Interprofessional Presentation (Multicomplexity): Delirium

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Objectives

- Distinguish between hypoactive and hyperactive delirium.
- Evaluate medications and classes of medications that may contribute to delirium
- Examine interdisciplinary strategies for delirium management and prevention

What is Delirium?

Delirium is a neuropsychiatric disorder, classified as hypoactive, hyperactive or mixed.

Onset if often abrupt in nature and is often confused with terminal restlessness, dementia and severe depression

Has specific DSM-5 diagnosis:

- Evidence of specific cause
- Acute onset
- Fluctuating change in cognition
- Disturbed consciousness

DeMaagd GA, DeMaagd DR, Philip A. Delirium and Its Pharmacological Causes in Older People, Part One-Three. *Sr Care Pharm*. 2021;36(12):619-631. doi:10.4140/TCP.n.2021.619

Hyperactive vs. Hypoactive

Hyperactive Delirium

- Restlessness and agitated behaviors
- Must rule out alcohol use and drug withdrawal

Hypoactive Delirium

- Drowsiness, inactivity
- Subtle changes often missed
- Rule out hypoxia, metabolic issues, and use of anticholinergic medications

Mixed Delirium

- Showing signs of both hyperactive and hypoactive symptoms

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Pathophysiology

- Complex and not fully understood
- Neurotransmitter imbalanced, often conceptualized as a hyper-cholinergic, hyperdopaminergic state
- Other theories include electrolyte/metabolic disturbances causing neuroinflammation
- In older adults, aging is associated with altered transmitter balance and thus an increase in inflammatory responses
- Medications may contribute to delirium more often in older adults to pharmacokinetic changes (decreased renal clearance, increase in Vd, slower elimination)

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Medications that may precipitate delirium:

- Anticholinergics
- Urinary antispasmodics
- Abx (cephalosporins, macrolides, procaine PCN, FQ)
- Drugs that effect the CNS
  - Benzodiazepines
  - Certain antihypertensives (propranolol, DHP-CCBs)
  - Metoclopramide
  - Analgesics (opioids)
  - NSAIDS (indomethacin and selective COX-2 inhibitors)
  - Anticonvulsants (VPA, phenytoin, phenobarbital)
  - Antiparkinsonian agents (levodopa, dopamine agonists)
  - Antidepressants (TCAs most often implicated)
- Corticosteroids
- Antiarrhthmics (digoxin, flecainide)
- H2 blockers
- Antipsychotics
- Hypnotics
- Skeletal muscle relaxants

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Susceptible Individuals

- Older adults
- Dementia
- Cognitive impairments
- Vision impairments
- Severe illness
- Depression
- Alcohol abuse

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Methods of Prevention

- Provide adequate pain control, prevent drug withdrawal, discontinue anticholinergic medications, if possible, proper glucose control, electrolyte management
- Antipsychotics, cholinesterase inhibitors, alpha-2-agonist, and melatonin have all been studied for prevention of delirium in older adults.
  - No significant evidence to suggest a reduction in delirium incidence
- **Non-pharmacologic strategies** –mainstay of prevention
  - Proper sleep/wake cycles
  - Address hydration and/or constipation
  - Address potential infections
  - Encourage mobility
  - Nutrition support

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Methods of Prevention

- Learn how to recognize delirium verses other neuropsychiatric issues
- Important to recognize due to predisposal of falls, fractures, aspirations, dehydration, urinary incontinence, pressure ulcers, constipation, pain, surgery, etc.
- Limited options for medication management
- Non-pharmacological treatment
  - Provide calming environment and relaxation techniques
  - Ensure safety
  - Physical activity
  - Reorientation
  - Sensory stimulation
  - Clear and simple communication
  - Family incorporation
  - Sleep/wake cycles
  - Foley catheter removal if able
  - Allow patients to complete one task at a time
  - Behavioral Management: Describe, Investigate, Create, Evaluate (DICE) or Tolerate, Anticipate, and Don't Agitate (TADA)

