NorthShore University HealthSystem
School of Nurse Anesthesia
&
DePaul University School of Nursing
Class of 2019
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Background: The pre-anesthetic evaluation (PAE) is a critical part of providing anesthesia and an important component of patient safety. Stress, anxiety, doubt, a novel environment and time constraints can result in an inefficient and inadequate assessment.

Objectives: To determine the overall readiness of student registered nurse anesthetists (SRNAs) to independently perform a thorough PAE upon entering clinical residency.

Method: A focus group was conducted with 10 SRNAs from NorthShore. Qualitative software and thematic analysis were used to analyze the data.

Results: Four main themes were identified from the data.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Illustrative Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barriers</td>
<td>Q1 “Expectations [for the pre-op assessment] definitely vary at different [clinical] sites.”</td>
</tr>
<tr>
<td></td>
<td>Q2 “We get lots of interruptions.”</td>
</tr>
<tr>
<td>Emotions</td>
<td>Q3 “I felt like I was a little bird getting kicked off the tree. And... you either learn to fly now, or you’re gonna send me home for the day.”</td>
</tr>
<tr>
<td></td>
<td>Q4 “I just fell... so overwhelmed with starting clinicals.”</td>
</tr>
<tr>
<td>Facilitators</td>
<td>Q5 “Mock interview... so that it was... a practice run before you did one on your first patient. Which, was nice ‘cause it helped you at least identify... things that you were forgetting on the first time.”</td>
</tr>
<tr>
<td></td>
<td>Q6 “Heavily relying on the template.”</td>
</tr>
<tr>
<td></td>
<td>Q7 “Maybe if we just had some time during class [to] run through [the interview] on each other, like, partner up and run through it.”</td>
</tr>
</tbody>
</table>

Role Transition

| Q8 “I think one of the main struggles with us having been nurses is that, we were the leaders on our floor. We were the nurse leaders. We were extremely competent, and then all of a sudden, we’re put in a situation where we’re primed to feel insecure. And, to feel... as if our previous skills are no longer good enough.” |
| Q9 “We aren’t new clinicians. We’re experienced clinicians, just playing a different role.” |

Discussion: Our findings support previous literature that students entering clinical practice experience information overload, role ambiguity, anxiety and stress related to their new surroundings. These factors have a negative impact on clinical performance.

Implications for Nursing:
- Include a mock interview or simulation in addition to didactic education.
- Utilize a pocket sized guide for reference to help the SRNA establish a flow.

Conclusions:
The ability to practice the PAE prior to entering clinical residency and using a reference guide can help decrease the SRNAs’ stress and anxiety allowing for a more consistent, thorough, and efficient PAE.
Background/Significance: A Venous Gas Embolism (VGE) is defined as the entrance of gases such as air or carbon dioxide into venous circulation, which may ultimately travel to the right side of the heart. VGEs develop when air or other gases enter the vasculature from an existing pressure gradient and are considered to be potentially fatal. Surgeries that present the highest risk for VGE development include neurosurgery, laparoscopic, orthopedic, obstetric-gynecological, and cervical laminectomies. Posterior fossa surgeries that are performed in the sitting position have the highest rates of VGE incidence. Sequelae of VGE development includes cardiac arrhythmias, systemic hypotension, decreased oxygen saturation, and ultimately cardiovascular collapse. Mortality rates associated with VGE occurrence can be as high as 28%. Video-based learning acts as a supplemental adjunct to traditional lectures, reading material, and clinical experiences. An important benefit to this learning method is that it allows students to improve their performance without the risk of causing patient harm. This project aims to assess the effectiveness of video-based learning to educate novice NATs on the management of VGEs.

Purpose: The purpose of this project was to evaluate the effectiveness of an educational video in enhancing the appropriate crisis management of VGE among NATs as measured by their knowledge and confidence levels.

Methods: A quasi-experimental pretest-posttest design on a single group of participants was utilized for this project. A total of 24 first-year NATs were recruited from NorthShore University HealthSystem School of Nurse Anesthesia (NSUHS) and participated in this study. An instructional video that simulates the proper management of VGE, a knowledge assessment tool (KAT) to assess non-technical skills knowledge pertaining to VGE, and a student confidence survey were developed for implementation of this study.

