SAFE USE OF OPIOIDS IN HOSPITALS

IntNSA Webinar Series

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Objectives

- Describe the common causes for adverse events associated with opioid use in hospitals
- Outline evidence-based actions and a systems approach to avoid opioid related adverse events
- Discuss management of acute pain in patients with substance abuse disorder
Case

A 56 year-old, 280 lb male is on methadone maintenance 80mg daily for a remote history of polysubstance abuse including Oxycontin. He is now about to undergo lumbar surgery in 1 month for back pain and radiculopathy. He has a lot of anxiety about uncontrolled postop pain and is requesting lorazepam perioperatively.

- Provide several options for the patient’s perioperative pain control plan.
- What are his risks for opioid safety?
- Discuss goals and plans for pain management following hospital discharge.

JC Sentinel Event Alert

- Lack of knowledge about potency differences among opioids
- Improper prescribing and administration of multiple opioids and modalities of opioid administration (i.e., oral, parenteral and transdermal patches)
- Inadequate monitoring of patients on opioids

Issue 49, August 8, 2012

Characteristics of patients at risk for oversedation and respiratory depression

- Increased opioid dose requirement or opioid naive
- Longer length of time receiving general anesthesia
- Receiving other sedating drugs such as benzos, antihistamines, sedatives, or other CNS depressants
- Preexisting pulmonary or cardiac disease or dysfunction or major organ failure
- Obstructive (obesity) or central sleep apnea
- Surgical incisions that may impair breathing
- Older age (2.8X higher 61-70, 5.4X age 71-80, 8.7X age>80)
- Smoker
Commonly Used IV Opioids

<table>
<thead>
<tr>
<th>Opioid</th>
<th>Potency</th>
<th>Onset of Effect</th>
<th>Peak Effect</th>
<th>Duration of Action</th>
<th>Active Metabolites</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydromorphone</td>
<td>7x &gt; morphine</td>
<td>~5 min</td>
<td>~15-20 min</td>
<td>~1-3 hr</td>
<td>No</td>
<td>Yes M6G: opioid agonist M3G: Neuroexcitatory, anti-analgesic effects</td>
</tr>
<tr>
<td>Morphine</td>
<td>~6 min</td>
<td>~20 min</td>
<td>~96 min-4 hr</td>
<td>~30-60 min</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>~2 minutes (highly lipophilic)</td>
<td>~4-6 min</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

0.2mg of IV hydromorphone is approximately equal to 1.3mg of IV morphine
3.0 mg of IV hydromorphone is approximately equal to 13.3 mg of IV morphine or 40mg PO morphine

Respiratory Depression

- Less than 8-12 breaths per minute
- A vicious cycle
  - Progressive rise in PaCO2 (and etCO2) and fall in SPO2
  - A lowered carbon dioxide (CO2) drive
  - Blunting of chemoreceptor response to oxygen and CO2
  - Prolonged exhalation
  - Suppression of depth of respirations
  - Impaired gas exchange
  - Supplemental O2 in COPD causes increased CO2 retention

Sedation is the most important predictor of respiratory depression in patients receiving IV opioids – a fact that only 22% of physicians, pharmacists, and nurses knew

A System’s Approach to Safety: Actions Suggested by The Joint Commission

- Effective processes
- Safe technology
- Appropriate education and training
- Effective tools

Effective Processes

- Policies and procedures for ongoing clinical monitoring of patients receiving opioid therapy
  - Serial assessments:
    - Quality and adequacy of respiration
    - Depth of sedation
  - Perform sedation and respiratory assessment before rousing the patient
  - Reinforce teaching; instruct family and visitors to NOT assist patient with IV PCA
  - Individualize monitoring according to patient response
  - Pulse oximetry useful to monitor oxygenation
  - Capnography useful to monitor ventilation
  - Pulse oximetry and capnography when used should be continuous
Effective Processes

- Policies and procedures that allow for a 2nd level review by a pain management specialist or pharmacist, would include high-risk opioids (e.g. methadone, fentanyl, meperidine, and IV hydromorphone)

