

Management of Delirium in the Non-ICU Geriatric Population

A presentation for HealthTrust members
February 6, 2020

Lauren Allen, PharmD, PGY-1 Pharmacy Resident
RWJ University Hospital-New Brunswick



RWJBarnabas
HEALTH

Speaker Disclosures

- The presenter has no real or perceived conflicts of interest related to this presentation.
- Note: This program may contain the mention of suppliers, brands, products, services or drugs presented in a case study or comparative format using evidence-based research. Such examples are intended for educational and informational purposes and should not be perceived as an endorsement of any particular supplier, brand, product, service or drug.

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

Patient Case

Hydrochlorothiazide 25mg by mouth daily

Felodipine 5mg by mouth daily

Doxazosin 1mg by mouth daily

Glyburide 5mg by mouth daily

Metformin 1000mg by mouth twice daily

Carbidopa 25mg – levodopa 100mg by mouth four times per day

Benztropine 1mg by mouth daily

Paroxetine 20mg by mouth daily

Donepezil 5mg by mouth daily

Acetaminophen 500mg by mouth every 4 hours as needed for pain

Acetaminophen-diphenhydramine take one tablet by mouth as needed for sleep

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



140/80



72



16



97.0 °F

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 effects 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?



Source: Roberts, A., et al. American Community Survey Report. October 2018.

DELIRIUM

DSM-V Diagnosis of Delirium:



Acute



**Cognitive
Dysfunction**

Subtypes:

1. Hyperactive

2. Hypoactive

3. Mixed

Drugs

Electrolyte imbalances

Lack of medications

Infection

Reduced sensory input

Intracranial

Urinary retention/constipation

Myocardial

Surgery

Source: Patel B, Holland N. Delirium Toolbox – Inpatient/Outpatient high value care considerations.
Acponline.org.

DELIRIUM: CONTRIBUTING FACTORS

DIFFERENTIAL DIAGNOSIS

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

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

ASSESSMENT

Non-ICU Confusion Assessment Method (CAM)

