Pain Management in Long Term Care Settings:
Improving Quality of Life While Reducing Adverse Events

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Objectives

• Define medication error, adverse drug reaction, and adverse drug event

• Describe the known evidence on opioid harms in skilled nursing facilities (SNFs), including estimated rates of opioid adverse drug events, risk factors for opioid adverse events in geriatric populations, and the effect on patient outcomes

• Outline tools, processes and policies that can address adverse drug events and prevent future adverse events

• Identify and describe evidence-based non-opioid pain management alternatives appropriate for SNF settings

• Identify the roles and responsibilities different employees can have in promoting safer opioid use and the utilization of non-opioid alternatives to pain management
What’s in a Name?
Medication errors, adverse drug reactions and adverse drug events
Medication Errors

• Defined as “inappropriate use of a drug that may or may not result in harm”
• Errors may occur during:
  – Prescribing
  – Transcribing
  – Dispensing
  – Administering
  – Adherence
  – Monitoring

Adverse Drug Reaction

• Defined as “harms directly caused by a drug at normal doses”
• May or may not be related to medication error
• Includes:
  – Allergic reactions
  – Overdoses
  – Known side effects or interactions

Adverse Drug Event

• Defined as “an injury resulting from medical intervention related to a drug”

• Events include:
  – Medication errors
  – Adverse drug reactions
  – Allergic reactions
  – Overdoses

Drug-Related Harm Terms

Figure 1. Terms Relevant to Drug-Related Harm [2]

- Medication Errors
- Adverse Drug Events (all blue areas)
- Adverse Drug Reactions (dark blue area only)

Opioid Adverse Events
Review Findings and Gaps
What adverse events do you see in patients utilizing opioids for pain management?
Opioid Adverse Events in the Elderly

• Constipation (60% to 90% of patients)
• Nausea and vomiting
  – Variable by patient and agent
  – Tolerance develops quickly
• Somnolence (mini-mental state examination scores lower than 27 were present in 33% of patients)
  – Problematic upon initiation or during dose escalation
  – Combination of central nervous system (CNS) depressants may be fatal
  – Ranges from slight inattention or fatigue, to disorientation, severe memory impairment, or extreme confusion and delirium
• Delirium
  – 12% of all SNF ADEs are medication-induced delirium or other change in mental status

Adverse Event Rates

- From 2008 to 2012 an estimated **22%** of Medicare beneficiaries experience an adverse drug event during their stay
- **59%** were clearly or likely preventable

<table>
<thead>
<tr>
<th>Types of Adverse Events</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Events Related to Infections</td>
<td>26%</td>
</tr>
<tr>
<td>Events Related to Resident Care</td>
<td>37%</td>
</tr>
<tr>
<td>Events Related to Medication</td>
<td>37%</td>
</tr>
<tr>
<td>Medication-induced delirium or other change in mental status</td>
<td>12%</td>
</tr>
<tr>
<td>Excessive bleeding due to medication</td>
<td>5%</td>
</tr>
<tr>
<td>Fall or other trauma with injury secondary to effects of medication</td>
<td>4%</td>
</tr>
<tr>
<td>Constipation, obstipation, and ileus related to medication</td>
<td>4%</td>
</tr>
<tr>
<td>Other medication events</td>
<td>14%</td>
</tr>
</tbody>
</table>

Opioid Adverse Events in the Elderly

- **Myoclonus**
  - Dose dependent
  - Neurotoxicity

- **Neuroendocrine effects**
  - Dysfunction of hypothalamic-pituitary-adrenal axis

- **Weight gain**
  - Abnormal glycemic control

- **Pruritis**
  - 2% to 10% of patients

- **Allergic reaction**

- **Urinary retention**

Opioid Adverse Events in the Elderly

Infection
- Associated with a 38% greater risk for community-acquired pneumonia
- Reduced natural killer cell cytotoxicity and impairment of neutrophil chemotaxis

Sleep-disordered breathing
- Exacerbate existing central or obstructive sleep apnea
- Associated with development of central or mixed sleep apnea with or without predisposing factors

Hyperalgesia

Respiratory depression
- Overdose

Do you have Naloxone in your facility?

