Pain Management Trends among Adults Hospitalized with Cellulitis: An Evidence-based Practice Project

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Pain Management Trends Among Adults Hospitalized with Cellulitis: An Evidence-Based Practice Project

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Cellulitis and Pain

- Pain is most common reason why someone comes to the hospital
- Model population
  - Medical, not surgical
  - Not traumatic
  - Similar kind of pain experienced
- Goals of care to alleviate pain
- **Cellulitis**
  - Painful skin Infection
  - Affects 2.5-3.5 million adults

- **Problem**
  - Opioids are commonly prescribed
  - Can be managed with non-opioid
  - Contributes to opioid epidemic
PICOT Question

Among patients hospitalized at two acute care hospitals in the Pacific Northwest for cellulitis, how have analgesic administration practices evolved between the years 2014-2020?

Objectives

<table>
<thead>
<tr>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe evolving opioid and non-opioid prescribing practices</td>
</tr>
<tr>
<td>Characterize patients who receive an opioid medication</td>
</tr>
</tbody>
</table>
Opioid Stewardship

- The Joint Commission 5th vital sign (2001)
- Between 2016-2018, efforts implemented to enhance opioid stewardship
Society of Hospital Medicine Guidelines

- Published in 2018
- Specific to inpatient acute pain
- 16 recommendations
  - Whether to use opioids
  - How to improve the safety of opioid use
  - How to improve the safety of prescribing opioids at discharge
Clinical Practice Guidelines

- Society of Hospital Medicine Guidelines

- That clinicians limit the use of opioids to patients with 1) severe pain or 2) moderate pain that has not responded to nonopioid therapy, or where nonopioid therapy is contraindicated or anticipated to be ineffective.
Practice Gap

What We Know

• There is no difference in pain management among adults with non-surgical, non-traumatic extremity pain when treated with opioid compared to non-opioid medications.

Practice Recommendations

• Guidelines suggesting how to prescribe

What we did not know

• The evolving practices and alignment with the practice guidelines
• Gap in practice
USCF Symptom Management Model

**Person**
Gender, hx of chronic pain, diabetes, hx of substance use disorder, BMI, age, primary or secondary diagnosis of cellulitis

**Symptom Experience**
Pain scores

**Environment**
Hospital
Hospital Year
Administration of opioid
Administration of non-opioid

**Components of Symptom Management Strategies**
Opioid or non-opioid medications

**Outcomes**
Pain relief, rate of prescriptions, and factors influencing prescriptions

**Health and Illness**
Pre-hospital opioid prescription, history of chronic pain, history of diabetes, history of substance use disorder
Methods

- Observational descriptive design
- Retrospective, de-identified data, extracted from the electronic health record

Inclusion criteria:
- Inpatient admission for primary or secondary reason cellulitis from January 2014 until December 31, 2020;
- Age 18 years or older at time of hospitalization admission;
- Inpatient length of stay between 24 hours and one week
- 4,523 records
Aim 1

1. Describe the sample of patients hospitalized with cellulitis at two acute care hospitals in the Pacific Northwest from 2014-2020. Examine differences in characteristics for patients receiving opioid and not receiving opioid medications in the treatment of pain during hospitalization

   - Analytical plan
     - Descriptive statistics
Aim 2

2. Determine the rate of inpatient prescriptions to manage cellulitis over time
   - Analytical plan
     - Descriptive report of proportions for each year
Results

- Rate of opioid administration significantly decreased
- Non-opioid administration rates were stable over time
## Mean Sample Characteristics (N = 4,523)

<table>
<thead>
<tr>
<th>Sample Characteristics</th>
<th>Inpatient Opioid Yes (N=3794) Mean±SD</th>
<th>Inpatient Opioid No (N=729) Mean±SD</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>57.6±17.4</td>
<td>62.9±18.6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Length of stay (hours)</td>
<td>90.9±36.3</td>
<td>75.6±38.2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Pain on admit*</td>
<td>6.2±3.2</td>
<td>3.5±3.2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Pain on discharge**</td>
<td>4.6±2.8</td>
<td>2.6±2.7</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*missing n=186 cases  
**missing n=249 cases
## Frequency Sample Characteristics (N = 4,523)

<table>
<thead>
<tr>
<th>Sample Characteristics</th>
<th>Inpatient Opioid Yes (N=3794) n(%)</th>
<th>Inpatient Opioid No (N=729) n(%)</th>
<th>P- value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chronic pain</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>550 (14%)</td>
<td>65 (9%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>No</td>
<td>3244 (86%)</td>
<td>664 (91%)</td>
<td></td>
</tr>
<tr>
<td><strong>Pre-hospital opioid use</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1252 (33%)</td>
<td>64 (9%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>No</td>
<td>2542 (67%)</td>
<td>665 (91%)</td>
<td></td>
</tr>
<tr>
<td><strong>Substance use disorder</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>863 (23%)</td>
<td>112 (15%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>No</td>
<td>2931 (77%)</td>
<td>617 (85%)</td>
<td></td>
</tr>
<tr>
<td><strong>Average pain severity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No pain (0)</td>
<td>76 (2%)</td>
<td>96 (13%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mild pain (0-3)</td>
<td>401 (11%)</td>
<td>223 (31%)</td>
<td></td>
</tr>
<tr>
<td>Moderate pain (3-6)</td>
<td>1751 (46%)</td>
<td>205 (28%)</td>
<td></td>
</tr>
<tr>
<td>Severe pain (&gt;6)</td>
<td>1452 (38%)</td>
<td>70 (10%)</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>114 (3%)</td>
<td>135 (18%)</td>
<td></td>
</tr>
</tbody>
</table>
Discussion

- Rates of opioid prescriptions decreased each year
- Almost all participants received an opioid
- Many differences emerged between groups
What is next?

- Future studies
  - Alternate analgesics/Eligibility
  - Outpatient opioid use
  - Other types of non-surgical pain
References

Questions?
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