>Chronic – deterioration over time</td>
<td>Chronic – responds to treatment</td>
</tr>
<tr>
<td><strong>Self-awareness</strong></td>
<td>May be aware of cognitive changes</td>
<td>Likely to hide or be unaware of cognitive changes</td>
<td>Likely to be concerned about memory impairment</td>
</tr>
<tr>
<td><strong>Activities of Daily Living (ADL’s)</strong></td>
<td>Depends</td>
<td>Impaired as disease progresses</td>
<td>May neglect self care</td>
</tr>
</tbody>
</table>
Delirium Superimposed on Dementia

- Delirium that occurs concurrently with pre-existing dementia
- Under-recognized by healthcare practitioners
- Affects 22 – 89% hospitalized adults
- Early recognition is crucial

Non-ICU Confusion Assessment Method (CAM)

Feature 1: Acute onset or fluctuating course

Feature 2: Inattention

Feature 3: Disorganized thinking

Feature 4: Altered level of consciousness

Positive CAM:

Feature 1 + Feature 2 + Feature 3 or Feature 4 = CAM Positive

DELIRIUM MANAGEMENT
Treatment Principles:

1. Identify **etiology**

2. Initiate appropriate **interventions**

Non-Pharmacologic Management: First-line Treatment Option

Stimulate the brain
Improve nutrition & hydration
Move the body
Pain
Lighting
Eyeglasses & hearing aids
DELIRIUM CONTRIBUTING FACTORS

Pharmacological Management

- Drugs
- Electrolyte imbalances
- Lack of medications
- Infection
- Reduced sensory input
- Intracranial
- Urinary retention/constipation
- Myocardial
- Surgery
DElirium: Contributing Factors

D - Drugs
E - Electrolyte imbalances
L - Lack of medications
I - Infection
R - Reduced sensory input
I - Intracranial
U - Urinary retention/constipation
M - Myocardial
S - Surgery
Medications that Contribute to Delirium Symptoms:

- Anticholinergics
- Anticonvulsants
- Antidepressants
- Antihistamines
- Anti-parkinsonian agents
- Antipsychotics
- Benzodiazepines
- H₂ Antagonists
- Opioid analgesics

The Polypharmacy Toolkit

• AGS Beers List
  – Updated in 2019

• STOPP/START List
  – [https://academic.oup.com/ageing/article/44/2/213/2812233](https://academic.oup.com/ageing/article/44/2/213/2812233)
DELIRIUM: CONTRIBUTING FACTORS

DELI

Lack of medications

Electrolyte imbalances

Infection

Reduced sensory input

Intracranial

Urinary retention/constipation

Myocardial

Surgery
Pain Management:

• Follow a **stepwise approach** when adding on medications

• **Continually assess** for verbal and nonverbal signs of pain

• Initiate **lower doses**, and **titrate slowly**

• Treatment choice based off of **type of pain**

Types of Pain:

Nociceptive Pain
- Visceral
- Somatic

Neuropathic Pain

Source: Am Fam Physician. 1998 Oct 1;58(5):1213-1215
Management of Nociceptive Pain:

• Acetaminophen
  – Mechanism of action: activation of descending serotonergic inhibitory pathways in the CNS
  – First-line

<table>
<thead>
<tr>
<th>Adverse Drug Reactions:</th>
<th>Monitoring:</th>
<th>Counseling:</th>
</tr>
</thead>
</table>
| -Liver failure         | -AST/ALT   | -Do not exceed 4,000 mg/day
                        |            | -Monitor for dark urine, fatigue, and abdominal pain |

Source: Am Fam Physician. 1998 Oct 1;58(5):1213-1215
Management of Nociceptive Pain:

- Non-steroidal anti-inflammatory Drugs (NSAIDS)
  - Mechanism of action: reversibly inhibits COX 1 and COX 2 enzymes, resulting in decreased prostaglandin formation

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<thead>
<tr>
<th>Drug Name</th>
<th>Adverse Drug Reactions</th>
<th>Monitoring:</th>
<th>Counseling:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ibuprofen</td>
<td>- GI bleeding</td>
<td>- Blood pressure</td>
<td>- Take with food</td>
</tr>
<tr>
<td></td>
<td>- AKI</td>
<td>- Kidney function</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- CVA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naproxen</td>
<td>- Dyspepsia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meloxicam</td>
<td>- HTN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diclofenac</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Celecoxib</td>
<td></td>
<td></td>
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</table>

