Incorporating Pre-procedural Hand-held Ultrasound (HUD) to Improve the Efficacy of Neuraxial Anesthesia

Jordan Crouch, BSN, RN
Nurse Anesthesia Student
University of Cincinnati
College of Nursing
Incorporating Pre-procedural Hand-held Ultrasound (HUD) to Improve the Efficacy of Neuraxial Anesthesia

Jordan Crouch, BSN, RN, CCRN; Beth Ann Clayton, DNP, CRNA, FAAN; Hyndhavi Chowdary, MD

Introduction

Background
- There are clear independent risk factors associated with difficult epidural placement:
  - Mallinckrodt size, epidural catheter size >0.6 cm, failure to confirm placement

Adoption of ultrasound technology remains low in neuraxial anesthesia:
- Ultrasonic is the standard of care for central venous access and highly recommended by regional anesthetic guidelines for peripheral nerve blocks.

Problem:
- Ultrasound remains the most common technique for determining needle placement in neuraxial anesthesia:
  - Accurately identifies vertebral level 70-90% of the time
  - More commonly incorrectly estimates toward the spinal cord
  - Inaccuracy is more common in less experienced providers

Recognizing value for using ultrasound with neuraxial anesthesia
- Level of conus medullaris is variable
- Midline identification using a red
- Increased risk of neurologic injury

Methods

- IRB determination for non-human subjects from University of Cincinnati.
- Literature search performed using PubMed and PAID databases using MeSH terms: ultrasonography, neuraxial block, epidural, spinal, and pregnancy.

Literature review
- 47 total articles found and 15 articles selected for meeting criteria

Evidence for Ultrasound Use:

<table>
<thead>
<tr>
<th>Evidence for Ultrasound Use:</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power needle passes and insertion of ultrasound compared to traditional palpation.</td>
<td>Sun et al., 2012</td>
</tr>
<tr>
<td>More accurate identification of a given lumbar intervertebral space using ultrasound that by landmark palpation alone.</td>
<td>Parlee, Chappard, &amp; Chalut, 2015</td>
</tr>
<tr>
<td>Decreased complications using ultrasound versus landmark palpation.</td>
<td>Guo et al., 2013</td>
</tr>
<tr>
<td>In obese population (BMI &gt;30) needle redirections are decreased by 40% using Accuro.</td>
<td>Okita et al., 2017</td>
</tr>
</tbody>
</table>

Incorporating Ultrasound

- Accuro® (Rivanna Medical) is a wireless handheld ultrasound device for neuraxial anesthesia.

Technology
- More than one ultrasound device:
  - Identifies the interlaminar space or spinous process
  - Cross-section overlay ORANGE when INTERLAMINAR SPACE identified
  - Cross-section overlay BLUE when SPINOUS PROCESS identified
  - Indicator automatically detects DEPTH of SPINOUS PROCESS
  - Dashed line RED when MIDLINE detected

Image Interpretation

Evaluation

- Two-tailed paired t test analysis
- Statistically significant difference p < 0.05 in posttest score

Evidence Analysis

Survey Questions

<table>
<thead>
<tr>
<th>Survey Questions</th>
<th>Pre-implementation</th>
<th>Post-implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>I can identify the inaccuracies of using landmark palpation techniques for neuraxial anesthesia.</td>
<td>3.5</td>
<td>4.5</td>
</tr>
<tr>
<td>I can discuss the evidence supporting the use of pre-procedural ultrasound for neuraxial anesthesia.</td>
<td>3.5</td>
<td>4.5</td>
</tr>
<tr>
<td>I have knowledge of hands-on techniques using the Accuro® ultrasound device.</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>I am able to discuss the steps for using the Accuro® ultrasound device.</td>
<td>2.5</td>
<td>4.5</td>
</tr>
<tr>
<td>I am able to accurately identify neuraxial somatosensory.</td>
<td>3</td>
<td>4.3</td>
</tr>
<tr>
<td>I see value in using ultrasound for neuraxial anesthesia.</td>
<td>4.5</td>
<td>5</td>
</tr>
<tr>
<td>I am confident in my ability to incorporate ultrasound when performing neuraxial anesthesia.</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Average p-value = 0.0005/143 (≤ 0.05)

Conclusion

Introducing pre-procedural hand-held ultrasound use through education improves staff confidence and knowledge for using ultrasound:
- Identifying accuracy from landmark palpation
- Discussing the evidence supporting the use of pre-procedural ultrasound for neuraxial anesthesia
- Controlling the Accuro® ultrasound device with hands-on techniques
- Discussing the steps for using Accuro®
- Identifying somatosensory accurately
- Recognizing value for using ultrasound with neuraxial anesthesia
- Acquiring confidence in abilities to incorporate ultrasound when performing neuraxial anesthesia

Recommendations:
- Education sessions introducing pre-procedural hand-held ultrasound use has the potential to increase awareness and incorporation of ultrasound for neuraxial anesthesia.
- Future studies should be conducted with larger sample sizes and hands-on ultrasound use has the potential to increase awareness and incorporation of ultrasound for neuraxial anesthesia.
- Further education sessions should be conducted with larger sample sizes and hands-on ultrasound use has the potential to increase awareness and incorporation of ultrasound for neuraxial anesthesia.

References


References
Preoperative ROMA - Risk for Opioid Misuse Assessment

Sara Hook, BSN, RN; Jennifer Lanzillotta-Rangeley, PhD, CRNA; Angela Clark, PhD, RN; Jack Stem, CDCA; Emily B. Kean, MSLS

University of Cincinnati
Preoperative ROMA - Risk for Opioid Misuse Assessment

Sara Hook, BSN, RN; Jennifer Lanzillotta-Rangeley, PhD, CRNA; Angela Clark, PhD, RN; Jack Stem, CDCA; Emily B. Kean, MSLS

Introduction

The Problem:
• According to the 2019 National Survey on Drug Use and Health 2 million individuals misused prescription opioids for the first time in 2018.
• Many patients’ first exposure to opioids occurs after a surgical procedure.
• Evidence suggests that an increase in persistent postoperative opioid use can occur after major and minor surgeries which indicates that chronic opioid use is not entirely due to surgical pain.
• 4.13% of patients with no exposure to opioids in the past 12 months, develop prolonged postoperative use after elective surgery.
• This amounts to 500,000 new individuals developing opioid use disorder every year.

