Acute Pain Management: Impact of Opioid Tolerance Leveling on Patient, Provider, and System Outcomes

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Study Design

**Design**
A quasi-experimental design examined the effects of an integrated pain management program designed with a four-prong approach:
- education of the provider of opioid selection and utilization
- focused approach for assessment of patient experience and tolerance with opioids
- consistent and reliable sedation-based selection and administration of opioids
- structure and processes enabling surveillance and escalation of pain management

**Data Sources**
- Nurses knowledge and attitudes survey regarding pain (NKASRP)
- HCAPPS
- Nalone administration logs
- Utilization Rates

**Setting**
Four post-operative nursing units within one large healthcare system

**Study Population**
- Registered Nurses
- Post Operative Surgical Patients
- Providers on pilot units

**Methods**
- Non-randomized convenience sampling of nurses were administered the NKASRP survey across all shifts and compared pre to post
- HCAPPS aggregate data was collected pre and post via the organization’s selected vendor for the intervention
- Nalone administration data was pulled from existing hospital databases and rate was calculated by patient days compared pre to post
- Utilization rates of pilot order sets were tracked over time of pilot period
- 3 month period - November 2014 to February 2015

**IRB Approval**
Registered Nurses completion of the survey implied consent

**Data Analysis**
- Mann Whitney U
- Chi-Square

**Results**
- **52** nursing NKASRP participants across four units
- Summary of pre and post individual unit level group responses for the pain knowledge and attitudes survey using a Mann Whitney U test

<table>
<thead>
<tr>
<th><strong>Unit</strong></th>
<th><strong>Mann Whitney U</strong></th>
<th><strong>Chi-Square</strong></th>
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</thead>
<tbody>
<tr>
<td>UH4S</td>
<td>0.75</td>
<td>13.67</td>
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<tr>
<td>UH4E</td>
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<td>13.89</td>
</tr>
<tr>
<td>BMATN</td>
<td>0.53</td>
<td>13.89</td>
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<tr>
<td>BMABN</td>
<td>0.67</td>
<td>13.67</td>
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</tbody>
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HCAHPS Pre-Post within unit comparisons:
- Pain was well controlled
- Staff did everything to help with pain

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<tr>
<th><strong>Unit</strong></th>
<th><strong>P</strong></th>
<th><strong>Z</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>UH3S</td>
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**Limitations**
- Quasi-experimental design ability to detect change
- Concurrency sampling
- Aggregate data

**Conclusion**
- No significant relationship noted between the pre- and post-HCAPPS scores on either pain perception in this population
- No significant relationship noted between the total pre- to post-nurse groups or the individual unit pre- to post groups HCAHPS score
- Out of 430 OPI, pain patients administered during the pilot period, zero patients were administered naloxone for opioid induced respiratory depression. While the percentage of administration of naloxone in the pre group was small, research shows that even one episode of naloxone rescue can have damaging effects (Dahan et al., 2010). A reduction to a rate of zero naloxone administration was deemed clinically significant.

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**References**