Source: Am Fam Physician. 1998 Oct 1;58(5):1213-1215
Management of Neuropathic Pain:

- Serotonin-Norepinephrine Reuptake Inhibitors (SNRI’s)
  - Mechanism of action: inhibits the reuptake of serotonin and norepinephrine
  - **Use in caution** in the elderly

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<tbody>
<tr>
<td>Duloxetine</td>
<td>- HTN (venlafaxine)</td>
<td>- Blood pressure</td>
<td>- Venlafaxine could cause constipation</td>
</tr>
<tr>
<td></td>
<td>- Serotonin syndrome</td>
<td>- Kidney function</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- N/V/D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Drugs Aging. 2016; 33(8): 575–583
Management of Neuropathic Pain:

- Anticonvulsant (GABA analog)
  - Mechanism of action: bind to voltage-gated calcium channels at the alpha-2-delta subunit and inhibit neurotransmitter release

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<tbody>
<tr>
<td>Gabapentin</td>
<td>- Drowsiness - Dizziness</td>
<td>- Kidney function (renal dose adjusted)</td>
<td>- Limit alcohol intake - Monitor the affects of this medication before driving</td>
</tr>
<tr>
<td>Pregabalin</td>
<td></td>
<td></td>
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</table>
Management of Neuropathic Pain:

• Lidocaine 5% Patches
  – Mechanism of action: blocks the initiation and conduction of nerve impulses
  – Administration:
    • Apply to most painful area of skin
    • May be cut
    • Avoid contact with water and external heat sources
    • Remove patch 12 hours after application
    • May wear up to three patches at a time

Source: Drugs Aging. 2016; 33(8): 575–583
AGITATION MANAGEMENT
Agitation Management

Use antipsychotics when a patient is harmful to themselves or others

Agitation Management

• Non-pharmacological options should be utilized first

• Use antipsychotics only when a patient is harmful to themselves or others
Agitation Management

• Antipsychotics:
  ▪ First—Generation
    • Mechanism of action: blockade of D₂ receptors
    • Adverse drug reactions:
      – Extrapyramidal side effects (EPS)
      – Anticholinergic side effects
  ▪ Second—Generation
    • Mechanism of action: blockade of D₂ **AND** 5-HT₂ A receptors
    • Adverse drug reactions:
      – Less EPS than first-generation antipsychotics
      – Weight gain
      – QTc prolongation

Source: Chokhawala K, Stevens L. Antipsychotic Medications.. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2019
Agitation Management

- Antipsychotics
  - Haloperidol
    - Agent of choice
    - 0.25mg – 1mg PO, IM, IV
  - Olanzapine
    - 2.5mg – 5mg PO, IM
    - Less EPS, more sedating
    - Not for acute management
  - Quetiapine
    - 12.5mg – 50mg PO
    - Less EPS
  - Risperidone
    - 0.25mg – 1mg PO
    - Similar to haloperidol

Agitation Management

• For patients **without** Parkinsonian-like symptoms:
  – Quetiapine 25 mg PO every 6 hours as needed
    OR
  – Haloperidol 0.25 mg PO every 4 hours as needed
    AND
  – Haloperidol 0.5 mg IM every 4 hours as needed

• For patients **with** Parkinsonian-like symptoms:
  – Quetiapine 25 mg PO every 6 hours as needed
  – Lorazepam 0.5 mg IM every 6 hours as needed
Agitation Management

• Benzodiazepines
  – Mechanism of action: bind to GABA-A receptors increasing the frequency of chloride ion channel opening which emphasizes the inhibitory effect of GABA on neuronal excitability
  – Adverse drug reactions:
    • Drowsiness
    • Fatigue
    • Amnesia
    • Confusion
  – Short half-life benzodiazepines preferred
    • Lorazepam
      – 0.25mg – 1mg PO, IV
      – Second line agent

BACK TO THE PATIENT
Patient Case

- A 78-year-old man is admitted to the surgical service for elective hernia repair. The hernia has been enlarging and becoming more painful in the past year, interfering with his appetite.

- **PMH:**
  - Hypertension
  - BPH
  - Alzheimer’s Disease
  - Insomnia
  - Depression
  - Diabetes
  - Parkinson’s Disease
  - Degenerative Joint Disease
**Assessment Question 1:** What medications could be contributing to his delirium or are inappropriate for use?

