Opioids in the Acute Care Setting: Safety is Within Our Reach

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Objectives

• Identify system-based causes of medication errors associated with the use of opioids.
• Describe methods to identify risk associated with the use of opioids in their organization.
• Prioritize strategies and actions to prevent harm and improve opioid therapy for effective pain management.
• Select appropriate opioid therapy for severe pain based on chronicity/source of pain and co-morbid medical conditions.

Contributing Factors Not Identified through Voluntary Reporting

• Prescribing
  – Lack of knowledge about equianalgesic potency among opioids
  – Improper prescribing – multiple opioids, with multiple doses, via multiple routes, long acting products
  – Order sets listing multiple opioids
  – Failure to consider patient information
    • Age, co-morbidities, renal status, opioid status, incomplete reconciliation process
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**HAP PA-HEN Knowledge Assessment**

<table>
<thead>
<tr>
<th>% Answering Correctly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
</tr>
<tr>
<td>55%</td>
</tr>
</tbody>
</table>

The development of this tool was in part funded and performed under contract number HHSM 500-2012-00022C, entitled “Hospital Engagement Contractor for Partnership for Patients Initiative.”

**HAP PA-HEN Organization Assessment**

<table>
<thead>
<tr>
<th>#</th>
<th>Item</th>
<th>Asthma/ COPD</th>
<th>Sleep Apnea</th>
<th>Opioid Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Patients are screened for the following elements which might affect the dose, monitoring parameters, or appropriateness of opioid use.</td>
<td>35%</td>
<td>29%</td>
<td>47%</td>
</tr>
<tr>
<td>36</td>
<td>Patients are screened for the following elements which might affect the dose, monitoring parameters, or appropriateness of PCA use.</td>
<td>25%</td>
<td>25%</td>
<td>31%</td>
</tr>
</tbody>
</table>

Contributing Factors Not Identified through Voluntary Reporting

- Dispensing
  - Look-alike drug packaging and labeling
  - Distribution of an unfamiliar product, concentration, or vial size
  - Pharmacy information systems that do not alert the provider against higher doses/frequencies
  - Access to opioid status
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Contributing Factors Not Identified through Voluntary Reporting

- Administration
  - Pain management guidelines or policies are ambiguous
  - Concentrated opioid solutions (oral, injectable) available in the clinical areas
  - Knowledge of equianalgesic dosing; unclear references for dose limits
  - Drug name confusion
  - Lack of use of smart pumps and drug libraries with hard stops for PCA use
Contributing Factors Not Identified through Voluntary Reporting

- Monitoring
  – Variability in the frequency of re-assessment
  – Staff competency with assessment parameters
  – Limited equipment availability and functionality
  – Location of patient
  – Lack of structured handoffs between departments
  – Patient discharge after HYDROmorphe administration before monitoring is complete

Assessments Performed by Nurses Prior to and Following Administration of Parenteral Opioids

![Graph showing assessments performed](image)

The development of this tool was in part funded and performed under contract number HHSM-500-2012-00022C, entitled “Hospital Engagement Contractor for Partnership for Patients: PA Patient Safety Authority. Adverse Drug Events with HYDROmorphe: How Preventable are They? Pa Patient Saf Advis 2010 Sep;7(3):69-75”
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Table 1. Predominant Medication Error
Event Types Associated with the Use of HYDROMorphine (n = 1,135, 67%),
January 2008 to October 2009

<table>
<thead>
<tr>
<th>EVENT TYPE</th>
<th>NUMBER</th>
<th>% OF TOTAL REPORTS (N = 1,694)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wrong dose/overdosage</td>
<td>287</td>
<td>16.9%</td>
</tr>
<tr>
<td>Wrong drug</td>
<td>185</td>
<td>10.9%</td>
</tr>
<tr>
<td>Monitoring error/</td>
<td>137</td>
<td>8.1%</td>
</tr>
<tr>
<td>documented allergy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wrong route</td>
<td>131</td>
<td>7.7%</td>
</tr>
<tr>
<td>Wrong dose/underdosage</td>
<td>106</td>
<td>6.3%</td>
</tr>
<tr>
<td>Other (specify)</td>
<td>289</td>
<td>17.1%</td>
</tr>
</tbody>
</table>