## Increased Opioid Overdose Risk

- Take high daily morphine milligram equivalents (MME)
- Obtain overlapping opioid prescriptions from multiple providers and/or pharmacies
- Have mental illness or a history of alcohol or other substance abuse
- Receive rotation opioid medication regimens
- Recent discharge from emergency medical care following opioid intoxication or poisoning

Receive overlapping opioid and benzodiazepine prescriptions
- Receive long-acting or extended release prescriptions for acute pain
- Live in rural areas or having low income
- Completion of mandatory opioid detoxification or abstinence programs
- Recent release from incarceration with a history of opioid use disorder
- Concurrent use of opioids with alcohol or sedating medications

Adverse Drug Event Risk Factors

- Age
- Frail state
- Disability
- Multiple chronic diseases
- Polypharmacy
- High risk medication consumption:
  - Antipsychotics
  - Antidepressants
  - Antiepileptics
  - Anti-infectives
  - Opioids
Organizational level risk:

- Staff knowledge gaps regarding high-risk medications
- Vague procedures to respond to laboratory values
- Inadequate staffing
- Time pressure
- Interruptions during medication preparation and administration
- Limited access to providers or pharmacy
- Lack of interdisciplinary collaboration
An estimated 1.5% of Medicare SNF residents experienced events that contributed to their deaths

An estimated 4% of Medicare SNF residents experienced at least one “cascade” adverse event, wherein multiple, related events occurred in succession

What systems are in place in your organization to reduce the risk of adverse events in your facility?

Do you have a process to evaluate adverse events?

How does your facility communicate adverse events and future prevention strategies?
Adverse Drug Event Root Cause Analysis and Prevention
Adverse Event Screening

Active surveillance is preferred
• Targeted queries
• Health record audits

Awareness
• Educate providers and staff on ADE rates and the effects on patient outcomes

Health literacy

Risk assessment tool implementation
• RIOSARD
• SOAPP-R
• Many others

Adverse Event Prevention

Conduct root cause analysis (RCA) on all discovered adverse drug events
  • Emphasis should be on system-related factors
  • Apply the knowledge gained

Address organizational factors
  • Patient safety culture

Maximize care coordination programs

Work with a pharmacist to manage polypharmacy and formulary restrictions

Root Cause Analysis

Assess
- Determine what is happening
  - Physical causes, human causes, organizational causes

Diagnose
- Determine **WHY** it is happening

Remedy
- Create a solution to reduce the chances it will happen again
Plan of Action

Should be specific and measurable

- What system failure led to the event?
- What roles were involved in the event?
- What needs have been identified?
  - New or change in policy needed?
  - Retraining on process or education on current policy needed?
  - IT safeguards?
    - Alert messages, double checks, peer reviews
Plan of Action (cont’d)

• When will needs be address?
• When will follow-up occur?
  – A plan of action should be very similar to a good goal setting session:
    ▪ Specific
    ▪ Measurable
    ▪ Achievable
    ▪ Relevant
    ▪ Time-bound
**SNF Trigger Tool Worksheet**

Larger version available in slide deck packet online.

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### Table C-2: SNF Trigger Tool Worksheet

