Narcotic Prescribing Following Orthopaedic Injury in the Pediatric Population

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Background

- Problems with evaluating and managing pain in the pediatric population
- Lack of literature
- 2012 WHO Guidelines on Pharmacological Treatment of Persisting Pain in Children with Medical Illnesses
  - Currently no WHO guidelines for acute pain
- AAP call for further research to better determine strategies for effective pain management
Indications for Intervention

• Increase in opioid prescriptions
  – Both adult & pediatric populations

• Adolescent experimentation
  – Increase in opioid-related fatalities

• Accidental poisonings
  – 70,000 pediatric ED visits annually
Specific Aims

1. To provide a descriptive analysis of opioid & benzodiazepine prescribing in the pediatric orthopaedic trauma population at Carolinas Medical Center

2. To compare encounters in which a patient received an opioid or benzodiazepine prescription to those encounters that did not in this population
Methods

• Retrospective Chart Review
  – Baseline Data: 4/25/15 – 5/25/15
  – 124 Pediatric Orthopaedic Trauma Cases
    • 0-5 years: 27 cases
    • 6-11 years: 45 cases
    • 12-17 years: 52 cases
  – Encounter, PMHx, Pt Demographics, Rx Details, Injury Info, Fracture Type & Fixation, Surgeon, Discharge Info
Results

Age Groups

- 0 - 5 yrs: 22%
- 6 - 11 yrs: 36%
- 12 - 17 yrs: 42%

Payer Status

- Private: 6%
- Medicaid: 47%
- Uninsured: 47%

Gender

- Male: 43%
- Female: 57%
# Results

<table>
<thead>
<tr>
<th>Bone Fractured</th>
<th>0 – 5 yrs</th>
<th>6 - 11 yrs</th>
<th>12 – 17 yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Extremity</td>
<td>11</td>
<td>31</td>
<td>19</td>
</tr>
<tr>
<td>Lower Extremity</td>
<td>5</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment Info</th>
<th>Received Narcotics</th>
<th>No Narcotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Patients</td>
<td>102</td>
<td>22</td>
</tr>
<tr>
<td>Operative fixation</td>
<td>58</td>
<td>2</td>
</tr>
<tr>
<td>Closed Reduction</td>
<td>23</td>
<td>15</td>
</tr>
</tbody>
</table>
# Narcotics Encounters

## Drug Prescribed

<table>
<thead>
<tr>
<th>Drug Prescribed</th>
<th>N=103</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrocodone-acetaminophen</td>
<td>96</td>
</tr>
<tr>
<td>Oxycodone-acetaminophen</td>
<td>5</td>
</tr>
<tr>
<td>Tramadol</td>
<td>1</td>
</tr>
<tr>
<td>Acetaminophen-codeine</td>
<td>1</td>
</tr>
</tbody>
</table>

## Age Group

<table>
<thead>
<tr>
<th>Age Group [years old]</th>
<th>0 – 5 years</th>
<th>6 – 11 years</th>
<th>12 – 17 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received Narcotics</td>
<td>19</td>
<td>34</td>
<td>49</td>
</tr>
<tr>
<td>70.4%</td>
<td>75.6%</td>
<td>94.2%</td>
<td></td>
</tr>
<tr>
<td>Did Not Receive Narcotics</td>
<td>8</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>29.6%</td>
<td>24.4%</td>
<td>5.77%</td>
<td></td>
</tr>
</tbody>
</table>
Summary of Fit

Linear Fit: MME = -3.91 + 3.25 * Age

$R^2 = 0.45522$

ANOVA: $p < 0.0001$

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Mean MME</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 5 years</td>
<td>9.447</td>
<td></td>
</tr>
<tr>
<td>6 – 11 years</td>
<td>20.791</td>
<td>$p &lt; 0.0001$</td>
</tr>
<tr>
<td>12 – 17 years</td>
<td>43.438</td>
<td></td>
</tr>
</tbody>
</table>
Limitations

• Retrospective Chart Review
  – Small sample size

• Limited to CHS medical records

• No link to state PDMPs
Conclusions

• High frequency of narcotic prescriptions for orthopaedic injuries
  – In children undergoing closed treatment of fractures and operative fixation

• Older children (adolescents) are more frequently prescribed narcotics often with higher doses
Impact

- Help to establish guidelines for prescribing narcotics to children in an acute pain setting

- MME’s in mg/kg
- ICD-9 codes from EDW: compare prescribing practices of orthopaedic surgeons at CMC to those of other CHS providers delivering orthopaedic care
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References


Thank You!