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Medication Use in Delirium

- In hypoactive delirium, symptoms are not treated with medication
- Aggression/severe agitation
  - Haloperidol
  - Olanzapine
    - Monitor SE, QTC
    - Use lowest effective doses
- Gabapentin- study found no difference in preventing or treating delirium in older adults receiving post-op care
- Cholinesterase inhibitors-rivastigmine vs haloperidol showed higher mortality in rivastigmine group
- Benzodiazepines-limited role, may be used if antipsychotics are contraindicated
  - Can cause increased delirium and/or confusion
- Guanfacine
  - Retrospective cohort study (Griffith, et al.) included hospitalized older adults (>65 yrs) who were treated with guanfacine, study resulted in reduction of daily antipsychotic exposure
    - However, medication was associated with hypotension and bradycardia
    - More studies necessary due to small sample size

Garvey K, Griffith K, Carter E, et al. Guanfacine for the management of the behavioral manifestations of delirium in older hospitalized adults. *Ment Health Clin*. 2025;15(3):164-169. Published 2025 Jun 2. doi:10.9740/mhc.2025.06.164
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PIP- Potentially Inappropriate Prescribing

- Use BEERs and STOPP/START criteria as a guide to question prescribing of certain medication in geriatric populations
- A study by Webber, et. Al, showed a significant relationship between medications prescribed from BEERs or STOPP/START lists and delirium in long term care.
  - Over 50% of the residents were found to have at least 1 PIP on their medication list
  - Older adults on 3 or more PIP most displayed delirium
  - Residents with no PIP were less likely to have a delirium diagnosis
  - As number of PIPs in population increased, delirium cases increased
  - Important to evaluate for PIP in this population
  - Prevention is KEY!

Webber C, Milani C, Bjerre LM, et al. Potentially Inappropriate Prescribing in Long-Term Care and its Relationship With Probable Delirium. *J Am Med Dir Assoc*. 2024;25(1):130-137.e4. doi:10.1016/j.jamda.2023.08.019

Interdisciplinary Strategies for Delirium Management and Prevention

Strategy	Intervention	Recommendations
Cognitive and Sensory Stimulation	Engage Family Provide opportunities for cognitive stimulation	Puzzles, games, books, music, patient-specific preferences Invite family to visit, familiar items
Delirium screening	Screen on admission, at regular intervals, changes in condition	Appropriate screen tools, staff training, education, avoid confusing pt
Hydration and Nutrition	Oral hydration and consider patient preferences and safety	Equipment that promotes hydration (straws, hydration carts), monitoring and documentation in EHR
Mobility	Promote early and safe mobility, refer to therapy	PT and OT to restore and maintain fxn, Appropriate exercise to promote mobility

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Interdisciplinary Strategies for Delirium Management and Prevention

Strategy	Intervention	Recommendations
Medication Management	Avoid or deprescribe high risk meds Address polypharmacy & monitor	AGS Beers Criteria, Clinical or consultant Pharmacist on the team
Orientation to Time & Place	Verbal & Visual Prompts	Dry erase boards, clocks, daily schedule, verbally orientation to time/place/situation
Pain Management	Ensure adequate pain relief using interdisciplinary approach	Non-pharmacy 1st, use meds cautiously and monitor, involve all member of direct care staff
Personal Adaptive Equipment	Access this equipment to ensure clean and functional, refer for screening	Eyeglasses, hearing aids, dentures stored and maintained appropriately, document in EHR so accessible to all

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Interdisciplinary Strategies for Delirium Management and Prevention

Strategy	Intervention	Recommendations
Staff awareness and recognition	Provider interdisciplinary staff training to assist with early detection	Review, revise, or develop facility policies for delirium prevention and management
Stress management	Maintain consistency, when able, with routine caregivers Reduce unnecessary noise and distraction Prevent sleep interruptions	Daily Schedules Avoid overnight medication administration, vital sign checks, blood draws when/if possible