Results: Following exposure to the video, the mean score increased with every category assessed best illustrated in Figures 1 and 2. The mean prevention score improved from a pre-test score of M=1.79 (SD=0.89) to M=2.79 with a (SD=0.42); the recognition score improved from M=1.07 (SD=0.91) to M=3.57 (SD=0.51); and the decision-making score improved from M=2.00 (SD=1.24) to M=4.00 (SD=0.00). The prioritization section improved from a mean pre-test of M=2.50 (SD=1.50) and improved to M=6.79 (SD=1.92). The overall total mean score improved from a pre-test score of M=7.36 (SD=2.24) to a post-test score of M=17.14 (SD=2.07). The mean pre-test value for confidence in identification increased from M=2.43 (SD=1.50) to M=3.43 (SD=0.54); the confidence in managing score increased from M=2.07 (SD=1.492) to M=3.14 (SD=0.770); and confidence in learning increased from M=3.29 (SD=0.469) to M=3.64 (SD=0.497).

Discussion: NATs that participated in the study gained knowledge and confidence from pre and post video implementation. The mean scores improved in every knowledge category (prevention, recognition, decision-making, and prioritization) and confidence category (identification, management, and learning crisis management). A Wilcoxon Signed Matched Pairs Ranks Test determined that the median post-test scores of the KAT significantly increased compared to the pre-test scores after video implementation proving statistically significant. The instructional video improved knowledge and confidence among NATs for the management of VGE as demonstrated by significantly increased mean score (Z = 3.301, p < 0.001 (2-tailed)). This demonstrated that video simulation education is an effective method of learning crisis management.

Future Recommendations: Further research can build upon current findings by assessing other educational modalities such as live simulation or traditional lecture. This will allow for another subset to be analyzed in comparison to video-based education. Another opportunity is to assess long-term retention of crisis management by utilizing video-based education as an adjunct to traditional lecture style learning. The strength of the study may improve by assessing retention with a future study through implementing a secondary post-test at a later date. This would also allow for a useful population subset analysis, which can be accomplished by assessing multiple nurse anesthesia programs first-year students.

Conclusion: Crisis management is an essential skill required of CRNAs and depends on the practitioner’s ability to identify individuals at risk, incorporate prevention strategies, recognize key signs and symptoms, incorporate appropriate decision-making skills, and prioritize actions. All of these non-technical skills are essential for patient care and safety as NATs enter the anesthesia arena. An instructional video can be used as an adjunct to didactic courses in the nurse anesthesia curriculum.
Cultural Competence in Student Registered Nurse Anesthetists in Illinois

Linda Brown RN, BSN
Said Iqbal RN, BSN
Susan Kravczyk, DNP APRN, CNFA
Joseph Tammin, PhD, RN, APN-BC, FAAN
DePaul University/NorthShore University HealthSystem School of Nurse Anesthesia

Methodology

Algorithms
- The process involved creating a descriptive, cross-sectional, online survey study.
- The survey was administered electronically.
- The survey was pretested for content validity to ensure cultural competence and cultural sensitivity.

Sample
- The survey was targeted to student registered nurse anesthetists (SRNAs) in Illinois.
- The sample size was calculated using the formula for estimating population parameters.
- The survey was distributed electronically.

Summary
- The survey was administered online.
- The survey was pretested for content validity to ensure cultural competence and cultural sensitivity.
- The survey was distributed electronically.

Results

Table 1: Demographic Characteristics of Study Participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>30</td>
<td>25</td>
<td>3.5</td>
</tr>
<tr>
<td>Gender</td>
<td>50</td>
<td>25</td>
<td>3.5</td>
</tr>
<tr>
<td>Race</td>
<td>50</td>
<td>25</td>
<td>3.5</td>
</tr>
<tr>
<td>Education Level</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ER Experience</td>
<td>50</td>
<td>25</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Conclusion

- The overall level of perceived cultural competence in SRNAs
- The overall level of perceived cultural competence in SRNAs
- The overall level of perceived cultural competence in SRNAs
- The overall level of perceived cultural competence in SRNAs

Educational Recommendations

- Integrate cultural education into the curriculum
- Provide opportunities for students to engage with diverse populations
- Develop culturally competent teaching materials

References

CRNA’s Awareness and Knowledge of Herbal Supplements and Perioperative Interactions

Catherine Carman, RN, BSN, DNP(c) & Victoria Rosinski, RN, BSN, DNP(c)

Background
Complementary alternative medicine has increased in popularity since the early 1990s. Herbal supplements are the most common form, with an estimated 50 million Americans taking herbal supplements—roughly half of all U.S. surgical patients. - 70% fail to report herbal supplements as medications
- 50% do not stop taking herbal supplements before surgery
Dietary Supplement Health and Education Act of 1994. Exempts herbal supplements from FDA regulation. This leads to poor quality and/or highly potent herbal supplements being sold in the U.S.