Table 2. Predominant Medications
Associated with Wrong Drug Errors involving HYDROMorphine (n = 146, 78.9%),
January 2008 to October 2009

<table>
<thead>
<tr>
<th>MEDICATION PRESCRIBED</th>
<th>MEDICATION ADMINISTERED</th>
<th>NUMBER</th>
<th>% OF TOTAL REPORTS (N = 185)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HYDROMorphine</td>
<td>morphine</td>
<td>66</td>
<td>35.7%</td>
</tr>
<tr>
<td>morphine</td>
<td>HYDROMorphine</td>
<td>63</td>
<td>34.1%</td>
</tr>
<tr>
<td>HYDROMorphine</td>
<td>lorazepam</td>
<td>6</td>
<td>3.2%</td>
</tr>
<tr>
<td>HYDROMorphine</td>
<td>meperidine</td>
<td>6</td>
<td>3.2%</td>
</tr>
<tr>
<td>oxycodone</td>
<td>HYDROMorphine</td>
<td>5</td>
<td>2.7%</td>
</tr>
</tbody>
</table>

Adverse Drug Reaction (ADR) Reports
Mentioning HYDROMorphine

• Analysts reviewed ADR reports submitted to
  the Authority to determine if there were cases
  that may have been preventable
  – i.e., due to an excess dose of HYDROMorphine

• There were 937 ADR reports submitted to the
  Authority between June 2004 and October
  2009.
  – Almost 90% (n = 842) of the ADR reports discussed events
    that were considered to have not harmed patients
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Table 3. Predominant Adverse Drug Reaction Categories Associated with the Use of HYDROMorphone, June 2004 to October 2009

<table>
<thead>
<tr>
<th>EVENT TYPE</th>
<th>NUMBER</th>
<th>% OF TOTAL REPORTS (N = 937)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central nervous system and/or respiratory depression</td>
<td>449</td>
<td>47.9</td>
</tr>
<tr>
<td>Allergic reactions</td>
<td>361</td>
<td>38.5</td>
</tr>
<tr>
<td>Nausea/vomiting</td>
<td>39</td>
<td>4.2</td>
</tr>
<tr>
<td>Unknown/reaction not specified</td>
<td>34</td>
<td>3.6</td>
</tr>
</tbody>
</table>

ADR Reports Mentioning HYDROMorphone

- Evaluated CNS/respiratory depression reports for preventability
  - Adult patient received > 1 mg of HYDROMorphone
  - Elderly patient received 1 mg or more
  - Patient received multiple medications with sedative properties
  - Contraindications, i.e., sleep apnea
- Of the reported CNS and respiratory adverse reactions, 65% (n=292) appear to have been preventable events

Examples of “Preventable” ADR Reports

- An adult patient was admitted with abdominal pain and received
  - Demerol® (meperidine) 25 mg IV push at noon and 1 p.m., followed by
  - Dilaudid 2 mg IV push at 2 p.m., 3 p.m., 4 p.m., and 6 p.m.
- At 7 p.m., the patient was found with shallow respirations and was difficult to arouse
- The patient responded to Narcan, and the orders were changed to Dilaudid 1 mg IV every 2 hours prn
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Recommendations

• Strategies can be employed to address the problems with HYDROmorphine
  – Appropriate patient assessment
  – Establish internal guidelines/resources for the safe use of HYDROmorphine
  – Support safe communication of drug information
  – Place barriers around distribution and drug selection
  – Enhance differentiation of HYDROmorphine from other opioids