Solution
• There is a clinical need for a preoperative screening tool to assess patients’ risk for postoperative opioid misuse

Risk Factors
• Prior opioid use, psychiatric history (anxiety, depression, PTSD), history of drug/alcohol abuse, comorbidities and tobacco smoking

PICOT Question:
• Can a perioperative evidence-based tool be developed to screen adult patients for known risk factors for prolonged, greater than 90 days, postoperative opioid use?

Ottawa Model of Research Use

Practice Environment: Highland District Hospital patients and clinicians
Potential Adopters: Nurses, Nurse Anesthetists, Surgeons
Evidence-Based Innovation: Understanding individuals preconceived ideas about implementing quality improvement projects
Transfer Strategies: Encouraging clinicians to utilize the opioid misuse risk screening tool by providing them with the evidence-based rational behind the screening tool and the potential to improve patient outcomes
Use of Evidence: Clinicians utilizing the screening tool and evaluating the impact of the screening tool on patient outcomes
Outcomes: Examining the intended and unintended outcomes of the opioid misuse risk screening tool

Integrative Review

Review of Literature
• 6 Databases: Elsevier Embase, PubMed, CINAHL Plus with Full Text, Web of Science, BIOSIS Previews, Cochrane Central Register of Controlled Trials (CENTRAL)
• Two independent blinded reviewers
• Sara Hook and Dr. Lanzillotta-Rangeley
• Utilized Rayyan to organize the literature review
• Unable to find a screening tool to assess patients’ risk for opioid misuse in the postoperative setting

Inclusion Criteria
<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 18 years old</td>
<td>&lt; 18 years old</td>
</tr>
<tr>
<td>Risk of Prolonged Opioid Use</td>
<td>Parturient Women</td>
</tr>
<tr>
<td>Screening Tool</td>
<td>Perioperative/Hospital Setting</td>
</tr>
</tbody>
</table>

Screening Tool Creation

Step 1: Literature Review
Current research on screening tools to assess patients’ risk for opioid misuse in the postoperative setting

Step 2: Adapting and modifying questions from validated screening assessments

Step 3: Compile questions from validated instruments into a REDCap survey to be sent to a panel of experts

Modified Delphi Approach

Step 4: Panel of experts including nurse anesthetists, surgeons, individuals in recovery, addiction specialists rank items from the validated instruments on a scale of 1-5

Step 5: Results from initial survey will be analyzed and a second expert survey will be sent

Step 6: Opioid misuse risk screening tool will be created with DNP Committee from the results from the expert follow up survey

Integrative Review

- Practice Environment: Highland District Hospital patients and clinicians
- Potential Adopters: Nurses, Nurse Anesthetists, Surgeons
- Evidence-Based Innovation: Understanding individuals preconceived ideas about implementing quality improvement projects
- Transfer Strategies: Encouraging clinicians to utilize the opioid misuse risk screening tool by providing them with the evidence-based rational behind the screening tool and the potential to improve patient outcomes
- Use of Evidence: Clinicians utilizing the screening tool and evaluating the impact of the screening tool on patient outcomes
- Outcomes: Examining the intended and unintended outcomes of the opioid misuse risk screening tool

Screening Tool Evaluation

Four Validated Screening Tools

<table>
<thead>
<tr>
<th>Drug Abuse Screening Test (DAST)</th>
<th>Utilized to assess individuals who are abusing illicit substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAST</td>
<td>Screening Tool</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient Health Questionnaire (PHQ)</td>
<td>Utilized to assess depression and anxiety</td>
</tr>
<tr>
<td>PHQ</td>
<td>Screening Tool</td>
</tr>
<tr>
<td>Trauma Screening Questionnaire (TSQ)</td>
<td>Utilized to assess PTSD</td>
</tr>
<tr>
<td>TSQ</td>
<td>Screening Tool</td>
</tr>
<tr>
<td>CAGE Questionnaire</td>
<td>Utilized to assess alcohol abuse</td>
</tr>
<tr>
<td>CAGE</td>
<td>Screening Tool</td>
</tr>
</tbody>
</table>

Implementation

Goal
Assess R.O.M.A. for clarity and social desirability bias

How
Highland District Hospital in Hillboro, OH

Respondents
Individuals answered three questions regarding clarity of the questions and willingness to answer the questions honestly

A total of 8 individuals responded to the survey

Results

Clarity
• Overall, the survey participants found that the ROMA questions were easy to follow and understand.

Bias
• The questions in ROMA focus on patients’ history with PTSD, anxiety, depression and substance abuse (drugs and/or alcohol).
• All these topics are socially undesirable in our current society; therefore, ROMA is susceptible to social desirability bias and the concept of faking good.

Types of Bias
Social Desirability Bias
Faking Good
• When individuals deliberately attempt to create false impressions
• When individuals deliberately attempt to create false impressions
• Improvement management
• Individuals who have a history of substance abuse are typically highly motivated to conceal their disorder

References


Angela Clark, PhD, RN; Jack Stem, CDCA; Emily B. Kean, MSLS

University of Cincinnati

Clinical Initiative

Improving the health of populations
- Preventing patients from missing opioids
- Decrease number of opioids prescribed to patients
- Increase multimodal pain management techniques
- Decrease opioid related side effects

Enhancing experience of care for individuals
- Enhance provider and patient relationship
- Involving patients in their pain management plans
- Educating patients about their risk and techniques to avoid opioid misuse

Reducing the per capita cost of health care
- Multimodal pain management techniques decrease patients need for opioids
- Less negative effects from opioids
- Increases positive outcomes and decreases healthcare costs

References
Operating Noise Pollution Education and Practice Improvement

Michael Wolf, BSN, RN; Rachel Smith-Steinert, DNP, CRNA; Tyler Davis-Sandfoss, DNP, CRNA

University of Cincinnati College of Nursing
Evidence: The operating room (OR) is a noisy place. The current science supports that noise levels in the OR frequently exceed limits set by federal regulatory agencies, such as the National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA). Excessive OR noise levels have been found to adversely impact anesthesia provider performance. Excessive noise places CRNA personal wellness at risk, negatively impacts practice performance, and patient outcomes. Noise reduction education can be an effective method in reducing noise levels and increasing awareness specific to the operating setting.