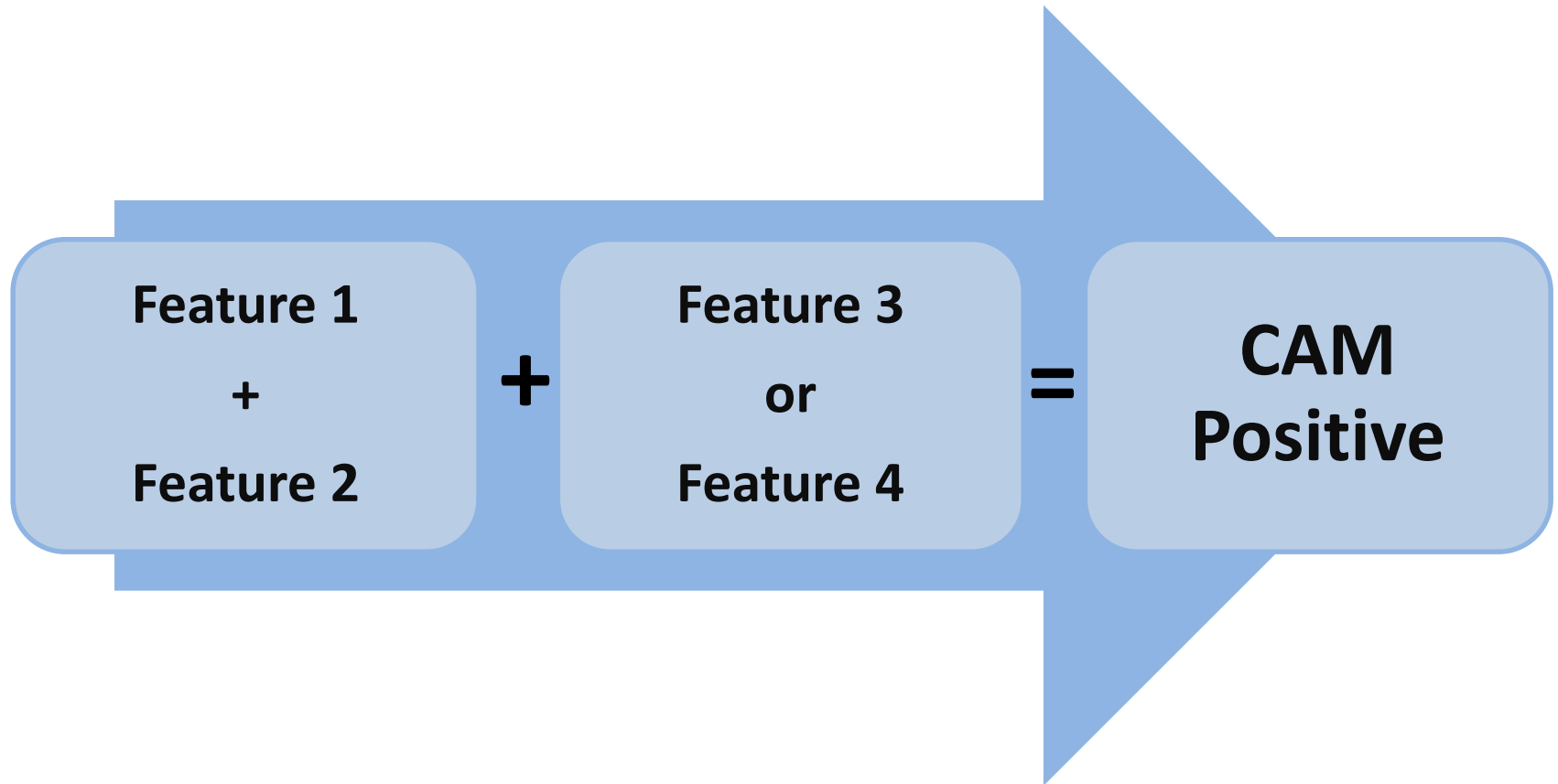
Feature 1: Acute onset or fluctuating course

Feature 2: Inattention

Feature 3: Disorganized thinking

Feature 4: Altered level of consciousness

Positive CAM:



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

Drugs

Electrolyte imbalances

Lack of medications

Infection

Reduced sensory input

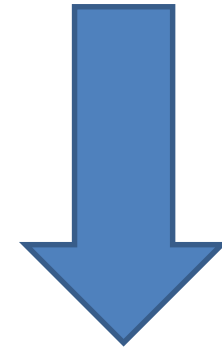
Intracranial

Urinary retention/constipation

Myocardial

Surgery

DELIRIUM CONTRIBUTING FACTORS



Pharmacological Management

Drugs

Electrolyte imbalances

Lack of medications

Infection

Reduced sensory input

Intracranial

Urinary retention/constipation

Myocardial

Surgery

DELIRIUM: CONTRIBUTING FACTORS

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
 - https://qioprogram.org/sites/default/files/2019BeersCriteria_JAGS.pdf
- STOPP/START List
 - <https://academic.oup.com/ageing/article/44/2/213/2812233>