- Policies and procedures for tracking and analyzing opioid-related incidents for quality improvement purposes

Safe Technology

- Use information technology to monitor prescribing of opioids
  - Red flags/alerts in e-prescribing systems for all opioids.
  - Separate LASA opioids and use tall man lettering
  - Conversion support systems to calculate correct doses of opioids to help prevent problems with conversions from oral, IV and transdermal routes
  - PCA to reduce the risk of over sedation; use smart infusion pumps with dosage error reduction software

Appropriate Education and Training

- Advise to use both pharmacologic and non-pharmacologic alternatives

- Educate and assess understanding of:
  - Potential effect of opioid therapy on sedation and respiratory depression
  - Difference between ventilation and oxygenation

- Emphasis on how to assess patients for ADRs, how to recognize advancing sedation, and importance of making timely adjustments to plan of care

- Patient and caregiver education (verbal and written)
Effective Tools

- Standard tools to screen for risks
  - Oversedation and respiratory depression
    - Pasero Opioid-Induced Sedation Scale (POSS)
    - Richmond Agitation-Sedation Scale (RASS)
  - Misuse of opioids
    - Screener and Opioids Assessment for Patients with Pain (SOAPP)
    - Opioid Risk tool (ORT)
    - Screening Instrument for Substance Abuse Potential (SISAP)

Factors and activities to avoid accidental opioid overdose

- Screen patients for respiratory depression risk factors
- Assess the patient’s history of analgesic use to identify potential opioid tolerance or intolerance
- Conduct a full body skin assessment to look for fentanyl patches or implanted drug delivery systems/infusion pumps
- Take extra precautions in patients new to opioids and those on other CNS depressants
- Consult a pharmacist or pain management expert for conversions
- Avoid rapid dose escalation in opioid-tolerant patients
- Take extra precautions at care transitions
- Avoid using opioids to meet an arbitrary pain rating or planned discharge date!
- Use multimodal analgesia

Use a Balanced, Rationale, Multimodal Approach

Although analgesics techniques are the mainstay, cognitive and physical strategies are essential.

Multimodal Analgesia

- May consist of opioids with nonopioids along with regional anesthesia

Benefits of MMT
- Additive effects of classes of agents with different MOAs
- Improved pain relief with reduced side effects
- Opioid sparing (30%–50%)
- Continuous coverage with less sedation
- Improved patient outcomes through facilitated rehabilitation (mobilization) and recovery efforts; may allow earlier discharge

Potential drawbacks
- Some techniques are labor-intensive
- Side effects including dizziness, fatigue, headaches, renal failure, bleeding or ulcers in the digestive tract

References:

Pain Management Principles When Addiction is Present

- Single prescriber
- PO route preferred, limit use of short-acting PRN formulations
- When needed, IV PCA is appropriate
- Anticipate tolerance and need for higher than average opioid doses
- Understand opioids are less effective and may increase pain (opioid induced hyperalgesia)
- Explore options for regional & non-opioid alternatives
- Team approach and communication of appropriate goals and plan is essential

Perioperative Management

Preop
- Gabapentin 600mg
- Acetaminophen 1000mg
- Celecoxib 400mg
- Methadone 80mg

Intraop
- Ketamine
- Midazolam
- Remifentanil
- Hydromorphone

Postop
- IV PCA X 24hrs lorazepam sparingly
- Methadone 80mg daily
- Gabapentin 600mg TID
- Acetaminophen 1000mg QID
- Hydromorphone 4-8mg PRN every 3 hr
- DC Orders
- Taper over 2-3 weeks
- How and Who
SAFE USE OF OPIOIDS: COMPLEX CASES

Case

- A 34 year old Iraq war veteran recently diagnosed with Acute Lymphoblast Leukemia is hospitalized for neutropenia and increased pain. He has GVHD after stem cell transplant, with skin, respiratory and gastrointestinal involvement. When hospitalized, he asks for IV hydromorphone despite being able to swallow. He asks the nurse to give it in the closest port and to inject it rapidly. He also requests diphenhydramine to reduce pruritus.

