
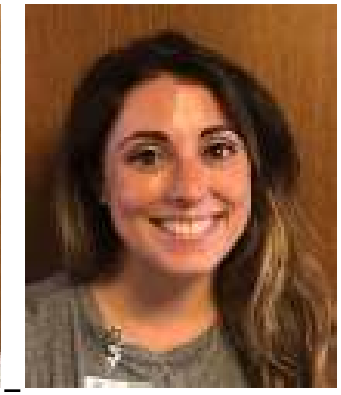

Authors: Matthew Klimesh BSN, RN & Angela Kurth BSN, RN
Committee: **Jeff Matson PhD, CRNA**, Shannon Simonovich PhD, RN

Gender Affirming Anesthesia: It's More than Pronouns

Transgender individuals experience healthcare-related discrimination, resulting in significant disparities and negative health outcomes in comparison to the general population. Many CRNAs do not receive formal or adequate education before being expected to care for transgender patients that contributes to these negative health outcomes. To correct this problem, an educational intervention was created to improve anesthesia providers' knowledge of gender-affirming therapies and survey anesthesia provider attitudes towards transgender patients and knowledge, beliefs, and preferences towards treating transgender patients. A sample of anesthesia providers was collected (n=27) that included SRNAs and CRNAs at varying levels of professional experience from diverse sociodemographic backgrounds. The data collected from this study is evidence that our educational intervention resulted in a statistically significant increase in the anesthesia provider's knowledge of gender affirming therapies. Additionally, scales designed to measure beliefs, knowledge, and attitudes of medical practitioners towards transgender patients showed that 68.1% of providers hold favorable views while 31.9% of providers hold unfavorable or neutral views towards this population. Increasing anesthesia provider knowledge of gender affirming therapies will foster competence, advance gender inclusive education, result in application of best current practices, and reduce healthcare disparities and negative healthcare outcomes faced by transgender populations.


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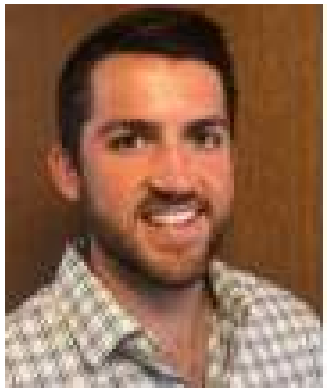
Examining certified registered nurse anesthetists' utilization of regional anesthesia in outpatient orthopedic surgery

Regional anesthesia has played a significant role in the reduction of perioperative opioid consumption while still providing high-quality analgesia, making it a fundamental practice in outpatient orthopedic surgery. The purpose of this study was to qualitatively examine the experiences and perspectives of CRNAs surrounding the utilization of regional anesthesia in outpatient orthopedic surgery. A qualitative study design using semistructured interviews was conducted (N =14). Study participants described their current practices and experiences with regional anesthesia utilization in the outpatient orthopedic surgery setting. In particular, four themes describing factors that promote CRNAs' utilization of regional anesthesia for outpatient orthopedic surgery emerged: 1) employment selection, 2) institutional factors, 3) practice variation, and 4) policy change. Overall, CRNAs felt strongly about implementing regional anesthesia techniques in this patient population due to consistent experiences with its positive impact on patient outcomes. CRNAs expressed the desire to perform regional anesthesia, allowing them to practice to the full scope of their education and training, which ultimately impacted their choice of employment. However, there are several barriers on an institutional, organizational, and systemic level that prevent the universal utilization of regional anesthesia by CRNAs, leading to practice variations that inhibit equitable, efficient care delivery. This study highlights the importance of the universal utilization of regional anesthesia by CRNAs and the necessity for advocacy efforts to alter unnecessary restrictive policies and barriers, ultimately improving inequities in healthcare.