Purpose: The purpose of this project is to increase Certified Registered Nurse Anesthetists (CRNAs) awareness on noise pollution in the operating room, sources of noise, and consequences of excessive noise pollution exposure to personal wellness and practice. This project aims to educate CRNAs on practice improvement strategies to reduce noise pollution in the operating setting.

Objectives:
- Reduce noise pollution in the operating room
- Standardize OR noise pollution education
- Improve CRNA wellness and performance

Clinical Initiative

**The CRNA is exposed to an educational module covering the hazards of noise pollution in operative settings and practice implications, compared to CRNAs that have not received OR noise pollution education.**

**Background**

**Implementation and Evaluation**

**Demographics:** N = 31 CRNAs

**Table 1:** CRNAs Years of Experience

<table>
<thead>
<tr>
<th>Years</th>
<th>1 to 5 years</th>
<th>6 to 10 years</th>
<th>11 to 15 years</th>
<th>16 years or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>12</td>
<td>8</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>

**Question 1:** CRNAs Years of Experience

<table>
<thead>
<tr>
<th>Question</th>
<th>Question Asked</th>
<th>Question Answered</th>
<th>CRNAs</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>You have been working in the operating room for ______ years.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question Answered</th>
<th>CRNAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Practice Implications**

- Clamp or turn off suction when not being used
- Suction can generate 75 to 80 dB alone
- Turn down or eliminate music
- Remind all staff during timeout
- Eliminate unnecessary monitor alarms
- i.e. Younger or athletic patients with lower baseline Heart rate

Change ETCO2 parameters for MAC cases
- Building ETCO2 for breathing

**Future Directions**

**Recommendations**

- Standardize annual OR noise pollution education for CRNAs and OR personnel
- Application of the sterile cockpit concept for all anesthesiologists
- Adding to the time out “can we have quiet during induction and emergence?”
- Long-term studies should be commenced to determine the impact of OR noise pollution on CRNA providers wellness, practice performance, and patient outcomes.

References

Anesthesia Technician Education

1LT Daniel Boyles, BSN, RN, ANC, USAR
Nurse Anesthesia Program
College of Nursing, University of Cincinnati
DNP Project Chair: Rachel Smith-Steinert, DNP, CRNA
DNP Project Team Member: Jason Hayes, MSN, CRNA
Anesthesia Technician Education
Daniel Boyles, BSN, RN; Rachel Smith-Steinert, DNP, CRNA; Jason Hayes, MSN, CRNA
University of Cincinnati College of Nursing

Introduction
- Anesthesia Technicians are integral members of the anesthesia care team
- When utilized appropriately, they assist licensed anesthesia providers in the acquisition, preparation and application of equipment and supplies required for the administration of anesthesia
- They prepare and maintain patient monitoring devices and anesthesia delivery systems before, during, and after anesthesia
- Formal education and national certification exist, but are rarely pursued and not required by many institutions
- Only 45% of the 2,500 American Society of Anesthesia Technologists & Technician members are actively certified in 2011 (Haas, 2013)
- Most anesthesia technician training is on-the-job (Haas, 2015)

Purpose
- PICOT question: For anesthesia technicians at the University of Cincinnati Medical Center (UCMC), how does formalized anesthesia machine education, compared to the current system of no formalized training, improve technician's anesthesia machine knowledge?
- Anesthesia technicians at UCMC are trained on-the-job and require no education, experience or certification
- During a needs assessment, many technicians reported feeling undertrained and unable to assist anesthesia providers when problems arise

Methods
- Pre-test administered to assess current anesthesia machine knowledge of anesthesia technicians
- Education module delivered to anesthesia technicians (N=12)
  - Delivered twice to accommodate all 3 shifts
  - Module covered internal & external components, monitors and basic set up of Fabius anesthesia workstation
- Post-test administered to assess new knowledge gained
- Demographic and qualitative questions to gauge feedback
- A paired t-test (assuming equal variance, with 95% confidence interval) was performed (N=12) using an internet biostatistician-created tool
- All analyses performed were run by R version 3.5.1 (1/29/2020) using the t.test function within R, and the p-value is extracted from it (Lambert, 2019)
- IRB exemption for non-human research was obtained prior to implementation

Results

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-test</th>
<th>Post-test</th>
<th>Statistically significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.03</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0.03</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0.03</td>
<td>0.18</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0.50</td>
<td>0.18</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0.18</td>
<td>0.18</td>
<td></td>
</tr>
</tbody>
</table>

- Mean Pre-test score: 38.9%
- Mean Post-test score: 62.5%

1. Select the correct option which indicates that a CO2 absorber needs to be changed.
   a. Purple granules
   b. Condensation
   c. The CO2 absorber feels warm
   d. Increased inspired CO2

2. How does the machine measure inspired and expired oxygen levels?
   a. Oxygen analyzer
   b. Gas analyzer
   c. Fresh gas outlet
   d. Scavenger system

3. What is the correct way to assess the proper level of patient suction?
   a. Rule of Thumb test
   b. The suction gauge says “full”
   c. Auditory suction sound
   d. Vacuum panel

4. What feature prevents the wrong connection of pipeline gasses to the anesthesia machine?
   a. Pin Index Safety System
   b. Diameter Index Safety System
   c. Color coded hoses
   d. Interlock system

5. Select the correct option that indicates the CO2 absorber is dry (desiccated).
   a. Rising CO2
   b. Unable to assess
   c. Complete purple granules
   d. Oxygen sensor fail

6. Which vaporizer must be plugged in to stay in its liquid form?
   a. Sevoflurane
   b. Isoflurane
   c. Nitrous Oxide
   d. Desflurane

Clinical Initiative

- Post-test comments addressing: “What about this training did you like?”
- “The breakdown of the machine information was in depth”
- “I would like to have more training classes. I honestly want to be one of the best”
- “Teaching the underlying concepts of the machine”
- “It gave me more insight about the inspiration and expiration”

Qualitative Results

- Anesthesia technician machine knowledge increased, and positive feedback of training was received, with the desire for additional education and training
- Questions 3 & 4 had a significant increase in correct answers from pre to post test because the technicians never received formal training on these components
- Trained anesthesia technicians make less errors (Weller et al., 2009), are more efficient, experience less burnout, decrease OR delays, and reduce stress to the anesthesia provider (Ford, 2012)
- Future recommendations include: additional educational offerings covering crisis management and equipment troubleshooting, annual competency to ensure knowledge and skill retention

Conclusion

References
Cardiac ERAS Needs Assessment and Educational Tool

Edward Jones BSN, RN
Ruth Wooten BSN, RN

University of Cincinnati Nurse Anesthesia Program
The iTunes U course was developed along with infographics detailing Cardiac ERAS interventions. Pictured below is one of the infographics.