Defining the Problem: While anesthesia providers recognize the importance of assessing for herbal supplements as proven in previous studies, this rarely transfers into practice. The failure of communication between patients and providers potentially endangers the patient due to the multiple adverse reactions between herbal supplements and perioperative medications.

Objectives
- Identify CRNAs’ current level of herbal supplement attitudes and knowledge.
- Assess if CRNAs’ current practice includes the prescriptive assessment of herbal supplements.
- Examine the impact of an online learning module on CRNAs’ knowledge of herbal supplements and their perioperative interactions with other anesthetic agents.

Methods
A descriptive survey design in the form of a pre and posttest was used to assess the effect of an investigator-developed online educational handout. This handout was available for review before and after the posttest. CRNAs recruited through the IANA.

Results
N = 111 CRNAs

Demographics
- Majority: female, ages 30-39 or 50-59, 10 or more years of experience with graduate degrees
- No statistical significance found in mean scores for sociodemographic variables

Attitudes & Beliefs
Table 1. Attitudes and Beliefs Pretest

<table>
<thead>
<tr>
<th>Questionnaire Item</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Assess my patient's use of herbal supplements preoperatively</td>
<td>3.28</td>
<td>0.922</td>
</tr>
<tr>
<td>2. Feel that herbal supplements can harm patients</td>
<td>3.19</td>
<td>0.779</td>
</tr>
<tr>
<td>3. Feel that herbal supplements can harm patients</td>
<td>3.75</td>
<td>0.706</td>
</tr>
<tr>
<td>4. Would not change treatment plan due to herbal supplements</td>
<td>3.99</td>
<td>0.681</td>
</tr>
</tbody>
</table>

Table 2. Attitudes and Beliefs Posttest

<table>
<thead>
<tr>
<th>Questionnaire Item</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Assess my patient's use of herbal supplements preoperatively</td>
<td>4.60</td>
<td>0.542</td>
</tr>
<tr>
<td>2. Feel that herbal supplements can harm patients</td>
<td>3.88</td>
<td>0.568</td>
</tr>
<tr>
<td>3. Feel that herbal supplements can harm patients</td>
<td>4.67</td>
<td>0.557</td>
</tr>
<tr>
<td>4. Would not change treatment plan due to herbal supplements</td>
<td>3.96</td>
<td>0.587</td>
</tr>
</tbody>
</table>

Knowledge
Table 3. Knowledge Pretest/Posttest

<table>
<thead>
<tr>
<th>Knowledge Variables</th>
<th>Answer</th>
<th>Pretest Mean (SD)</th>
<th>Posttest Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>May cause interactions of major medications and possibly decrease pharmaceutical</td>
<td>4.49 (SD)</td>
<td>6.64 (SD)</td>
<td></td>
</tr>
<tr>
<td>May cause mild to severe adverse effects and is used in cognitive enhancement</td>
<td>6.64 (SD)</td>
<td>6.64 (SD)</td>
<td></td>
</tr>
<tr>
<td>May cause hypotension or hypotension without</td>
<td>6.64 (SD)</td>
<td>4.67 (SD)</td>
<td></td>
</tr>
<tr>
<td>May cause severe dermatologic side effects</td>
<td>6.64 (SD)</td>
<td>4.67 (SD)</td>
<td></td>
</tr>
<tr>
<td>May cause severe dermatologic side effects</td>
<td>6.64 (SD)</td>
<td>4.67 (SD)</td>
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<td>May cause severe dermatologic side effects</td>
<td>6.64 (SD)</td>
<td>4.67 (SD)</td>
<td></td>
</tr>
</tbody>
</table>

Discussion
The posttest scores regarding attitudes and beliefs improved as shown by the Cronbach’s α coefficients increase: 0.332 to 0.817
- Indicates adequate reliability of the handout
Questions with highest pretest mean (M=3.99) were items regarding more education about herbal supplements.
Questions with the largest increase in posttest mean pertained to the assessment of herbal supplements preoperatively (M = 3.16 to 4.10)
- The educational tool had a small effect on improving CRNA knowledge of supplements (Cohen’s d value = -0.114)

Future Research
Future research should be aimed at improving the knowledge regarding specific herbal supplements. Educational tools should explore other avenues for different learning styles such as in-person lectures or online videos.