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Airway Management Simulation with PPE to Improve NAT

Education and Comfort

Guidelines for the use of proper personal protective equipment (PPE) were created by the Center of Disease Control and Prevention (CDC) half a century ago but PPE compliance remains low. To effectively protect healthcare workers from becoming infected and spreading infectious agents, PPE compliance must be improved. The purpose of this study was to assess the efficacy of an educational tool and simulation on improving NAT (nurse anesthesia trainee) knowledge of PPE protocols as well as perceived comfort performing airway management procedures while wearing PPE. This study used a pre- and post- survey design to assess both knowledge of proper operating room (OR) PPE protocols and NAT comfort wearing PPE during airway management scenarios. 26 NAT's from NorthShore University School of Nurse Anesthesia participated and data was analyzed using SPSS software. The Chi-Square, McNamar, and Sign Test were used. The results showed that 92% (n=24) of participants felt more comfortable both donning and doffing PPE after the simulation experience. Additionally, 96% (n=25) of participants reported feeling more comfortable intubating while wearing PPE after the simulation. The use of an educational tool increased participants' knowledge of proper PPE donning procedures by 27% (p=0.03271). The findings of this study add to previous evidence that the addition of PPE simulations for anesthesia trainees is essential to improving provider comfort while performing procedures in PPE.

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TEFRA 7 Requirements: Assessment of education on CRNA

knowledge

CRNAs need to be aware of the 7 requirements of the Tax Equality and Fiscal Responsibility Act (TEFRA) to prevent Medicare fraud. However, CRNAs and SRNAs lack basic knowledge about the TEFRA 7 requirements which puts them at risk of committing inadvertent medical billing fraud. To prevent fraud and improve CRNA knowledge regarding the TEFRA 7 requirements, the researchers developed an educational flyer based on the most current literature. The purpose of this study was to determine if the investigator developed an educational flyer that improved CRNA and SRNA knowledge regarding the TEFRA 7 requirements. This hypothesis was tested using a pretest-posttest quasi-experimental study. A convenience sample of CRNAs and SRNAs (n=61) completed an online knowledge pre-test about TEFRA, reviewed the investigator-developed educational flyer about TEFRA, and completed an online knowledge post-test. A Shapiro-Wilk test, Wilcoxon signed-rank sum test, and McNemar test were conducted on the collected responses showed a statistically significant increase ($p < 0.05$) between pre-test scores (66%) and post-test scores (87%). This increase in knowledge is evidence that the newly developed TEFRA 7 flyer will improve CRNA and SRNA knowledge regarding TEFRA 7 requirements and should be distributed amongst CRNAs and SRNAs to improve knowledge and reduce medical fraud.

Keywords: TEFRA, CRNAs, education, billing modifiers, billing fraud


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Clearing the Smoke Around Marijuana Laws for Healthcare Organizations: Evaluating Certified Registered Nurse Anesthetists' Perceived Knowledge of their Organizations' Cannabis Use Policies

The legalization of marijuana in many U.S. states, despite its federal illegality, has resulted in an influx of positive marijuana drug screens across the healthcare sector (Perna, 2021). This study surveyed certified registered nurse anesthetists' (CRNA) perceived knowledge of their organization's policies regarding cannabis use. Survey data was collected from CRNAs who practice in Illinois via an email link that was distributed by the Illinois Association of Nurse Anesthetists (IANA). Results from the Likert-scale, ten question survey, showed that 70% of CRNAs disagreed or were neutral when asked if their organization's policies were well-communicated regarding cannabis use. Conclusions made from the analyses of data collected reflect that CRNAs lack clarity and communication from employers surrounding cannabis policies if they exist. To address these issues healthcare organizations should clarify their marijuana-related policies, create educational materials, and improve communication related to these policies to their employees. These approaches may prevent CRNAs from having an inadvertent positive drug screen and may increase CRNA compliance with federal laws.
Keywords: Substance Abuse, Cannabis, Workplace Policies


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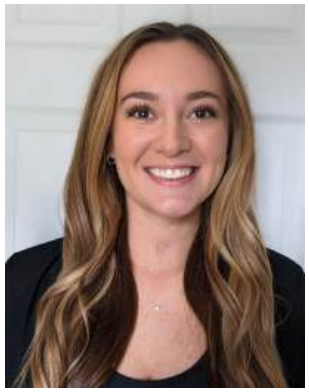
Playing Darts Blindfolded: A Quasi-Experimental Study on CRNAs and SRNAs Knowledge on Pre-Procedural Ultrasound for Neuraxial Anesthesia

