Intravenous Hydromorphone Prescribing Patterns in a Community Hospital Emergency Department: an Assessment for Opioid Stewardship Optimization

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BACKGROUND
- As of 2017 the US department of Health and Human Services declared the Opioid Crisis a public health emergency, making opioid stewardship the responsibility of all involved in the prescribing process.
- Acute pain is a common problem in the emergency department (ED). In some cases, pain has been identified as the chief complaint in upwards of 50% of all ED visits.
- Common treatments include non-steroidal anti-inflammatory drugs (NSAIDs), muscle relaxants, anxiolytics, and opioids.

PURPOSE
- Determine prescribing patterns of the opioid hydromorphone ordered intravenously (IV) in the ED
- Identify potential opportunities for opioid stewardship in the ED

METHODS
Design: Retrospective, single center, electronic medical record review
- 29 bed ED, ~ 40,000 annual visits
- Encounters occurred August 2020 to February 2021
Inclusion criteria: Patients who visited the ED during the study period and received at least 1 dose of IV hydromorphone
Exclusion criteria: Patient was admitted or transferred to another hospital following ED visit
- IV hydromorphone used for end-of-life or comfort care
Statistical analysis: Chi square statistics were performed using an online calculator on Social Science Statistics, alpha set at 0.05

RESULTS
- 221 encounters among 204 total patients were evaluated during the study period identified in initial search
- Average patient age: 47.9 +/- 11.8 years

<table>
<thead>
<tr>
<th>Pain Origin (n, %)</th>
<th>Repeat Visitors, n</th>
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</thead>
<tbody>
<tr>
<td>Abdomen 103 (46.6)</td>
<td>2 encounters 9</td>
</tr>
<tr>
<td>Musculoskeletal 37 (16.7)</td>
<td>3 encounters 1</td>
</tr>
<tr>
<td>Flank 29 (13.1)</td>
<td>4 encounters 3</td>
</tr>
<tr>
<td>Back 26 (11.8)</td>
<td>5 encounters 3</td>
</tr>
<tr>
<td>Chest 15 (6.8)</td>
<td>7 encounters 1</td>
</tr>
<tr>
<td>Headache 7 (3.2)</td>
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<tr>
<td>Sickle Cell Crisis 4 (1.8)</td>
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Proportion of Encounters with IV hydromorphone as first line: 67% (149)
Proportion of encounters with NO morphine or fentanyl allergy: 60% (133)

DISCUSSION
- When ordered, IV hydromorphone was the first line treatment in most cases
- Disparities in prescribing habits among ED providers have been identified, illustrating potential need for improvement in opioid prescribing habits
- Patients with morphine and fentanyl allergies were significantly more likely to be given hydromorphone first line, which may be appropriate
- Patients with repeat visits were not more likely to be prescribed hydromorphone first line

LIMITATIONS
- No adjustment for number of provider shifts worked
- Did not evaluate dosing strategies with patient weight

CONCLUSIONS
- Opportunities to improve prescribing habits at the Olathe Medical Center ED were identified
- Potential initiatives to address current patterns include physician and nursing education and order set modifications that emphasize use of alternative analgesic agents (e.g. ketamine, local anesthetics, NSAIDs)

AUTHORS’ DISCLOSURES
The authors have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interested in the subject matter.

REFERENCES