Design of new preoperative assessments to include specific documentation on herbal supplements.

Focus on educating patients about supplement interactions and importance of discontinuing before surgery.

Conclusion
The handout tool was effective at educating CRNAs’ about the importance of herbal supplement and their perioperative interactions, as well as the need to assess for supplement use. Not as effective as a teaching tool for specific supplement interactions, indications or side effects.

More educational opportunities should be implemented specific to anesthesia providers regarding herbal supplements.
What We Say Matters: A Survey of Anesthesia Providers’ Knowledge and Beliefs
Stefanie Glasgow & Lindsey Harris
DePaul University School of Nursing & NorthShore University HealthSystem School of Nurse Anesthesia

Introduction
Patients receiving anesthesia are vulnerable, so what nurses say and how they say it is matter. Past studies have determined that positive language affects patient outcomes positively. Language training can improve outcomes in patient experiences. Positive language is closely tied to patient experiences and respects their dignity.

Positive Language
- Promotes the best healthcare outcomes
- Conveys empathy
- Enhances patient satisfaction
- Increases patient compliance
- Facilitates better patient outcomes

Negative Language
- Causes patient anxiety
- Decreases patient compliance
- Leads to negative patient outcomes
- Conveys a lack of empathy

Methods & Materials
Sample
- 1,796 adult inpatients (30% men and 70% women)

Survey
- 17-item survey was developed to assess the knowledge level and beliefs of anesthesiologists regarding their own knowledge of positive language and their current practices.

Survey Results
- 57% of survey respondents had received training in the use of positive language.
- 68% of respondents believed that positive language improved patient outcomes.

Results
- Anesthesia providers who received training in positive language were more likely to use positive language in their interactions with patients.
- Positive language was associated with a significant reduction in patient anxiety and an improvement in patient satisfaction.

Most Significant Variable: Years of Practice
- The number of years of practice was positively correlated with the use of positive language.

Conclusion
- Anesthesia providers, when properly trained, can significantly reduce patient anxiety and improve patient outcomes.
- Positive language is an effective strategy for improving patient outcomes.

Acknowledgments
- Thanks to our colleagues for their support and guidance throughout this project.
Background:
Current nurse anesthesia education relies on the quality and duration of clinical experiences. Certain low frequency high acuity procedures are becoming increasingly difficult to learn. Insertion of a pulmonary artery (PA) catheter is an invasive procedure that carries serious risk. Simulation has been shown to improve a provider’s ability to complete a skill on the first attempt lending it especially useful for teaching invasive procedures such as PA catheter insertion.

Objectives:
- What affect does simulation have on SRNAs’ knowledge of PA catheter insertion?
- What affect does simulation have on SRNAs’ confidence in inserting a PA catheter?
- Does perceived knowledge of PA catheter insertion correlate with actual knowledge?
- Do SRNAs believe one teaching method (educational video or low-fidelity simulation) is superior to the other?

Method:
Participants: Single group pre-test and post-test
Population: Convenience sample of second-year SRNAs, 24 eligible 22 participants.
Setting: The study took place at NorthShore University HealthSystem Evanston.
Tools: Four surveys were utilized and included a demographics survey, pre-test questionnaire, knowledge assessment tool (KAT), and post-test questionnaire. The pre and post test questionnaires used a 4-point Likert scale to assess perceived knowledge and confidence. The 14 question KAT was used to assess actual knowledge.

Results:
The mean score on the KAT increased from 7.73 (SD = 3.01) to 10.77 (SD = 3.29), *p < 0.05*. Hypothesis testing using Related-Samples Wilcoxon Signed Rank Test rejects the null hypothesis that the median of differences between the mean pre and post study KAT scores equals 0 (P = 0.001).

The mean score of perceived knowledge was 2.68 (SD = 0.51) on the pre-study questionnaire and 3.43 (SD = 0.49) on the post-study questionnaire. Confidence mean scores increased from 1.36 (SD = 0.50) to 3.09 (SD = 0.68). Hypothesis testing using Related-Samples Wilcoxon Signed Rank Test rejects the null hypothesis that the median of differences between the mean pre and post study questionnaire scores equals 0 (P = 0.001) for both perceived knowledge and confidence.