Pre-procedural ultrasound is an emerging technique among anesthesia providers to increase procedural efficiency and safety of neuraxial procedures on patients with increased technical difficulty. The use of pre-procedural ultrasound in neuraxial anesthesia among certified registered nurse anesthetists (CRNAs) and student registered nurse anesthetists (SRNAs) has not been previously described. This study examined the efficacy of an educational intervention on CRNAs' and SRNAs' knowledge and future intent to use pre-procedural ultrasound to identify lumbar intervertebral spaces. We utilized a pre-and post-test design with convenience sampling. This study demonstrated a statistically significant improvement in the participants' knowledge in four out of seven question pairs. One question pair had the majority of the participants answer correctly on both pre and post-tests thus no statistical improvement was observed. Two question pairs did not show enough statistical improvement between pre-and post-test scores. A McNemar test ($p<0.05$) was performed on all knowledge-based questions, which indicated that our educational video improved the participants' knowledge. Seventy-six percent of the participants indicated that they intend to use this technique after viewing the educational video. One of the most prominent barriers to implementation among CRNAs and SRNAs was the lack of knowledge of ultrasound use. Most of the participants did not have formal ultrasound training during their anesthesia education. Many obtained their ultrasound knowledge and skills through other resources. Approximately half of the participants found pre-procedural ultrasound useful in their neuraxial practices. It is recommended that nurse anesthesia programs develop more robust ultrasound training to ensure that nurse anesthesia residents are graduating with this emerging critical skill. ***Keywords***: pre-procedural ultrasound; neuraxial anesthesia; parturients; CRNA; SRNA

Authors: Emily Miller MSN, RN & Michelle Murray BSN, RN
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Just-In-Time Training Videos for Specialty Operating Room Setups for Student Registered Nurse Anesthetists

Background: Just-in-time training (JITT) is an accepted training method in healthcare education that can be used for newer concepts or for procedures that are not performed often. JITT training is focused, brief, and intended to be used in the moment to address a knowledge or skill deficit. This makes JITT videos an appropriate solution for when the student registered nurse anesthetist (SRNA) needs a timely reminder on how to set up an operating room for a unique case, such as a pediatric or neonatal micrognathia case.

Purpose: The purpose of this study was to examine the efficacy of JITT videos on specialized operating room setups on the knowledge and confidence of SRNAs.

Method: Current SRNAs received a pretest, watched a JITT video on a pediatric and neonatal micrognathia room setups, and took a posttest to evaluate their knowledge and confidence on these room setups pre- and post-intervention. The pretest and posttest included multiple choice questions derived from literature and intended to evaluate the participants' knowledge as well as a five- point Likert scale intended to evaluate the participants' confidence.

Results: After viewing a JITT video on pediatric or neonatal micrognathia setup, the SRNAs had increased knowledge and confidence in setting up operating rooms for pediatric and neonatal micrognathia patients.

Discussion: Research has shown that JITT can be effective in many different aspects of healthcare training, and further research should be done to identify and create additional JITT for specialized anesthesia training.

Conclusion: JITT videos can be used by both novice and seasoned anesthesia care providers whenever they need an efficient and easily accessible way to refresh their knowledge on specialized skills or procedures.


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Just-In-Time Training Improves Knowledge and Confidence in Neuraxial Anesthesia in Student Registered Nurse Anesthetists

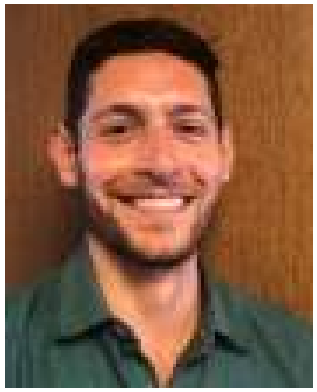
Background: Student registered nurse anesthetists (SRNAs) are required by the Council on Accreditation to complete a minimum of ten spinal and ten epidural procedures. Neuraxial anesthesia, which includes spinal and epidural techniques, are challenging skills to master, requiring deliberate practice and active learning to achieve competency. There may be an extended period between when SRNAs learn the steps and implications of neuraxial procedures, and when they begin performing these skills in the clinical setting. Just-In-Time Training (JITT) is proven to be a successful teaching adjunct to bridge knowledge gaps for healthcare professionals.