- The iTunes U course was accessed via a link and course code that were provided.

Cardiac ERAS Education Tool

- Educational Tool content included: pre-education and post-education surveys, compiled data from the chart review, ERAS origins, ERAS in the cardiac patient, and multimodal pain management (acetaminophen, dexmedetomidine, NSAIDs, gabapentin, tramadol, and ketamine).

Provider knowledge assessed by Likert scale questions on the pre and post evaluations. Providers' knowledge markedly increased and proved to be statistically significant via a paired t-test; p-value <0.0006.

100% of providers Agreed or Strongly Agreed implementing a cardiac ERAS protocol would improve patient outcomes.

Conclusions

- Anesthesia providers benefit from ERAS knowledge regarding literature and evidenced based interventions
- Multimodal Pain Management as part of a cardiac ERAS protocol may be implemented at KMC
- The iTunes U course proved to be an effective means of delivering knowledge and encouraged providers to implement specific interventions that can be implemented as part of a cardiac ERAS protocol at the facility.

Key References


Edward Jones BSN, RN; Ruth Wooten BSN, RN; Richard Prior DNP, FNP-BC, FAANP; Beth Ann Clayton DNP, CRNA, FAAN; Kristen Roth MSN, CRNA
Corneal Abrasions: Improving Endoscopy Nurses' Confidence

Chelsea Boles BSN, RN, Paul Hohmann BSN, RN

Nurse Anesthesia Program, College of Nursing
University of Cincinnati

Deana Joss DNP, CRNA
Kelly Elmore MSN, CRNA
Corneal Abrasions: Improving Endoscopy Nurses' Confidence
Chelsea Boles BSN, RN, Paul Hohmann BSN, RN,
Deana Joss DNP, CRNA, Kelly Elmore MSN, CRNA

Introduction

Corneal abrasions are the leading ocular complication in the perioperative period (Grixti, Sadri, & Watts, 2013). Corneal abrasions may cause functional limitations related to vision impairment or loss, decreased productivity, decreased patient satisfaction, and delayed discharge from the hospital (Segal et al., 2014).

Knowledge gaps related to recognition and diagnosis may lead to underreporting of corneal abrasions in endoscopy settings (Dixon, Adler, Sossenheimer, Taylor, & Fang, 2019). Lillienthal et al. (2016) found 82% of perioperative providers did not know how to prevent, recognize or initiate the treatment, leading to delayed treatment and poor outcomes.

Methods

- Literature review was performed using PubMed, CINAHL, and Embase. Keywords searched: anesthesia, endoscopy, corneal abrasion, and education; inclusion and exclusion criteria were applied, 21 articles were reviewed.
- IRB Exemption was received.
- Educational PowerPoint and handout were created.
- Education sessions were conducted, and post-surveys administered to participants.
- Surveys were evaluated to determine if participants gained a subjective increase in confidence.

Results

- Data was organized into the table below.
- Mean scores were calculated for each question:
  - A positive mean score showed participants felt the information was relative to practice or a high confidence level in using educational material.
  - A negative mean score illustrated participants did not feel the information was relative to practice or low confidence level in using educational material.

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Agree/Agree (1)</th>
<th>Agree/Neutral (2)</th>
<th>Disagree/Slightly Disagree (3)</th>
<th>Strongly Disagree/Disagree (4)</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1. In general, I was satisfied with my education from the session.</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Q2. The knowledge gained from the education session is applicable to my nursing career.</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Q3. Prior to the education session, my confidence level in managing a corneal abrasion was:</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>7</td>
<td>1.79</td>
</tr>
<tr>
<td>Q4. After the education session, my confidence in corneal abrasion prevention is:</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Q5. After the education session, my confidence in corneal abrasion recognition is:</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Q6. After the education session, my confidence in corneal abrasion treatment is:</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

- Average for questions one (2.32) and two (2.6) indicated the staff felt information applicable to practice.
- Higher averages for questions four through six when compared to question three indicated staff felt more confident in utilizing educational material post educational session.

Purpose

To improve satisfaction and outcomes for endoscopy patients by:
- Educating endoscopy staff to enhance their confidence in utilizing corneal abrasion preventative measures.
- Increasing endoscopy staff confidence in recognizing corneal abrasion signs and symptoms as well as increasing their confidence regarding treatment.

Evaluation

- All 19 staff members who attended the education sessions completed a survey.
- The survey consisted of nine questions, six of which were Likert scale questions and three were open-ended:
  - The six-point Likert scale used (agreeance v. confidence) depended on the question asked.
  - A numerical value was assigned to each of the six points on the scale.

Implementation

Educational session was given to the endoscopy nursing staff at the University of Cincinnati Medical Center. This took place in one day during a staff meeting over two sessions, each lasting approximately 30-45 minutes.

Limitations and Discussion

- Limitations include small and homogenous (one unit) sample size and lack of available research on corneal abrasions in endoscopy cases due to low prevalence rates.
- Overall, endoscopy RNs reported improved confidence in corneal abrasion prevention, recognition, and treatment.
- Future implications for practice include increased patient follow up post endoscopy discharge specific to corneal abrasions.
Decreasing Postoperative Opioid Consumption in the Postcesarean Patient at West Chester Hospital

Michael Riddle, MSN, CRNA; Mary Bakis, DNP, CRNA; Beth Ann Clayton DNP, MS, CRNA; Donna Green, PhD, RN; Hyndhavi Chowdary, MD

College of Nursing, University of Cincinnati
Background:
Cesarean delivery analgesia management traditionally includes use of neuraxial anesthesia during delivery, followed by obstetrician management of pain during the postoperative phase with as needed opioids combined with acetaminophen and as needed NSAID (Sutton & Carvalho, 2016).