The relationship between perceived knowledge and actual knowledge was determined using Spearman’s rank order correlation. Pre and post study perceived and actual knowledge scores were statistically significant with the following values: rs = 0.463, P = 0.03 and rs = 0.612, P = 0.002, respectively.

Discussion:
The video and low-fidelity simulation were effective in increasing the mean perceived knowledge scores from 2.68 to 3.43 as well as the mean actual knowledge scores from 7.73 to 10.77. The video and low-fidelity simulation were also effective for increasing confidence in PA catheter insertion as evidenced by the mean confidence scores increasing from 1.36 to 3.09. All of the SRNAs agreed that the hands-on simulation increased their confidence more than watching the video. This is consistent with what has been seen outside of healthcare for decades and is currently gaining momentum and is a focus of research within the healthcare community. SRNAs who thought they had more knowledge about the indications, contraindications, stops, and complications of PA catheter insertion scored better on the KAT.

Conclusions:
The decline of PA catheter use due to the development of other noninvasive techniques has caused a decrease in teaching opportunities for actual placement. The findings of this study suggest watching an educational video and participating in a hands-on simulation can significantly increase both knowledge and confidence of those learning the skill of PA catheter insertion. Due to the positive results demonstrated in this study, the methodology used could be applied for teaching other anesthesia procedures.
Examining the Reflections of Nurse Anesthesia Trainees in Guatemala

Background:
There is a lack of surgical and anesthesia services in low-income and middle-income countries (LMICs) which creates an increased burden of disease from otherwise surgically treatable conditions. Nurse anesthetists (NAs) can serve to fill this lack of anesthesia services while also gaining real-life experience that can enhance their training.

Results:
- Preparation
- Review regional anesthesia
- Review older anesthesia machines
- Talk to previous volunteers
- Gain perspective
- Set expectations

- The variety of life is an experience to measure. It’s a great opportunity to learn about how to operate in a different place, one that probably never showed up in a text book.
- “Better words lasting are two truths. I spoke with some Native Americans who had participated in a project dealing with what they see at the expense of the surgery center.

- Prior Strengths and Experiences
- Clinical experience
- Flexible attitude
- Composition
- Previous mission experience (proper expectations)

- “The infrastructure and its structure is really unique. It’s a great opportunity to learn about how to operate in a different place, one that probably never showed up in a text book.
- “Better words lasting are two truths. I spoke with some Native Americans who had participated in a project dealing with what they see at the expense of the surgery center.

- Perspective of Healthcare Access
- Increased perspective on access to healthcare in LMICs
- New appreciation for healthcare access in US

- “The infrastructure and its structure is really unique. It’s a great opportunity to learn about how to operate in a different place, one that probably never showed up in a text book.
- “Better words lasting are two truths. I spoke with some Native Americans who had participated in a project dealing with what they see at the expense of the surgery center.

- Challenges
- Language barrier
- Working with unfamiliar equipment and OR environment
- Often acknowledged as a learning experience
- Working long hours

- Changed Personal View
- Increased desire to volunteer/pro in future
- Increased knowledge of waste in US healthcare

- “The more experience I have in Guatemala, the more I want to start volunteering through volunteering opportunities other than NA work. After exposure to the healthcare system in America, I can’t help but think that the healthcare system in the US is just as much wasted as the healthcare system in Guatemala.

- Positive Experience
- “Reinventing
- “Dollifying
- “Life changing

- “The more experience I have in Guatemala, the more I want to start volunteering through volunteering opportunities other than NA work. After exposure to the healthcare system in America, I can’t help but think that the healthcare system in the US is just as much wasted as the healthcare system in Guatemala.

- Advice to Others
- “Keep an open mind

References:

Discussion:
Nursing volunteering in LMICs offers positive benefits, including providing valuable anesthesia services to a community in need. Nurse anesthesia programs can implement similar volunteer surgical brigades in LMICs by increasing involvement of new volunteers and providing education on positive benefits of volunteering in LMICs.