Purpose: To determine if using JITT, , as a video demonstration of neuraxial anesthesia procedures, improves SRNAs knowledge and confidence of neuraxial anesthesia.The primary objective of this study was to determine the efficacy the educational strategy JITT video demonstrating neuraxial anesthesia by measuring knowledge and confidence in first and second year SRNAs.

Method: Thirteen SRNAs participated in the quantitative pre/posttest research study. A survey tool developed by the researchers (CVI =1.00) was used to assess the knowledge and confidence of participants in neuraxial anesthesia before and after viewing 2 neuraxial anesthesia JITT videos.
Results: Data were analyzed with R version 4.0.2 and tested for statistical significance ($p<0.05$) with McNemar's and Sign test for knowledge and the Wilcoxon Signed rank tests for confidence measures.

Discussion: Post-test results demonstrated a statistically significant increase in students' knowledge and confidence in neuraxial anesthesia procedures. The findings in this study support the use of JITT intervention to refresh clinical knowledge and improve confidence of SRNAs in neuraxial procedures throughout their clinical residency.

Keywords: just-in-time training, students, anesthesiology, neuraxial anesthesia, video instruction



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Increasing Anesthesia Bar Code Medication Administration Scanning Compliance

Purpose: This study aimed to determine whether the multimodal implementation of visual aids in anesthesia drug drawers, dissemination of virtual reminders through email and scheduling software, and alteration of the barcode scanner location to a more convenient location will improve barcode medication administration (BCMA) compliance.

Design: This study was a time series design study utilizing a retrospective chart review.

Methods: The data collection points included pre- vs post-intervention, anesthesia provider type, medication type (ephedrine or phenylephrine), and whether the barcode was scanned or not. Chi-squared tests and logistic regression analysis were performed.

Findings: The Chi-squared tests indicated that the type of anesthesia providers ($p<0.0001$), type of medication ($p=0.012$), and pre vs post-intervention ($p<0.0001$), were all significant factors associated with barcode scanning compliance of anesthesia medications. BCMA scanning compliance increased by 28.3% from pre- to post-intervention. The logistic regression showed that certified registered nurse anesthetists (CRNA) were more likely to comply with barcode scanning of anesthesia medications than physician anesthesiologists. There were no significant differences between student registered nurse anesthetists (SRNA) and physician anesthesiologists regarding the scanning rate.

Conclusion: A multimodal intervention including a variety of visual reminder and a change in location could provide a method to increase BCMA compliance throughout the anesthesia workflow. Institutions should implement strategies and policies to reduce medication errors. Continuous professional development regarding the compliance of BCMA technology is essential to reduce anesthesia medication errors.
Contribution: Statistical Consulting Center, DePaul University

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Evaluating the effectiveness of simulation-based education of venous gas embolism on novice nurse anesthesia trainees

Background: Simulation-based education is a learning modality utilized in healthcare curriculum among nurse anesthesia trainees (NATs) for crisis management training. This learning modality may improve confidence and knowledge in novice NATs responding to a crisis scenario, such as a venous gas embolism (VGE).

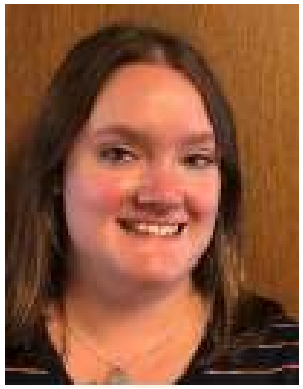
Purpose: Evaluate the effectiveness of simulation-based education in effectively managing a crisis scenario, VGE, as measured by novice NATs confidence and knowledge levels.