Problem:
• Research shows postoperative pain continues to be under-managed, has undesirable side effects and unwanted outcomes (Eisenach and Brennan, 2018; Lavand’homme, 2018; Ituk & Habib, 2018).
• The first 12 hours post-surgery necessitates the greatest analgesia requirements (Weigl et al., 2016). Severe acute pain post-delivery is predictive of chronic postsurgical pain and postpartum depression (Booth et al., 2016).
• Persistent post-surgical pain is found in cesarean patients with higher acute postoperative pain in the immediate 24-hour period post-delivery (Booth et al, 2016; Jin et al., 2016; Lavand’homme, 2018).
• Physical abuse, as well as sedation, nausea, vomiting, and constipation are well documented potential maternal side effects of opioid use (Benyamin et al., 2008). Infant respiratory depression and sedation have been reported through opioid breastmilk transference (Lam et al., 2012).

Direction:
Incorporate evidence-based practice (EBP) recommendations from the American Association of Nurse Anesthetist (AANA) and the Society for Obstetric and Perinatology (SOAP) for the obstetric patient following cesarean delivery (CD) while congruently meeting the University of Cincinnati (UC) Health System quadruple aims. The EBP guidelines recommend the use of multimodal analgesia, including a minimum effective dose of neuraxial opioid, in combination with non-steroidal anti-inflammatory drug (NSAID), acetaminophen, and dexamethasone in providing optimal pain relief.
Methods

During the first quarter of 2019, dissemination and education regarding a new multimodal postcesarean analgesia order set became available to all staff at West Chester Hospital, part of the UC Health system.

- After receiving Institutional Review Board (IRB) non-human subject determination, operative electronic medical records (EMR) were retrospectively reviewed to determine patients that met project criteria.
- Inclusion criteria were ASA I – III classification, 18 to 45 years of age, ≥ 34 weeks' gestation, and receiving a spinal, a combined spinal-epidural or epidural anesthesia.
- Exclusion criteria included patients requiring general anesthesia, emergency cesarean deliveries, chronic opioid or IV drug use and fetal demise.
- Opioid use was converted to morphine milligram equivalents (MME) to allow for standardization.
- The primary outcome goal was postoperative opioid consumption during the postpartum timeframe.
- Secondary outcomes include pain score, acetaminophen and NSAID consumption, and the number of opioid pills prescribed upon discharge.
- All data were collected into REDCap secure database and then statistically analyzed using JMP 14.0 Pro into Pre-Implementation and Post-Order set groups.
- Data points collected include administered opioid dose, acetaminophen dose, NSAID dose, and visual analog survey (VAS) pain score. Anesthetic and delivery type, demographic and ASA data, were collected and consisted of type of anesthesia, cesarean delivery indication, previous cesarean delivery status, age, race, and obstetrician group.

### Multimodal Order Set

<table>
<thead>
<tr>
<th>Preoperative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaminophen 975 mg PO – 60 minutes prior to delivery</td>
</tr>
<tr>
<td>• If unable to give preoperative, anesthesia may give 1 gm IV acetaminophen immediately after cord clamp intraoperatively.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intraoperative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuraxial opioids:</td>
</tr>
<tr>
<td>• Morphine (spinal: 0.1-0.2 mg; or epidural: 2.0-3.0 mg)</td>
</tr>
<tr>
<td>• Fentanyl (spinal: 10-20 mcg; or epidural: 50-100 mcg)</td>
</tr>
<tr>
<td>Dexamethasone 8-10 mg IV post-delivery of the infant</td>
</tr>
<tr>
<td>Ketorolac IV 30 mg during wound closure</td>
</tr>
<tr>
<td>♦ Acetaminophen 1 gm IV after cord clamp IF NOT received preoperatively.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Postoperative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ketorolac 30 mg IV every 8 hours to decrease inflammation. Not to exceed 8 total doses - Discontinue IV Ketorolac once patient is able to take oral ibuprofen.</td>
</tr>
<tr>
<td>Ibuprofen 800 mg oral every 8 hours for inflammation.</td>
</tr>
<tr>
<td>Acetaminophen 975 mg oral every 8 hours. Maximum dose of 4000 mg from all sources in 24 hours.</td>
</tr>
<tr>
<td>♦ Alternate acetaminophen and ibuprofen every 4 hours</td>
</tr>
</tbody>
</table>
Of the 148 electronic medical records selected for analysis, 139 records were analyzed.

The opioid MME use decreased during the first 24 hours by 54%, 24 – 48 hours by 28% and the first 48 hours total by 44%.

Discharge opioid prescription amount decreased by 29%.

Pain score improved for all time frames during admission with a mean VAS (0 to 10) score reduction of 50% over the first 48 hours.

Acetaminophen and NSAID use increased by 153% and 12% respectively.
Conclusions

- Initiation of the multimodal order set was made possible by a multidisciplinary team approach using the latest EBP guidelines as recommended by the AANA and SOAP.

- After implementation of a new multimodal post-partum order set, opioid consumption in the post-cesarean delivery patient population was reduced.

- The reduction in opioid consumption and increase use of acetaminophen and NSAID was followed by a reduction in pain scores and discharge opioid prescription in the new mother.