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Clinical Pearls

- Consider and assess for delirium when there is a change in mental status, as most easily managed if identified early
- Avoid attributing confusion and cognitive changes to pre-existing conditions
- Assessment of dementia should not be conducted during an acute illness
- Hypoactive delirium often presents with older adults eating less, sleeping more, and having changes in mobility
- Avoid the word “agitation”, describe the specific behaviors
- Use Behavioral Management over adding medications
- Avoid adding medications that may contribute to cognitive impairment and attempt to deprescribe possible offenders

Patient Case Scenario One

CC: A 79 year-old male was admitted to an inpatient rehab center following a 72-hour hospital staff after sustaining a fall in his driveway while retrieving the mail. Prior to hospitalization, the patient lived at home with assistance from his 75 year-old wife and two daughters who live nearby with their families. Patient is independent in performing ADLS and enjoys spending time with family, taking short walks with his dog, and having coffee with friends in the AM.

The patient has been in the rehab facility for 5 days following an open reduction and internal fixation of his right hip. Pain levels 6-8 range (scale 1-10) and usually refuses pain medications. Today, he presents with new-onset **confusion/delirium** and refused to attend PT, stating he is too tired. Nursing staff report attempting to get out of bed without assistance, unaware of surroundings, refusal to use his hearing aids, and yelling at staff and family members. This behavior was described as completely out of his usual presentation per his daughters.

PMH: Hypertension, Mild Cognitive Impairment, Spinal Stenosis, Restless Leg Syndrome, and uses eyeglasses and bilateral hearing aids

Patient Case Scenario One

Current medications:

-Donepezil 10mg q day
-Hydrochlorothiazide 12.5mg q day
-Omeprazole 20mg q day
-Lisinopril 40mg q day
-Ropinirole 1mg HS started 2 months ago
-Senna-S 1 tab BID prn
-Oxycodone/acetaminophen 5mg/325mg q 4hrs prn pain level 5-10.
-Acetaminophen 650mg q 4hrs prn pain

-Patient has had 4 doses of acetaminophen and 1 dose of oxycodone/APAP since admission.

Patient Case Scenario One

Orthostatic Blood Pressures

Date	Sitting BP	Standing BP
Day 1	108/74 mmHg	--
Day 2	104/70 mmHg	98/72
Day 3	102/68 mmHg	100/70
Day 4	108/70 mmHg	-
Day 5	102/66 mmHg	-

Labs

	Day 2 Rehab
Sodium	125 mEq/L (LOW)
Potassium	4.2 mEq/L
SCr	0.9 mg/dL
eGFR	>60 mL/min
Hemoglobin	10.5 g/dL
Ferritin	5 (LOW)
ALT	32 units/L
AST	16 units/L
HgA1c	--

Patient Case Scenario One

- What conditions and risk factors does this patient have for developing delirium?
- What medications may be contributing to possible delirium? What changes would you make?
- What non-medication changes would you recommend to improve delirium?

Patient Case Two

JT is an 84 year old male admitted to hospice for a diagnosis of terminal CHF and his condition is declining. He is having increasing chronic pain, constipation, and delirium. Your interdisciplinary team is meeting him today.

Labs 1 month ago. Na+ 141, K+= 4.2, creat.= 1.3, LDL=55,

Hemoglobin= 13.1, Ferritin= 436 (normal 10-270)

- Which medications would you consider discontinuing?
- What additional medications would you recommend?

Medication	Indication
Simvastatin 40mg HS	Hyperlipidemia
Lisinopril 20mg q day	CHF
Furosemide 40mg BID	CHF/Edema
Metoprolol succinate 100mg q day	CHF
Ca++ with Vit D 600/400 BID	Bone Health
FeSO4 325mg BID	History of Anemia
Oxybutynin 5mg BID	Incontinence
Latanoprost 1 gtt OU HS	Glaucoma
Oxycodone ER 20mg BID	Chronic Pain
Diphenhydramine 25mg HS	Sleep
Sertraline 50mg q day	Anxiety Disorder

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