Methods: An observational, cross-sectional study with a pretest-posttest design on a group of novice second-year NATs (NAT-2s) from NorthShore University HealthSystems (NorthShore) School of Nurse Anesthesia was utilized. A total of 15 NATs participated in a simulation on VGE, confidence survey, and knowledge assessment tool (KAT), which assessed students in the recognition, decision making, and prioritization of a VGE.

Results: Sign Tests and McNemar Tests revealed that simulation was most impactful in improving novice NATs knowledge of surgical procedures that increase the risk of VGE, signs and symptoms of a VGE, and identifying the most sensitive monitor for VGE. As a whole, simulation-based education improved novice NAT knowledge and confidence survey scores.

Discussion: Simulation-based education has the potential to improve patient outcomes by improving crisis management skills in NATs, who will then bring skills into clinical practice.

Conclusion: Novice NATs who participate in simulation-based education gain confidence and knowledge in the identification and management of a crisis scenario, VGE.
Key Words: Simulation-based education, venous gas embolism, crisis management, nurse anesthesia trainees, confidence, knowledge.

Authors: Samantha Tarnoff BSN, RN & Nicole Kwolek BSN, RN
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Sphenopalatine Ganglion Block for Post-dural Puncture headaches: A Video and Simulation for Nurse Anesthesia Trainees

Background: It is estimated that as many as 1.5% of all epidurals result in a dural puncture, and upwards of 85% of those punctures result in debilitating headaches, known as post-dural puncture headaches (PDPHs). Currently, an epidural blood patch, an invasive procedure, is considered the 'gold-standard' treatment for a PDPH. When properly performed, a sphenopalatine ganglion (SPG) block, a minimally invasive technique, can treat PDPHs.

Objectives: This study aimed to determine if an educational video and simulation focused on the SPG block for PDPHs increased nurse anesthesia trainees' (NAT) knowledge of the block and confidence in performing the block.

Method: A one-group quasi-experimental study consisting of a pre-test, an educational intervention, including a video and hands-on simulation, and an identical post-test assessed twenty-three NATs' knowledge of the SPG block and their confidence in the placement of the block. The study took place in the Grainger Center for Simulation and Innovation at NorthShore University HealthSystem in Evanston, Illinois.

Results: A McNemar test revealed a statistically significant increase in knowledge from pre-test to post-test scores following the intervention (test statistic= 59.211, $p<0.001$). The intervention was also successful in improving average confidence in performing the block from pre-test to post-test [(4% (n=1) versus 39% (n=9); ($p<0.001$)]. After the video and simulation, there was a significantly increased likelihood of utilizing the block in future practice [13% (n=3) to 78% (n=18); ($p<0.001$)].

Conclusion: Teaching NATs about the use and proper technique for placing a SPG block through an educational video and simulation increased NATs' knowledge of the SPG block and increased confidence in performing the block. Also, there was an increased likelihood of NATs using the block in future practice. This study also provides an educational framework for future studies on emerging anesthesia skills and techniques to facilitate NAT learning.

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Podcasting as an Education Modality on the Environmental Effect of Desflurane

Background: Climate crisis is well-documented as posing a major threat to the population. The provision of anesthesia utilizes gases that contribute to this problem. Podcasts may serve as a useful modality to educate anesthesia providers on best practices.

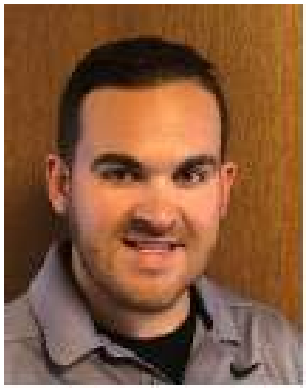
Purpose: The purpose of this study was to evaluate the effectiveness of an evidence-based educational intervention in the form of a podcast which focuses on the evaluation of knowledge, attitudes, and practice habits related to the use of desflurane among anesthesia providers.

Methods: An observational cross-section study using survey methodology was utilized in this pre-test post-test design. Knowledge, attitudes, and practice habits regarding desflurane use among anesthesia providers were analyzed and summarized.