- Limitations include retrospective nature of study; Control of patient selection was accomplished through strict sequential patient selection covering different time periods of obstetric care without overlap of order sets; While collected data relied heavily on OB nurse documentation of pain scores and medication delivery, data was collected similarly via a well-defined collection tool; Exclusion from this study included patients requiring general anesthesia, emergency cesarean deliveries, chronic opioid or IV drug use and may not represent all patient populations.
References


Multidisciplinary Airway Crisis Simulation

Caroline Bronowski, BSN, RN & Ashley Estes, BSN, RN
University of Cincinnati
Multidisciplinary Airway Crisis Simulation
Caroline Bronowski, BSN, RN, Ashley Estes, BSN, RN; Mary Bakis, DNP, CRNA; Matt Yockey, MSN, CRNA
University of Cincinnati College of Nursing

Introduction

- Difficult airway: "The clinical situation in which a conventionally trained [anesthesia provider] experiences difficulty with facemask ventilation of the upper airway, difficulty with tracheal intubation, or both" (ASA, 2013).
- Management of a difficult airway has potentially serious implications. Including hypoxic brain injury or death in a matter of minutes (Rosenblatt & Artime, 2018).
- 0.5 - 2.5% of intubation attempts are considered difficult and failed intubations are the leading cause of morbidity and mortality in anesthesia (Myatra et al., 2017).
- Skills attained though simulation training are transferable to human models and clinical practice (Latif et al., 2016).

Simulation Implementation

- Simulations were run inside one of the operating rooms at University of Cincinnati Medical Center, Holmes Hospital Ambulatory Surgery Center using SimMan 3G.
- Four groups consisting of four participants, two nurse anesthesia program (NAP) students and two oral and maxillofacial surgery (OMFS) residents, were included.
- Two of the groups were provided no pre-education and two groups were provided pre-education in the form of a PowerPoint presentation.

Quad Aim

- Improved patient experience and population health with improved provider airway management skills
- Decreased costs associated with inappropriate airway management
- Improved caregiver comfort and confidence when faced with an airway crisis.

Results

- A simple T-test was run to analyze the data.
- It can be concluded from a p-value of 0.0006 that there is statistically significant evidence that the airway securement times for those who were pre-education is less than the times for those who were not provided pre-education.
- Additionally, it was noted that fewer deviations from the American Society of Anesthesiologists Difficult Airway Algorithm (ASA-DAA) were committed by the group that was pre-educated comparably.

Conclusion

- A high-fidelity, in situ simulation improved familiarity and recall of the ASA-DAA.
- The data supports the use of airway crisis education training to improve airway securement times during a difficult airway situation.
- Multidisciplinary participation allows participants to practice non-technical skills which include situational awareness, decision-making, communication, teamwork, and leadership.

References

PONV Treatment Analysis

Kenneth Jones BSN, RN; Rachel Smith-Steinert DNP, CRNA; Sean Josephs, MD

University of Cincinnati
College of Nursing
Strength of Evidence: Postoperative nausea and vomiting (PONV) accounts for nearly 1.2 billion dollars annually in healthcare costs due to increased length of stay, unplanned admissions and adverse surgical outcomes.

Hofmann et al. (2017) states that PONV is a top-ranking fear of patients undergoing elective surgery and is reported to be more debilitating than surgery or pain. Therefore, the prevention of PONV improves patient satisfaction and can decrease healthcare costs.

The best treatment strategy is a well laid plan that begins in the preoperative phase and follows the patient through the perioperative phase and into recovery (Kranke, 2015)

PONV treatment should adopt a risk-based approach that utilizes multi-modal antiemetic administration for better control (Gan et al., 2014).

Best practice suggests that each risk factor should be treated by an intervention (Cao, White, & Ma, 2017).

Purpose: Conduct an assessment of an anesthesia Department’s PONV occurrence rate and prophylactic treatment practice in relation to the preoperative PONV risk assessment.

Objectives:
- Perform retrospective chart reviews for the month of April and October 2019
- Comparison analysis of data collected from April and October 2019
- Analyze the effectiveness of the new PONV risk assessment tool incorporated in the EMR in May.

Implementation

A retrospective electronic chart review was employed to determine the current PONV risk assessment use, PONV treatment practices, and PONV occurrences.

Data points were extracted from procedures performed during the months of April and October 2019
- Total of 1,874 procedures performed during these periods
  - 922 procedures performed in April 2019
  - 952 procedures performed in October 2019
- 300 charts reviewed (~15% sample)
  - 151 charts reviewed from April (~16% sample)
  - 149 charts reviewed from October (~15% sample)
- A Data collection tool was created to accurately document each data point on paper
  - Collected data transferred to excel spread sheet
  - Second reviewer performed a 10% spot check of data collected to ensure accuracy
- Findings from the two months were compared to assess for improvements in PONV risk assessment utilization, treatment practices, and PONV occurrence rates

Results

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Table 3</th>
<th>Table 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk assessment performed</td>
<td>April</td>
<td>October</td>
</tr>
<tr>
<td>62 (61.06%)</td>
<td>131 (67.92%)</td>
<td></td>
</tr>
<tr>
<td>Risk assessment not performed</td>
<td>59 (50.07%)</td>
<td>18 (12.08%)</td>
</tr>
</tbody>
</table>

Total of 1,874 procedures performed during these periods

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>April</th>
<th>October</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 risk factor</td>
<td>26 (27.22%)</td>
<td>66 (48.30%)</td>
</tr>
<tr>
<td>2 risk factors</td>
<td>41 (37.35%)</td>
<td>56 (42.21%)</td>
</tr>
<tr>
<td>3 risk factors</td>
<td>21 (15.91%)</td>
<td>9 (6.04%)</td>
</tr>
<tr>
<td>4 risk factors</td>
<td>4 (3.65%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

True PONV risks (opioid predict/admin)

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>April</th>
<th>October</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 risk factor</td>
<td>16 (10.60%)</td>
<td>20 (15.42%)</td>
</tr>
<tr>
<td>2 risk factors</td>
<td>35 (25.83%)</td>
<td>58 (38.93%)</td>
</tr>
<tr>
<td>3 risk factors</td>
<td>33 (21.85%)</td>
<td>48 (32.21%)</td>
</tr>
<tr>
<td>4 risk factors</td>
<td>2 (1.36%)</td>
<td>5 (3.36%)</td>
</tr>
</tbody>
</table>

Antiemetic administration.