• Employ technology and manual redundancies as appropriate
  – Provide resources and expectations for appropriate monitoring
  – Create policies, required education on equianalgesic dosing, creating critical awareness of the issues with HYDROmorphine
  – Identify risks associated with opioids in your organization
  – Use metrics to evaluate the reliability of processes and success with any changes

Identifying Risk with Opioids

• What internal methods are being used to identify the problem?
  – Voluntary error reports; sentinel events
  – Reported adverse drug reactions
  – Pharmacy interventions
  – Use of triggers
  – Rapid response team information
  – Data from technology
  – Fall data
  – External sources of information
AND OTHER OPIOIDS??
mf, 6/29/2017

Do you want to add "and other opioids" just so it doesn't look like you're just focusing on him?
Maria Foy, 6/25/2017
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Safe Prescribing of Opioids

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Pain and Opioid Prescribing

• Approximately 116 million people are affected by pain each year
• Increase in prescribing of opioids has fostered an opioid epidemic
  — Opioid prescribing increased four-fold since late 1990’s
  — Opioid deaths have matched increase in prescribing
  — Diversion and improper use contributing to the crisis
  — OPIOIPHOBIA becoming common
    • Fear and bias regarding opioid prescribing and use

The Pendulum is Swinging

• Number of patients in pain remain high despite increased opioid use
• As opioid prescriptions increased, so did inappropriate use
  — Of the 34000 opioid deaths in 2013, 37% were from prescription medications
  — Approximately 19% of deaths were due to heroin
• The number of opioid related deaths (including heroin) have quadrupled in last 15 years
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Proposed TJC Standards: Medical Staff and Hospital

- Active involvement in pain assessment, management, and safety of prescribing opioids
- Criteria defined to screen, assess, and reassess pain based on patient specific factors
- Screening during ER visit and at admission
- Involvement of the patient by communicating realistic expectations, objectives of treatment, treatment options, safe use
- Monitor for high risk patients for adverse reactions
- Education of patient and family at discharge on plan, side effect management, ADL’s, and storage issues

Proposed TJC Changes: Leadership

- New standards in effect January 2018
- Pain management recommended to be an institutional priority
  - Monitoring of performance improvement activities
  - Provide educational resources and programs
  - Resources available for complex patients
  - Facilitates access to PDMP
  - ID treatment programs for needed referrals
Polling Question

- True or False
  - The majority of opioid deaths are in patients prescribed opioids.

Creating a Safe Pain Management Strategy

- Patients in pain deserve treatment, even those with current or history of substance use disorder (SUD)
- Comprehensive SUD risk assessment needed
  - Identify risks for substance use disorder
- Develop treatment program based on risk
- Multi-modal treatment needed for chronic pain
  - Use of non-opioid analgesics
  - Use of complimentary therapies
  - Increase monitoring if opioids indicated

Polling Question

- What is the first step in assessing pain?
  1. Perform a urinary toxicology screen
  2. Complete a pain assessment
  3. Obtain CT imaging
  4. Order blood work to rule out infection
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**Risk Mitigation Strategies**

- Screen patients for addiction risks
  - Opioid risk tool (ORT)
  - Screener and Opioid Assessment for Patients with Pain (SOAPP and SOAPP-Rev)
- Prescription Drug Monitoring Program (PDMP) data review
- Random urine drug screening
- Treatment agreements

**Risk Factors for SUD**

- Family history of inappropriate substance use
- Personal history of addiction or “chemical coping” behaviors
  - All patients with SUD are “chemical copers”
  - BUT...not all chemical copers suffer from SUD
- Current inappropriate substance use can increase future risk
  - Excessive alcohol use
  - Cigarette smoking

**Multimodal Interventions**

- Utilization for more than one treatment approach for pain management
  - Pharmacologic
  - Non-pharmacologic
  - Interventional
  - Complimentary
  - Psychological
- Multimodal medication treatment approach utilizes therapies based on targeted areas along the pain pathway
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Treatment Characteristics