Results: A total of 148 providers opened the survey. Correct answers to all knowledge questions increased by more than 50% in post-survey. Items in the attitudes and practice habits including avoiding the use of desflurane due to its environmental profile and that podcasts were reliable sources of information on anesthesia practice showed a statistically significant increase in the percentage of providers who agreed with these statements (p-value: <0.0001).

Discussion: This project adds support to the literature base that podcasts can be effectively used to educate anesthesia providers and shift both attitudes and practice habits as well as increase knowledge on a particular subject.

Conclusion: As the field of anesthesia continues to advance, podcasts can be used to disseminate new information that research deems appropriate to integrate in practice.



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CRNAs of Illinois: Where do we fall on the current anesthesia provider map?

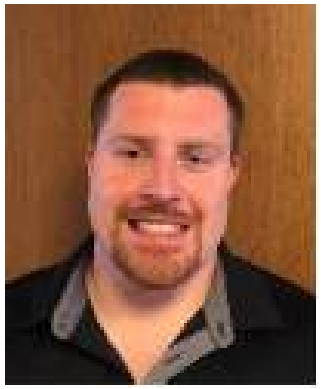
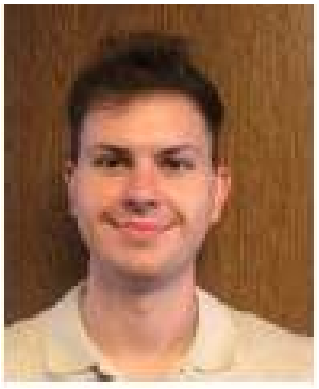
Background: The Illinois Association of Nurse Anesthesiology (IANA) is a professional organization that advocates for Illinois Certified Registered Nurse Anesthetists' (CRNA) professional practice. It is crucial that the IANA has updated CRNA demographic data to share with policy and decision makers.

Purpose: The purpose of this study was to develop a facility specific, multi-tiered, interactive map for the IANA.

Methods: CRNAs were asked to complete an electronic survey about the CRNA practice information at their anesthesia facility of employment. These questions displayed (1) healthcare facilities that provide anesthesia services, (2) type of anesthesia facility, (3) demographics of licensed anesthesia providers at these facilities, and (4) the anesthesia practice model used at each facility.

Results: In this study 106 survey responses were included for analysis. 98% of facilities in this sample were located in urban geographic locations. Data was collected for 41% of hospitals and 11.6% of ambulatory surgery centers in Illinois. 86% of facilities reported participation in opioid reducing measures/initiatives. 56% of facilities utilizing a CRNA-only model were designated critical access hospitals whereby CRNAs are the sole provider. This data was then synthesized into an electronic map displaying components for all facilities included in the study.

Conclusions: The updated anesthesia provider map in this study will serve as a modernized, interactive reference tool for the IANA. This will be beneficial in advocating for CRNAs and providing anesthesia practice information with legislators, professional groups, and the public.
Keywords: Illinois, Advocacy, CRNA, policy, anesthesia models of practice

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Pediatric Fiberoptic Intubation Education Utilizing Simulation: A Qualitative Improvement Study

Fiberoptic intubation has been used as a secondary option to intubate pediatric patients with difficult airways. Failure to understand how to properly use a fiberoptic scope could have severe consequences, such as increased mortality. This study's purpose is to examine the efficacy of simulation education utilizing a pediatric flexible fiberoptic scope on Nurse Anesthesia Trainee confidence and competency. This is a quality improvement research study. A survey tool developed by the authors was used to assess the knowledge and confidence of participants intubating the pediatric airway with a fiberoptic scope before and after viewing an educational tool and participating in a simulation. Utilizing IBM SPSS Version 26, data was analyzed and tested for statistical significance *($p<0.05$)* with ANOVA *t*-test and the Wilcoxon signed rank tests for confidence measures. Post-survey results demonstrated a statistically significant increase in trainees' confidence with using the fiberoptic scope to intubate a pediatric manikin. This study demonstrated the importance of hands-on simulation for pediatric patients with difficult airways and the need for standardized pediatric airway management simulations in nurse anesthesia programs.
Keywords: Fiberoptic scope, simulation, pediatric airway management, nurse anesthesia