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>April</th>
<th>October</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 risk factor</td>
<td>15 (7.78%)</td>
<td>20 (13.42%)</td>
</tr>
<tr>
<td>2 risk factors</td>
<td>33 (22.15%)</td>
<td>33 (21.15%)</td>
</tr>
</tbody>
</table>

Clinical Initiative

- Significant increase in utilization of preoperative PONV risk assessment in October from April
- Proper use of PONV risk assessment tool still lacking as evidenced by low prediction of post op opioid administration.
- True opioid risk refers to post-op opioid use predicted or administered.
- Disparity of PACU nurses charting a PONV occurrence vs actual administration of antiemetics in the PACU
- Treatment regimens not fully based upon risk assessment
- Occurrence rates remained steady even with increased PONV risk assessment

Discussion

- Decrease in PONV by 54 patients (38%)
- Charting noted an increase of 92% of all antiemetics administered to patients
- Improved patient satisfaction
- Decreased incidence of PONV
- Healthcare cost savings
Needs Assessment: Presence of Maternal Morbidity and Mortality Disparities

Candace Holloway, BSN, RN; Gordon Gillespie, PhD, DNP, RN, FAAN; Beth Clayton, DNP, CRNA, FAAN

University of Cincinnati
In the United States, racial and ethnic minority women face substantially higher rates of severe maternal morbidity and mortality compared to Non-Hispanic white women.

Specifically, African American women are 2 to 4 times more likely to die from pregnancy-related causes compared to non-Hispanic white women.

Up to 60% of pregnancy-related deaths are preventable, highlighting inequities in health care access and quality of care factors that contribute to racial disparities in maternal morbidity and severe morbidity.

Literature Review:
- Databases searched: PubMed, CINHAL, and Scopus
- MESH terms: healthcare disparities, obstetrics, maternal mortality, severe maternal morbidity, and African American

Strength of evidence:
- 1 Quasi-experimental study, 6 Qualitative data collection methods, and multiple retrospective studies
- Insufficient and inconsistent data collection methods suggest that more than half of pregnancy-related deaths are not identified through routine surveillance methods (Hirsberg and Srinivas, 2017).
- Pregnancy related mortality rates were 42.4 deaths per 100,000 live births for black women and 13 deaths per 100,000 live births for non-Hispanic white women in 2011-2016 (Center for Disease Control, 2020)
- Black women are more likely to undergo a cesarean section, even for low risk pregnancies, increasing their risk for severe morbidity and mortality (Lane, Rao, & Toledo, 2017).
- When stratified by cause of mortality, Berg et al. demonstrated that 93% of pregnancy-related deaths due to hemorrhage, 89% of deaths due to chronic conditions, and 60% of deaths due to hypertension were preventable.
- African American women are more likely to experience maternal complications associated with severe postpartum hemorrhage, peripartum infection, and cardiovascular conditions (Berg et al., 2005).

Data Collection
- Retrospective chart review of patients who delivered a child at UCMC in 2017
- Subjects were chosen from electronic health record using systematic random sampling
- 162 charts reviewed

Findings from this project will provide better information as to the breadth and depth of pregnancy-related mortality and morbidity disparity rates at the University of Cincinnati Medical Center. The relative risk was calculated for the variables collected. The relative risk ratio reflects an increase or decrease in the likelihood of a maternal complication for African American women when compared to non-Hispanic White Women. Findings showed an increased risk for maternal complications for African American women when compared to non-Hispanic White Women for cesarean delivery (94.5% higher risk), preeclampsia (29.5% higher risk), hemorrhage (21.3% higher risk).

Study Limitations: The project is limited by a sample size of 162 patient chart reviews and the inability to control for adequate prenatal care, medical exposure, number of previous cesarean deliveries, and other clinical factors that may be associated with severe maternal morbidity and mortality.

Conclusion:
- Racial disparities in pregnancy-related morbidity and mortality were evident with significantly higher rates of maternal complications among African American women when compared to Non-Hispanic White Women. This pilot study is a step towards identifying maternal health disparities at the local level and initiation of next steps.

Next steps:
- Bring awareness to the matter by educating providers on the presence of the disparity
- Standardize data collection with disparity dashboards
- Implement interventions to address the issue and improve patient outcomes

In summary, this project highlights the need for targeted interventions to address and reduce disparities in maternal health outcomes among racial and ethnic minority women in the United States.
Assessing the Impact of an Ultrasound Guided Vascular Access Workshop for Acute Care Nurse Practitioner Students

Tyler Murphy BSN, RN

Nurse Anesthesia Program, College of Nursing
University of Cincinnati

Dr. Jamie Furstein PhD, DNAP, APRN-CRNA, APRN-CNP,
Dr. Kathleen Ballman DNP, APRN, ACNP-BC, CEN;
Dr. Anthony Prickel, DNP, APRN-CRNA
Assessing the Impact of an Ultrasound Guided Vascular Access Workshop for Acute Care Nurse Practitioner Students

Tyler Murphy BSN, RN; Dr. Jamie Furstein PhD, DNAP, APRN-CRNA, APRN-CNPe; Dr. Kathleen Ballman DNP, APRN, ACNP-BC, CEN; Dr. Anthony Prickel, DNP, APRN-CRNA

Introduction

Invasive procedures are a key component to the management of critically ill patients. Obtaining central venous access (CVC), peripheral access (PIV), and arterial access (AC) is within the scope of practice of acute care nurse practitioner (ACNP) graduates. With more and more states passing bills approving full practice authority for Nurse Practitioners (NP), oftentimes NPs will find themselves in a position where they are the only provider available to perform these invasive procedures. Therefore, ACNP students should have a baseline level of competency of such procedures upon graduation.

The evidence suggests simulation based teaching methods as being successful in helping ACNP students obtain competency in invasive procedures. Avadhani et al. (2017) found a simulation workshop for placement of CVC and AC to improve knowledge, skill, and confidence of Acute Care Nurse Practitioner students based on self-evaluation.

Methods

A literature review was performed to assess the current evidence in regards to this project. PubMed and CINAHL databases were utilized. Articles evaluating the effectiveness of simulation based training for these procedures were identified. Also articles pertaining to the benefits, or lack thereof, for utilization of ultrasound for each of these invasive procedures were included.

• An education session was conducted followed by a hands on lab
• Pre and post evaluations were utilized to assess changes in knowledge, confidence, and skill

Purpose

The purpose of this quality improvement project is to determine if an educational session, followed by a hands-on lab will increase ACNP student’s knowledge, confidence, and skill in utilizing ultrasound guided vascular access (USG-VA). Provider’s skill in these invasive procedures can be vital in caring for critically ill patients. The PICOT question is, for University of Cincinnati AGNP students, will an educational session followed by a hands-on simulation-based lab, compared to their current level, improve their knowledge, confidence, and skill in USG peripheral venous access (PIV), central venous access (CVC), and arterial line (AC) insertion, immediately after the education session and hands-on lab.