<table>
<thead>
<tr>
<th>Core Module Triggers</th>
<th>Medication Module Triggers</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 Acute mental status change</td>
<td>M1 Abnormal electrolytes</td>
</tr>
<tr>
<td>C2 Aspiration</td>
<td>M2 Abrupt medication stop</td>
</tr>
<tr>
<td>C3 Call to physician or family members</td>
<td>M3 Anti-emetic use</td>
</tr>
<tr>
<td>C4 Code or Emergency Medical Services (EMS)</td>
<td>M4 Diphenhydramine (Benadryl) use</td>
</tr>
<tr>
<td>C5 Death</td>
<td>M5 Elevated INR</td>
</tr>
<tr>
<td>C6 Drop in hemoglobin/hematocrit</td>
<td>M6 Epinephrine use</td>
</tr>
<tr>
<td>C7 Studies for emboli: PE or DVT</td>
<td>M7 Glucose +60, Glucagon or Dextrose supplement</td>
</tr>
<tr>
<td>C8 Fall</td>
<td>M8 Abrupt onset hypotension</td>
</tr>
<tr>
<td>C9 Family complaint</td>
<td>M9 Naloxone (Narcan) use</td>
</tr>
<tr>
<td>C10 Any infection</td>
<td>M10 Sodium Polysorbate (Keyesulatate administration)</td>
</tr>
<tr>
<td>C11 New or increased diuretics</td>
<td>M11 Abnormal drug levels</td>
</tr>
<tr>
<td>C12 High or low body temperature</td>
<td>M12 Thromboprophylaxis</td>
</tr>
<tr>
<td>C13 In (SNF) stroke or TIA</td>
<td>M13 Total WBC &gt; 5000</td>
</tr>
<tr>
<td>C14 New onset of infection</td>
<td>M14 Vitamin K administration (Aqua-Maphyton)</td>
</tr>
<tr>
<td>C15 Insertion or use of urinary catheter</td>
<td>M15 Antibiotics started in SNF</td>
</tr>
<tr>
<td>C16 Significant change in Status Assessment in MDS (SCSA)</td>
<td>M16 Increasing pain medication needs</td>
</tr>
<tr>
<td>C17 Resistant infection or accident</td>
<td>M17 Administration of parenteral fluid</td>
</tr>
<tr>
<td>C18 Pressure ulcer</td>
<td>M18 Rising ALT/AST liver function test</td>
</tr>
<tr>
<td>C19 ED visit</td>
<td>M19 Medication Other</td>
</tr>
<tr>
<td>C20 Transfer to acute care hospital or observation (DBS) unit</td>
<td>Procedure Module Triggers</td>
</tr>
<tr>
<td>C21 Restraint use</td>
<td></td>
</tr>
<tr>
<td>C22 Rising serum creatinine</td>
<td>P1 Postoperative/post-procedure complication</td>
</tr>
<tr>
<td>C23 Urinary retention</td>
<td>P2 Procedure reintubation/BRAP/New CRAP</td>
</tr>
<tr>
<td>C24 New onset diabetes</td>
<td>P3 Procedure Other</td>
</tr>
<tr>
<td>C25 Prolonged constipation</td>
<td></td>
</tr>
<tr>
<td>C26 Diagnostic radiology or imaging studies</td>
<td></td>
</tr>
<tr>
<td>C27 Care Other</td>
<td></td>
</tr>
</tbody>
</table>

Adverse Events Worksheet

Larger version available in slide deck packet online

Table F-1: Adverse Events by Clinical Category, Harm Level, and Preventability (n=148)

<table>
<thead>
<tr>
<th>Adverse Event</th>
<th>Harm Level</th>
<th>Preventability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine-Related Delirium or Other Change in Mental Status (13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Delirium and agitation secondary to psychotropic and pain medications</td>
<td>F</td>
<td>CNP</td>
</tr>
<tr>
<td>2. Delirium, hallucinations, and respiratory failure secondary to pain and</td>
<td>F</td>
<td>CP</td>
</tr>
<tr>
<td>3. Confusion, delusions, and continuing episodes of disorientation secondary</td>
<td>F</td>
<td>LNP</td>
</tr>
<tr>
<td>4. Delirium, disorientation, and hallucinations secondary to inappropriate</td>
<td>F</td>
<td>LP</td>
</tr>
<tr>
<td>5. Cascade in which disorientation and hallucinations due to multiple</td>
<td>F</td>
<td>CP</td>
</tr>
<tr>
<td>6. Acute change in mental status due to inadequate hydration therapy that</td>
<td>F</td>
<td>LNP</td>
</tr>
<tr>
<td>7. Acute change in mental status secondary to medication</td>
<td>F</td>
<td>LP</td>
</tr>
<tr>
<td>8. Cascade event in which confusion and somnolence secondary to medications</td>
<td>F</td>
<td>LP</td>
</tr>
<tr>
<td>9. Delirium secondary to multiple pain medications (opioids) resulting in</td>
<td>F</td>
<td>LP</td>
</tr>
<tr>
<td>10. Delirium secondary to psychiatric medications (hydrocodone)</td>
<td>F</td>
<td>LP</td>
</tr>
<tr>
<td>11. Confusion secondary to beta blocker (metoprolol) with sinus bradycardia</td>
<td>F</td>
<td>LP</td>
</tr>
<tr>
<td>12. Episode of unresponsiveness secondary to psychiatric medication (lithium)</td>
<td>F</td>
<td>CP</td>
</tr>
<tr>
<td>13. Lethargy and altered mental status secondary to medication*</td>
<td>F</td>
<td>LP</td>
</tr>
</tbody>
</table>

*Event identified during screening false-negative rate review. Continued on next page.