Case

- A 63 year old engineer undergoing chemo/radiation for head and neck cancer is hospitalized for pain, placement of g-tube. Morphine 10 IV every 2 hours is ineffective in relieving pain; the patient reports minimal relief and no sedation is observed. An increase to 15 mg provides little additional relief. He demands additional increases.
Case

- An 82 year old artist with a known history of colorectal cancer presents to the hospital for confusion. He has been taking morphine extended release 60 mg q 12 hours and morphine ir 15 mg every 3 hours around the clock for visceral pain.

Differential Diagnosis of Aberrant Drug-Taking Behavior

- Addiction
- Pseudo-addiction (inadequate analgesia)
- Other psychiatric disorders
  - Chemical coping
  - Mood disorders (anxiety, depression)
  - Encephalopathy
  - Borderline personality disorder
  - Inability to follow a treatment plan (low literacy)
  - Criminal Intent

Biopsychosocial Model of Pain

- Tumor
- Treatment
- Co-morbidities

- Anxiety
- Depression
- Sleep disorders

- Support
- Finances
- Substance use


Strategies to Address Opioid Abuse

- Thorough assessment
- Pain
- Risk factors for abuse
- Universal precautions
- Agreements
- Urine toxicology
- Use of prescription monitoring programs
- Education!

The CAGE and CAGE-AID Questionnaires

<table>
<thead>
<tr>
<th>Item</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Have you ever felt you might have to cut down on your drinking or drug use?</td>
</tr>
<tr>
<td>2.</td>
<td>Have people annoyed you by criticizing your drinking or drug use?</td>
</tr>
<tr>
<td>3.</td>
<td>Have you ever felt bad or guilty about your drinking or drug use?</td>
</tr>
<tr>
<td>4.</td>
<td>Have you ever had a drink or used drugs first thing in the morning to steady your nerves or to get rid of a hangover?</td>
</tr>
</tbody>
</table>

Note: The plain text shows the CAGE questions. The illustrative text was added to produce the CAGE-AID. For this study, the CAGE-AID was preceded by the following instructions: "When thinking about drug use, include illegal drug use and the use of prescription drugs other than as prescribed."

Table from: "The prevalence and detection of substance use disorders among adults ages 18 to 64: A report by the National Institute on Drug Abuse" by Dr. R. L. Schuster and A. L. Paciorek (2012)."
Prescription Painkiller Overdoses in the US
November 2011

15,000

Every year, 15,000 people die every year of overdoses involving prescription painkillers.

1 In 20

In 2010, 1 in 20 people in the US (age 12 or older) reported using prescription painkillers for nonmedical reasons in the past year.

1 Month

Enough prescription painkillers were prescribed in 2010 to medicate every American adult around-the-clock for a month.

Figure 2: Unintentional drug overdose deaths by major type of drug, United States, 1999-2007

Number of deaths

Opioid analgesic
Cocaine
Heroin

Source: National Vital Statistics System

Prescription painkiller overdose deaths are a growing problem among women.

Every 3 minutes, a woman goes to the emergency department for prescription painkiller misuse or abuse.
After Cannabis, Nonmedical use of Prescription and Over-the-Counter Medications. Account for Most of the Commonly Abused Drugs in 12th Graders (in the past year).

People who abuse prescription painkillers get drugs from a variety of sources.

http://www.cdc.gov/homeandrecreationalsafety/rxbrief/

"Balance" and the roles of clinicians and law enforcement.
Sources of Diversion

- Thefts from pharmacies, drug distribution centers
- Thefts from medicine cabinets
- Internet
- Smuggling
- Prescriptions from “pill doctors”

Prevent Diversion

- Educate patients/families regarding safe medication practices
  - Don’t leave medications out
  - Lock boxes
- Safe disposal
  - Take back programs – pharmacies, police depts
  - Mix drug in wet coffee grounds or kitty litter until dissolved, then dispose in garbage – do not flush down toilet

www.deadiversion.usdoj.gov

Case: Management?

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Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has.

Margaret Mead