Evaluation

• Prior to the presentation the ACNP students filled out a pre-evaluation to obtain the following:
  • Demographics:
    • Years practicing as an RN
    • Past Experience with USG VA
  • Self-Rated on a 5 point likert scale:
    • Knowledge
    • Confidence
    • Skill
  • 14 question exam evaluating knowledge
• After the workshop the student’s filled out the post-evaluation to see if there was change in each category

Implementation

• A 50-minute PowerPoint presentation was performed at the University of Cincinnati College of Nursing.
• A hands-on lab was then performed
• The hands-on lab consisted of 8 stations:
  • Ultrasound guided scanning for:
    1. Arterial lines
    2. Central lines
    3. Peripheral Intravenous
  • Needle Guidance under ultrasound for:
    4. Arterial lines
    5. Central lines
    6. Peripheral Intravenous
  • FAST Exam (7)
  • Stop-The-Bleed (8)

Results

• Mean scores on both the pre-evaluation and post-evaluation for the following categories was obtained:
  • Self-rated confidence
  • Likely to utilized ultrasound in their practice
  • Self-rated knowledge
  • Self rated skill
  • Test scores on the 14 question exam
  • This considered a paired study, and p-values were obtained
  • p-value of <0.05 is evidence the scores of the pre-evaluations and post-evaluations will be different at a population level.
  • P-values for each category are:
    • Self-rated confidence: 0.00000000759
    • Likely to utilized ultrasound in their practice: 0.018
    • Self-rated knowledge: 0.0000260
    • Self rated skill: 0.000329
    • Scores on14 question exam: 0.00000000000132

Limitations and Discussion

• Limitations:
  • 40 students participated in the project, but only 29 filled out both the pre and post-evaluations.
  • The students were not observed while taking the post-evaluations, making it inconclusive if they were helping each other.
  • Discussion:
    • The student’s self rated knowledge, confidence, and skill went up in every category, as well as their knowledge on the 14 question exam.
    • All p-values indicate the results may be applied at a population level.
Preoperative Education for Patients in Recovery for Opioid Use Disorder

Jill M. Shaw, BSN, RN
Nurse Anesthesia Program
Introduction

- Individuals with OUD present with unique needs:
  - Decreased pain tolerance and hyperalgesia
  - Higher depression/anxiety tendencies
  - Chronic pain conditions
  - Stigmatization

Methods

PICOT Question: For patients preparing for surgery who are in recovery for OUD does an e-book addressing the importance of open communication with a patient’s health care team and recovery support system regarding nonmedical opioid use and analgesia plans increase a patient’s likelihood of discussing and developing a postoperative pain management plan that involves their recovery support system as measured by a pre and post e-book survey

Intervention: Educational e-book accessed via URL for patients in OUD recovery

Evaluation Method: Pre-survey and post-survey consisting of 5-point Likert Scale questions, multiple choice questions, and open-ended questions

Theoretical Framework: Kolcaba’s Comfort Theory

Evidence Based Practice Framework: John Hopkins Nursing Evidence-Based Practice Model

Preliminary Results

Figure 1: Pre-Intervention Surgical Concerns

Figure 2: Participant Post-Intervention E-Book Assessment

Table of Contents

<table>
<thead>
<tr>
<th>Pre E-Book Survey</th>
<th>Application Kolcaba’s Theory of Comfort Taxonomy To Surgical Patient’s in Recovery for OUD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical</td>
<td>- Surgical site pain</td>
</tr>
<tr>
<td></td>
<td>- Restless</td>
</tr>
<tr>
<td>Psychosocial</td>
<td>- Anxiety</td>
</tr>
<tr>
<td></td>
<td>- Distress</td>
</tr>
<tr>
<td>Environment</td>
<td>- Different surrounding, people</td>
</tr>
<tr>
<td></td>
<td>- Lack of privacy</td>
</tr>
<tr>
<td>Sociocultural</td>
<td>- Need for support</td>
</tr>
<tr>
<td></td>
<td>- Need for support</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Value Added to Nursing Practice and Health Outcomes

- Promote continued recovery
- Strengthen communities and society
- Curb the opioid epidemic

References

Evaluation of Multimodal Pain Plan in Patients Following Cesarean Delivery

David S. Lin, BSN, RN
Lauren R. Hart, BSN, RN
Beth A. Clayton, DNP, CRNA

University of Cincinnati
Nurse Anesthesia Program
Introduction

Aim: The purpose of this project is to evaluate the implementation of a multimodal pain management plan in postcesarean women through analysis of perceived pain and opioid consumption during the hospital stay.

Methods

Setting:
- University of Cincinnati Medical Center (UCMC)
- Labor and Delivery, Recovery, and Post-Partum units
- ~2,500 deliveries per year, 600-700 cesarean sections annually

Retrospective chart review:
- Aug.- Sept. 2018 pre-implementation data; Oct. & Nov. 2019 post-implementation and evaluation
- Visual analog pain scores (VAS)
- Provider adherence to order set
- Total opioid consumption
- Opioids converted into Morphine Milligram Equivalents (MME)
- Research Electronic Data Capture (REDCap) used for secure data collection and review
- JMP Pro 14.0 used for statistical analysis

Results

Conclusions

- Post-implementation of the order set showed decreased opioid consumption and decreased pain scores for the general population at all recorded times after recovery.
- Post-implementation of the order set showed decreased opioid consumption for OUD patients, and decreased pain scores in a small sample size at the 4, 8, 12, and 48 hours.
- OUD patients benefited from TAP blocks with lower VAS pain scores at the 4, 8, 12, 24, and 48-hour time period.
- Analysis showed increased adherence with administering preoperative acetaminophen, postoperative acetaminophen, ibuprofen, and ketorolac in both the general and OUD population.
- Statistically significant decrease in total MME consumption in both General and OUD population.
- Post-implementation exhibited decreased total discharge MME opioids.