Recommendations:
- Since volunteering is beneficial to NAs, further research is underway to determine how nurse anesthesia programs may better involve surgical volunteers in LMICs.
- Nurse anesthesia programs that provide a volunteer surgical brigade experience could be offered to potential barriers or opportunities for implementing a new volunteer surgical brigade program.
- Nurse anesthesia programs should also pursue additional sources of funding to cover travel expenses and increase volunteer participation.

Conclusions:
The Council of Accreditation of Nurse Anesthesia Educational Programs (COA) does not recognize NA experiences in LMICs as forming the equivalent of an anesthesia clinical experience. Further research is needed to determine whether COA can offer more specific guidelines for COA-approved national volunteer programs.

Acknowledgments:
- Thank you to DNP committee:
  - Chair: Genevieve T. Schroe, BSN, APRN
  - Member: Frances A. Jacobson, DNP, CRNA

- North Shore University Health System School of Nursing
- DePaul University School of Nursing
- Limited studies on CRNAs
- Volunteering in LMICs
- More focus on surgical services
- Pecyanski et al., (2013) focused on anesthesiologists/residents
- CRNAs/NATs may have similar experiences/barriers identified
- But different background and training...
Peer Mentorship: Reported Outcomes Among Student Registered Nurse Anesthetists Enrolled in the DNP Program

Champagna Conner BSN, RN & Aja Rivera BSN, RN

Abstract

Background: Student Registered Nurse Anesthetists (SRNAs) experience high levels of stress and anxiety while enrolled in a demanding Doctor of Nursing Practice (DNP) program. A peer mentorship program offers an excellent support system for SRNAs.

Objective: The purpose of the study was to evaluate if a peer mentorship program can reduce stress, anxiety, and improve professional development among first-year, second-year, and third-year SRNAs in the Master of Science in Nursing (MSN) program.

Methods: A quantitative, descriptive, cross-sectional study design with a convenience sample of SRNAs enrolled in the MSN program was used. The study included first-year, second-year, and third-year SRNAs. A validated stress and anxiety scale was used to measure the level of stress and anxiety experienced by the participants.

Results: The study revealed that peer mentorship programs can significantly reduce stress and anxiety among SRNAs. The results showed a positive correlation between peer mentorship and professional development among SRNAs.

Discussion:

- The peer mentorship program yielded positive results based on the feedback from participants.
- These interventions included regular meetings with peer mentors, stress management workshops, and mentoring sessions.
- The feedback from participants indicated that the peer mentorship program improved their overall well-being and reduced stress levels.

Implications for Nursing Education

- Continuing the program at NURS 540A
- Program integrated into the curriculum with faculty support and participation
- Program could start from the first two semesters and be included in each semester
- Incorporate Collaborative Learning Experiences (CLES) in the curriculum and program
- The use of social media platforms

Conclusion

- Peer mentorship can be a valuable tool that can be utilized during all phases of the nursing education program.
- A support group can serve as an indispensable tool to help improve the mental well-being of the SRNAs.
- The continuation and expansion of the peer mentorship program at NURS 540A is beneficial for participating SRNAs.
- The peer mentorship program proves to be a positive coping strategy to assist with a positive and meaningful personal development among the nursing students.

Acknowledgements:

- CITI Training: Compliance with all requirements
- IRB Approval: Approved by NorthShore UHS
- Institutional Review Board Authorization Agreement (IABA) from completed at DePaul University
Background:
• Healthcare workers are inundated with patient-monitoring alarms every minute.
• 80-95% of these alarms do not result in provider intervention.
• False alarms cause “cry-wolf” phenomenon among providers.
• Responsiveness to alarms dangerously inconsistent due to desensitization.
• Anesthesia providers neglecting alarms or misusing alarms by silencing or shutting them off.
• Alarm fatigue and alarm mismanagement pose threat to patient safety and provider satisfaction.

Objectives:
• To assess anesthesia providers’ perceptions of their alarm fatigue experience and interactions with alarms and monitors.
• To explore associations between sociodemographic factors and the various perceptions of alarm fatigue experience among anesthesia providers.

Methodology:
• Anonymous online survey consisting of a 20-item Likert-scale questionnaire related to alarm management practice and alarm fatigue administered to all NorthShore University HealthSystem anesthesia providers.

Results:
• Respondents consistently recognized alarm management as their responsibility and acknowledged false alarms and alarm fatigue as relevant to anesthesia practice.
• Anesthesia trainees and providers with less total years in practice exhibit higher levels of alarm fatigue and associated provider distress.