<table>
<thead>
<tr>
<th></th>
<th>ADVANTAGES</th>
<th>DISADVANTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaminophen</td>
<td>Recommended for mild pain</td>
<td>Can cause liver damage</td>
</tr>
<tr>
<td></td>
<td>Minimal side effects</td>
<td>In many OTC's – can easily unknowingly exceed ceiling dose</td>
</tr>
<tr>
<td>NSAIDS</td>
<td>Recommended for mild, inflammatory pain</td>
<td>Can precipitate acute renal failure</td>
</tr>
<tr>
<td></td>
<td>Good for bone metastasis, sickle cell pain</td>
<td>Risk of gastrointestinal bleed</td>
</tr>
<tr>
<td></td>
<td>Part of multimodal therapy</td>
<td>Dosage ceiling</td>
</tr>
<tr>
<td>Tramadol</td>
<td>Recommended for moderate pain, neuropathic pain</td>
<td>Many drug interactions</td>
</tr>
<tr>
<td></td>
<td>Many drug-interactions</td>
<td>Adverse reactions common</td>
</tr>
<tr>
<td>Opioids – pure mu agonists</td>
<td>Recommended for severe pain</td>
<td>Lack of understanding of different potencies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADHD's common</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hyperalgesia development</td>
</tr>
<tr>
<td>Tapentadol</td>
<td>Recommended for severe pain, neuropathic pain</td>
<td>Ceiling dose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New medication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expensive</td>
</tr>
</tbody>
</table>

Polling Question

• True or False
  – Every opioid will effect everyone the same way and will provide equivalent levels of pain control among different individuals

Safe Opioid Use for Acute Pain

• Assess opioid tolerance status
• Understand opioid equivalencies
• Be aware of options that should not be used for acute pain without specialist approval
  – Fentanyl patch
  – Methadone
• Highest risk for OD is during the 24 hours after surgery
  – Understand risk factors for respiratory depression
  – Assess for both pain and sedation
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Prescribing Opioids

• Pain management needs individualization!
  – Opioids are NOT a one size fits all therapy
• Treatment selection for severe pain based on
  – Chronicity of pain
  – Pain source
    • In absence of physical findings, consider central sensitization
  – Co-morbid medical conditions
    • Respiratory, renal, liver issues
    • Anxiety, depression, PTSD
    • Opioid naïve vs. tolerant

Patient Characteristics

• History and physical
  – Establish a diagnosis
• Age
• Evaluate risk for substance abuse
• Check for co-morbidities that may affect choice and dosing
• Past opioid use
  – Evaluate for response to codeine, if previously used

Additional Considerations

• Type of pain
  – Neuropathic pain responds better to co-analgesics
    • Antidepressants
    • Anticonvulsants
    • Topical products
• Chronicity: acute vs. chronic pain
• Cancer vs. non cancer pain
• Caution with opioid use in non-cancer pain
  – Improvement of function is the goal
  – Assess co-morbidities and risk of abuse
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Opioid Choice Considerations

• Codeine and morphine should be avoided in severe kidney disease
  — Accumulation of metabolites can cause toxicity
• Fentanyl drug of choice for patients with severe renal/liver disease
  — Fentanyl PCA often restricted or not available
• Methadone good option in renal disease
  — Dosing is complicated — specialist initiation and monitoring needed
• Hydromorphone/oxycodone relatively safe in renal disease
• Caution with ER medications in end stage liver disease

Is Morphine for Everyone?

<table>
<thead>
<tr>
<th>Positives</th>
<th>Negatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to control intense pain and suffering</td>
<td>Not recommended in renal failure due to toxic metabolites</td>
</tr>
<tr>
<td>Most studied</td>
<td>Most histamine release</td>
</tr>
<tr>
<td>Inexpensive</td>
<td>Possibly higher incidence of GI related adverse reactions</td>
</tr>
<tr>
<td>Many formulations</td>
<td>Addiction potential</td>
</tr>
<tr>
<td>Good choice for shortness of breath at end of life</td>
<td>Delayed plasma response an issue with titration for acute pain — stacking may occur</td>
</tr>
</tbody>
</table>

Is Hydromorphone for Anyone?