Drugs

Electrolyte imbalances

Lack of medications

Infection

Reduced sensory input

Intracranial

Urinary retention/constipation

Myocardial

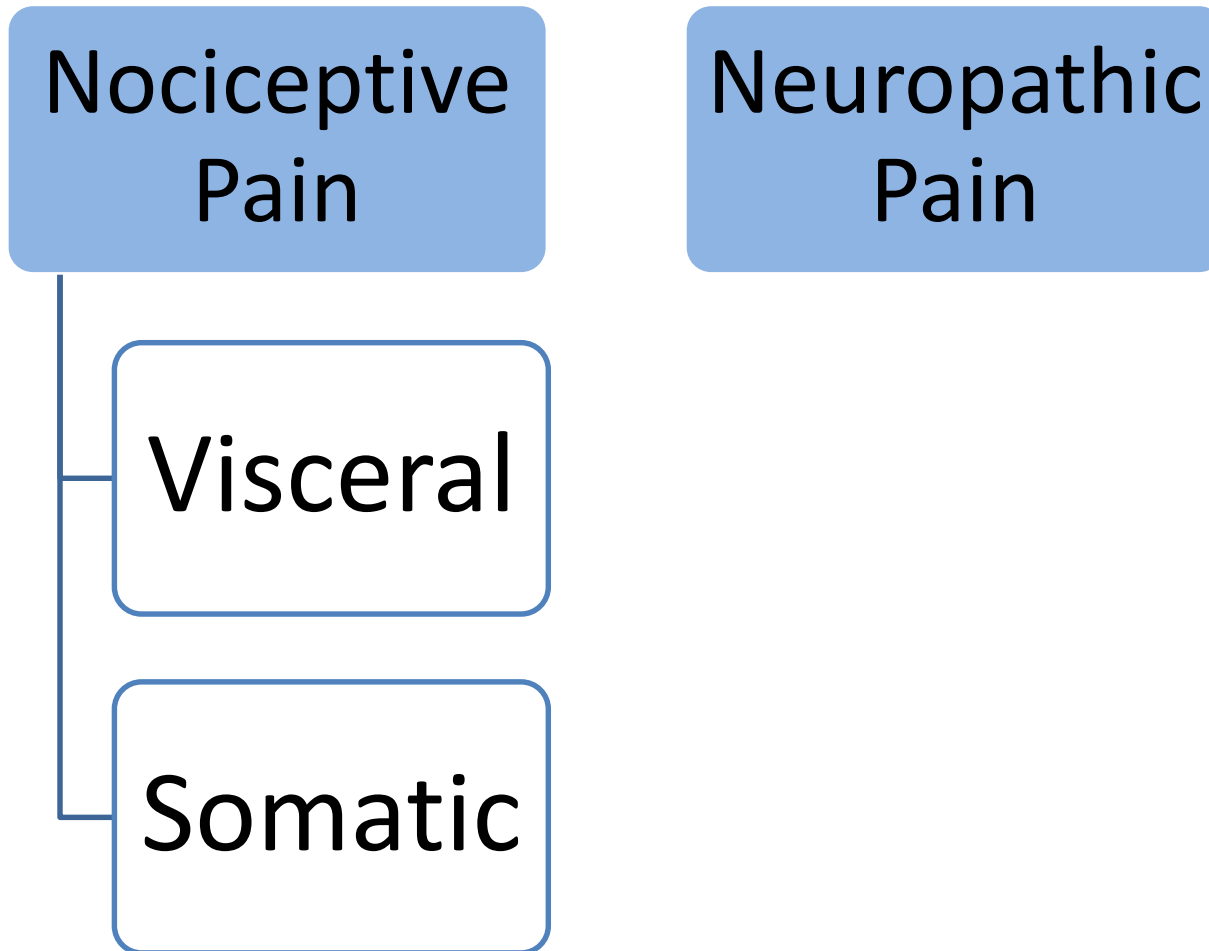
Surgery

DELIRIUM: CONTRIBUTING FACTORS

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:



Management of Nociceptive Pain:

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

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

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

Drug Name:	Adverse Drug Reactions:	Monitoring:	Counseling:
Ibuprofen	<ul style="list-style-type: none">- GI bleeding- AKI- CVA- Dyspepsia- HTN	<ul style="list-style-type: none">- Blood pressure- Kidney function	<ul style="list-style-type: none">- Take with food
Naproxen			
Meloxicam			
Diclofenac			
Celecoxib			

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

Drug Name:	Adverse Drug Reactions:	Monitoring:	Counseling:
Duloxetine Venlafaxine	<ul style="list-style-type: none">- HTN (venlafaxine)- Serotonin syndrome- N/V/D	<ul style="list-style-type: none">- Blood pressure- Kidney function	<ul style="list-style-type: none">- Venlafaxine could cause constipation