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### Audience Participation

**Patient Case - Assessment 1 Response**

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*Note: The medications highlighted in red are the ones that were specifically mentioned in the context of the patient case assessment.*
Patient Case

- The patient undergoes the hernia repair with no intra-operative problems

- He is back in the surgical unit by the evening

- The nurse notes while on rounds the patient is complaining of pain and has a fever
Patient Case

- Pain Scale: 6 out of 10
  - Percocet 5/325mg by mouth 1x with relief
- CBC:
  - WBC: 16,000 cells/L
- Urinalysis:
  - 30 WBC/hpf
  - Nitrite (+)
  - Leukocyte Esterase (+)
  - Bacteria (+)
- Patient given antibiotics
Audience Participation

Assessment Question 2:
What precipitating factors does the patient have for delirium?
Drugs
Electrolyte imbalances
Lack of medications
Infection
Reduced sensory input
Intracranial
Urinary retention/constipation
Myocardial
Surgery
• Nurse notes patient is agitated
• Patient pulls out his IV twice, tries getting out of bed, is calling out frequently, and is not eating
• He has angry outburst claiming the staff is trying to harm him
• At other times he is drowsy
Audience Participation

Assessment Question 3:

What non-pharmacological approaches can be implemented to manage his delirium?

SIMPLE
Non-Pharmacologic Options

**S**timulate the brain

**I**mprove nutrition and hydration

**M**ove the body

**P**ain

**L**ighting

**E**yeglasses and hearing aids
Audience Participation

Assessment Question 4:
The nurse asks for an as needed medication to help control the patient’s agitation, as its interfering with care. What is an appropriate regimen?

A. Diazepam 5 mg by mouth daily
B. Haloperidol 5 mg by mouth every 4 hours
C. Haloperidol 0.5 mg by mouth every 4 hours
D. Quetiapine 25 mg by mouth every 4 hours
Audience Participation

Assessment Response 4:
The nurse asks for an as needed medication to help control the patient’s agitation, as it’s interfering with care. What is an appropriate regimen?

A. Diazepam 5 mg by mouth daily
B. Haloperidol 5 mg by mouth every 4 hours
C. Haloperidol 0.5 mg by mouth every 4 hours
D. Quetiapine 25 mg by mouth every 4 hours
The patient’s profile is as follows:

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<td>Insulin Lispro sliding scale</td>
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<td>Carbidopa – levodopa</td>
<td>25mg – 100mg by mouth four times per day</td>
</tr>
<tr>
<td>Escitalopram</td>
<td>5mg by mouth daily</td>
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<tr>
<td>Donepezil</td>
<td>5mg by mouth daily</td>
</tr>
<tr>
<td>Acetaminophen</td>
<td>500mg by mouth every 4 hours as needed for mild pain (1-3)</td>
</tr>
<tr>
<td>Oxycodone-acetaminophen</td>
<td>5/325mg by mouth every 6 hours as needed for moderate pain (4-6)</td>
</tr>
<tr>
<td>Morphine</td>
<td>1mg IV push every 4 hours as needed for severe pain (7-10)</td>
</tr>
</tbody>
</table>
Audience Participation

Assessment question 5:
Knowing the risk factors for delirium, what medication would you add to the patient’s regimen?

A. Hydromorphone PCA
B. Docusate 100mg by mouth twice daily
C. Ibuprofen 400mg by mouth every 6 hours
Audience Participation

Assessment response 5:
Knowing the risk factors for delirium, what medication would you add to the patient’s regimen?

A. Hydromorphone PCA
B. Docusate 100mg by mouth twice daily
C. Ibuprofen 400mg by mouth every 6 hours
DELIРИUM: CONTRIBUTING FACTORS

- Drugs
- Electrolyte imbalances
- Lack of medications
- Infection
- Reduced sensory input
- Intracranial
- Urinary retention/constipation
- Myocardial
- Surgery
Summary

• Delirium is a **common** disorder affecting 20–40% of hospitalized elderly patients
  
  – Delirium is an **acute** change in cognition
  
  – Treatment principles of delirium are identifying the **cause** of the symptoms and **initiating appropriate interventions**

• **Non-pharmacological** management of delirium should be considered **first-line**
  
  – **Antipsychotics** and **other medications** should be used only when a patient is **harmful** to themselves or others
Thank you!

Lauren Allen, PharmD
PGY-1 Pharmacy Resident

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