Discussion:
• ASA recommends every operating facility have alarm management policy specific to anesthesia equipment and monitors.
• Deleterious effects of excessive noise in the O.R. more frequently contributes to alarm fatigue in new, vulnerable providers already anxious in the stressful O.R. environment.
• Attention to alarm fatigue in anesthesia practice is warranted to improve provider relationship with alarms, monitors and patient safety.

Conclusions:
• To improve interactions with monitors and alarms and minimize alarm fatigue among providers and its burden on patient safety, the researchers developed policies and procedures for managing patient monitoring alarms.
• The researchers’ policy recommendations focus on the assessed needs of the NSUHS Anesthesia Department with emphasis on equipment, device alarms, and telemetry alarms as well as the responsibility for alarm maintenance and management.
Cost Differences Between Sugammadex and Neostigmine Use in Non-Operating Room Anesthesia Care

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BACKGROUND
- Before the introduction of sugammadex, the only option to reverse neuromuscular blockades (NMBs) were cholinesterase inhibitors (e.g., neostigmine) and anticholinesterase (AchE, i.e., glycopyrrolate)
- Sugammadex administration has been shown to provide a more effective and complete reversal of NMBs
- The higher cost of sugammadex has been cited as a limiting factor to its use
- The medication costs of sugammadex and neostigmine with glycopyrrolate have been studied in the operating room setting. There is a lack of information regarding the usage and medication costs of sugammadex and neostigmine with glycopyrrolate for non-operating room anesthesia care (NORA).

SIGNIFICANCE
- Sugammadex has been an alternative to the traditional NMB reversal since its FDA approval in 2016
  - Better safety profile
  - Significantly lower risk of respiratory and cardiac adverse events
  - Lower risk of post-operative weakness (Cannon, Lentz, Tollefson, & Crit, 2016)
  - Decreased recovery time in operating room (Cannon, 2018)
  - High cost limits its use (Cannon et al., 2019)
- Increased costs associated to NORA procedures
  - Higher incidence of preventable mortality and adverse events (Cannon et al., 2019)

PURPOSE
- To examine the costs associated with the administration of neostigmine with glycopyrrolate versus sugammadex for NORA locations
- NORA locations include:
  - Cardiac catheterization laboratory
  - Interventional laboratory
  - Magnetic resonance imaging room
  - Computed tomography room
  - Interventional radiology
  - Obstetrics unit
  - Electrophysiology laboratory

METHODS
- Retrospective chart review was conducted over a 12-month period at North Shore University HealthSystem using their electronic medical record: Epic
- Usage and cost associated with the administration of sugammadex, neostigmine for anesthesia in NORA locations was analyzed
- This study consisted of 529 patient charts that fulfilled the inclusion criteria
- The following information was collected:
  - Dosage of the NMB reversal agent
  - Age
  - Weight
  - Body mass index (BMI)
  - American Society of Anesthesiologists physical status (ASA PS) classification
  - NORA location

RESULTS
- Sugammadex was administered to 187 patients as NMB reversal agent
  - Average ASA score was 2.7 ± 0.028
  - Mean weight was found to be 55.15±1.00 kg
  - Mean BMI was 28.85±3.27 kg/m²
  - There was a non-normal distribution of dose of sugammadex administered with a large number of patients modeling 200 mg of sugammadex
  - Consentual data analysis revealed that there was a weak positive correlation between ASA physical status and use of sugammadex (Spearman’s r = 0.017; p = 0.007)
  - Statistically significant difference in the administration between NORA departments, notably in the electrophysiology laboratory (p < 0.000)
  - No statistical significant correlation noted between age category, BMI category, and weight-category compared to administration of sugammadex using Spearman’s test.

CONCLUSION
- There was a slight correlation between the use of sugammadex and ASA physical status classification. EP lab was the only department where sugammadex was administered more frequently than neostigmine. Cost-analysis could not be performed to determine if the choice of NMB reversal agent would lead to cost savings. The inability to perform cost-analysis was due to the constant fluctuating costs of sugammadex, neostigmine, and glycopyrrolate and a large range of acquisition costs of these medications. A potential explanation of the frequency of neostigmine and sugammadex use observed in this study may be due to the anesthesiologist provider’s preference of NMB reversal agent.

REFERENCES

NURSING IMPLICATIONS