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

Drug Name:	Adverse Drug Reactions:	Monitoring:	Counseling:
Gabapentin Pregabalin	<ul style="list-style-type: none">- Drowsiness- Dizziness	<ul style="list-style-type: none">- Kidney function (renal dose adjusted)	<ul style="list-style-type: none">- Limit alcohol intake- Monitor the affects of this medication before driving

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

AGITATION MANAGEMENT

Agitation Management

WARNING

Increased Mortality in Elderly Patients with Dementia-Related Psychosis:

Elderly patients with dementia-related psychosis treated with antipsychotic drugs are at an increased risk of death. Analyses of seventeen placebo-controlled trials (modal duration of 10 weeks), largely in patients taking atypical antipsychotic drugs, revealed a risk of death in drug-treated patients of between 1.6 to 1.7 times the risk of death in placebo-treated patients. Over the course of a typical 10 week controlled trial, the rate of death in drug-treated patients was about 4.5%, compared to a rate of about 2.6% in the placebo group. Although the causes of death were varied, most of the deaths appeared to be either cardiovascular (e.g., heart failure, sudden death) or infectious (e.g., pneumonia) in nature. Observational studies suggest that, similar to atypical antipsychotic drugs, treatment with conventional antipsychotic drugs may increase mortality. The extent to which the findings of increased mortality in observational studies may be attributed to the antipsychotic drug as opposed to some characteristic(s) of the patients is not clear. HALDOL Injection is not approved for the treatment of patients with dementia-related psychosis (see WARNINGS).

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:
 - Extrapyrarnidal 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

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

Audience Participation

Assessment Question 1: What **medications** could be **contributing** to his delirium or are inappropriate for use?

Hydrochlorothiazide 25mg by mouth daily
Felodipine 5mg by mouth daily
Doxazosin 1mg by mouth daily
Glyburide 5mg by mouth daily
Metformin 1000mg by mouth twice daily
Carbidopa 25mg – levodopa 100mg by mouth four times per day
Benztropine 1mg by mouth daily
Paroxetine 20mg by mouth daily
Donepezil 5mg by mouth daily
Acetaminophen 500mg by mouth every 4 hours as needed for pain
Acetaminophen-diphenhydramine take one tablet by mouth as needed for sleep

Audience Participation

Patient Case - Assessment 1 Response

Hydrochlorothiazide 25mg by mouth daily

Felodipine 5mg by mouth daily

Doxazosin 1mg by mouth daily

Glyburide 5mg by mouth daily

Metformin 1000mg by mouth twice daily

Carbidopa 25mg – levodopa 100mg by mouth four times per day

Benzotropine 1mg by mouth daily

Paroxetine 20mg by mouth daily

Donepezil 5mg by mouth daily

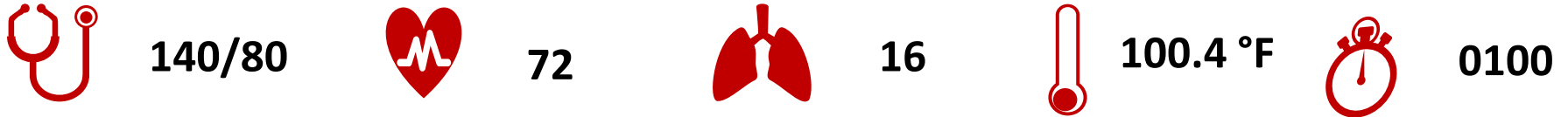
Acetaminophen 500mg by mouth every 4 hours as needed for pain

Acetaminophen-diphenhydramine take one tablet by mouth as needed for sleep

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

Patient Case



140/80



72



16



97.0 °F

- 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

Stimulate the brain

Improve nutrition and hydration

Move the body

Pain

Lighting

Eyeglasses 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 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**

Patient Case

The patient's profile is as follows:

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

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

DELIRIUM: 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
Lauren.Allen@rwjbh.org