<table>
<thead>
<tr>
<th>Positives</th>
<th>Negatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>More potent than morphine</td>
<td>Neuro-excitatory effects are increased with higher dosing, seen with end stage disease</td>
</tr>
<tr>
<td>Quicker distribution into plasma and BBB than with morphine</td>
<td>Potency often mistaken as equivalence with morphine, potentially causing an overdose situation</td>
</tr>
<tr>
<td>Better for acute pain titration as plasma response is not delayed</td>
<td></td>
</tr>
</tbody>
</table>
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Is Fentanyl Safe?

- Fentanyl is 100 x stronger than morphine
- Drug of choice in renal and liver failure
  - Only available as transmucosal formulation for cancer pain
  - REMS requirement prior to prescribing
- Often restricted to practitioners familiar with use
  - Dosed in mcg – errors in conversions seen
  - Patch recommended only in opioid tolerant* patients
    • Not indicated for acute pain
    • Delayed onset (12-16 hrs) with patch
    • Delayed offset can be problematic with overdose

Communicating with Patients About Opioids

Sample Phrases:

- “Opioids work well for acute pain, such as just after surgery or a serious injury.”
- “There is not a lot of evidence that they work well or that they are safe for chronic pain, especially at the higher doses.”
- “As you have probably seen in the news, many people are accidentally overdosing and dying from prescription opioid use.”
- “I need to carefully weigh the possible benefits that might come from prescribing these medications against the known risks that exist.”

How to Say “YES”

“I am willing to try some opioid medication to see if it helps you and does not cause you too many problems.

- This will be on a trial basis and we will re-evaluate often to see how you are doing.
- I may decide very soon or at future date several months or years from now that the benefits of this medication are not enough to justify the risks involved.
- We need to be realistic from the start: these medications cannot be expected to make you free of pain or to give you complete pain relief. Instead, we are aiming to help to take the edge off of the pain.”
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**How to Say “YES”**

- “Most importantly, we want to see if we can get you to do things that are important to you -- maybe you will do more exercise or other activities with the same amount of pain, or maybe you can have less pain doing what you already do.”

- “Also, these medications do not work well when they are the only tool that we are using. It will be important for you to get regular exercise, to get regular sleep, to eat a good diet, and to manage your stress well. We also need to make sure that you are: (using your CPAP regularly for your apnea, that your blood sugars are controlled well, etc.)”

**How to Say “NO”**

I am not comfortable prescribing opioids to you because it seems to me that the risks are too high compared with the benefits; I am concerned that these medications can harm you more than help you because of:

- your recent history of (current use of) alcohol (opioids, methamphetamine, etc.)
- your current problems with depression (or memory or emotional stability)
- your sleep apnea, COPD, heart disease, etc.

There are some other treatments and self-management options for pain management that we can pursue, including

**Patient and Family Education**

- Realistic expectations are key!
  - Patient education and engagement essential for success
  - No pill alone can control chronic pain

- Provide information and written instructions regarding potential risks of adverse reactions and substance abuse
  - Differentiate addiction, dependency, tolerance and withdrawal

- Review proper storage and disposal

- Highlight benefits of non-pharmacologic therapies
  - PT, massage, acupuncture
  - Water therapy
  - Mind/body techniques
  - Cognitive behavioral or acceptance therapies
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References

• Kreiner S. Serious Complications from Opioid Overuse in Hospitalized Patients Prompts Nationwide Alert. The Hospitalist. 2013 February
• Smith HS, Poppin JF. Toward a systematic approach to opioid rotation. J Pain Res. 2014; 7: 589-608

Questions??

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