Non-opioid Pain Management
Non-Opioid Pain Management Options

- Nonsteroidal anti-inflammatory drugs (NSAIDs)
  - Oral or topical
- Acetaminophen
- Lidocaine
  - Gel, patch, or injection
- Anticonvulsants
- Serotonin and norepinephrine reuptake inhibitors (SNRIs)
- Tricyclic antidepressants
- Corticosteroids
- Muscle relaxants
- Anxiolytics
- Physical therapy
- Acupuncture
- Surgery
- Injections
- Nerve blocks
- Massage
- Biofeedback
- Radiofrequency ablation
- Electric nerve stimulation
- Spinal cord stimulator
- Exercise
## Comfort Menus

<table>
<thead>
<tr>
<th>Comfort Items</th>
<th>Comfort Actions</th>
<th>Personal Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra pillow</td>
<td>Re-positioning</td>
<td>Toothbrush</td>
</tr>
<tr>
<td>Extra blanket</td>
<td>Walk in the hall</td>
<td>Toothpaste</td>
</tr>
<tr>
<td>Heat pack</td>
<td>Gentle stretching or range of motion</td>
<td>Vaseline/lip balm</td>
</tr>
<tr>
<td>Ice pack</td>
<td>Visualization</td>
<td>Mouthwash</td>
</tr>
<tr>
<td>Humidity for oxygen tube</td>
<td>Aromatherapy</td>
<td>Floss sticks</td>
</tr>
<tr>
<td>Comfortable clothing</td>
<td>Progressive relaxation</td>
<td>Soap</td>
</tr>
<tr>
<td>Bathrobe</td>
<td>Massage</td>
<td>Lotion</td>
</tr>
<tr>
<td>Socks</td>
<td>Gentle touch</td>
<td>Deodorant</td>
</tr>
<tr>
<td>Music</td>
<td>Prayer or meditation</td>
<td>Ear plugs</td>
</tr>
<tr>
<td>White noise</td>
<td>Controlled breathing</td>
<td>Sleep mask</td>
</tr>
<tr>
<td></td>
<td>Quiet time</td>
<td>Hair tie</td>
</tr>
<tr>
<td></td>
<td>Pet therapy</td>
<td>Nail file</td>
</tr>
<tr>
<td></td>
<td>Shower</td>
<td></td>
</tr>
</tbody>
</table>

Promoting Safer Pain Management
Appropriate Pain Management

Patient evaluation and risk stratification
- Risks and benefits discussed with patient and family when possible

Development of individualized treatment plan and goals
- Reasonably attainable improvement in pain and function
- Improvement in pain-associated symptoms

Ongoing monitoring and adaptive treatment plan
- Routine review of progress, level of function and presence of side effects
MM is a 78 year old female with chronic back pain, primarily caused by degenerative disc disease. Her medical conditions include stage 3 chronic kidney disease, atrial fibrillation, GERD and COPD.

Her current pain medications include:

- Oxycodone 5mg one to two tabs every six hours as needed. The Medication Administration Report indicates she has consumed an average of seven tablets daily for the past 30 days.

MM reports she has had back pain for the past 25 years. She feels the pain has been worsening in the past four months, with increased stiffness after rest, reduced flexibility and reduced mobility.
Case Review #1

• Is MM’s pain treated appropriately?
• Are there any risks associated with MM’s current pain regimen?
• Would you make any treatment recommendations?
Case Review #2

JB is a 72 year old male with a history of chronic pain, depression, anxiety and type 2 diabetes.

His current medications include:

- Tylenol® 325 one to two tabs every four to six hours as needed for mild pain
- Tramadol 50mg QID prn for moderate pain
- Hydrocodone 5/300 two tabs every six hours as needed for severe pain
- Wellbutrin® SR 150mg one tab twice daily
- Alprazolam 0.5mg TID prn
- Long and short acting insulin
Case Review #2

• Is JB’s pain treated appropriately?
• Are there any risks associated with JB’s current medications?
• Would you make any treatment recommendations?