

2019 Poster Abstracts

Assembly of Didactic & Clinical Educators



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A1

A Content and Thematic Analysis of Closed Claims Resulting in Death

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Oakland University

Introduction: Qualitative research methodology can be an effective approach to providing clarity and an understanding of anesthesia adverse events. Using content and thematic analysis, closed claims where the outcome was death were reviewed. The purpose of this study was to identify themes that would provide unique insights into the events leading up to death with a focus on the role anesthesia may or may not have had in the outcome.

Literature Review: Mortality attributable to anesthesia has declined significantly over time. The reasons include the introduction of respiratory monitoring, use of evidence based practice guidelines, and advances in teamwork and education. Although anesthetic mortality has improved, studies evaluating the contribution of anesthesia to peri-operative mortality are needed to enable improvements in quality and safety.

Methodology: This study was IRB approved by the American Institute of Research. Content and thematic analysis, a qualitative framework approach, was employed to analyze closed malpractice claims. Through this method, patterns, features, and themes specific to the sample could be identified facilitating interpretation and understanding of the dataset.

Data Collection & Methods: In 2015, the insurer, CNA, made available to the AANA Foundation Closed Claim Research Team 245 closed claim files. Of the 245 files, an adverse event leading to death occurred in 87 of the claims. Applying a qualitative thematic framework approach, data from each file were extracted and entered onto a previously validated closed claim instrument. The instrument has four distinct sections including the reviewer's narrative, reviewer's assessment, listing of accusations, and a description of key lessons learned. From the narrative, code words capturing the phenomena of interest were generated. Through analytical reflection of the data set, themes were identified. Prior to data entry, all research claim reviewers participated in a protocol session and interrater reliability was established.

Results & Data Analysis: All claims were analyzed adhering to the described method. Four major themes emerged from the thematic analysis: (1) patient factors, (2) anesthesia provider factors, (3) environmental factors, and (4) team/group factors. In addition, 16 subthemes were identified. Excerpts demonstrating evidence of the major themes were drawn from the claims.

Discussion & Conclusions: The AANA Foundation researchers identified 87 deaths resulting in closed malpractice claims during a 10-year period. Major events leading to death were categorized as respiratory, cardiac and drug related. The major themes contributing to events leading to death include patient, provider, environmental and team/group factors. The analysis of these claims exposed important and previously unappreciated aspects of adverse outcomes in cases involving CRNAs.

Funding: AANA Foundation

A2

Adverse Events During Cosmetic Surgery: A Thematic Analysis of Closed Claims

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Introduction: Very few descriptions of anesthesia related adverse events during cosmetic surgery exist in the literature. The purpose of this research was to analyze cosmetic closed claims and answer: What themes emerged related to anesthetic technique that appeared to contribute to adverse events? What themes emerged related to human behaviors that appeared to contribute to adverse events? Did themes emerge that demonstrated deviations from AANA Standard(s) of Care?

Literature Review: Quantification of adverse events and expressive narratives do not establish a cause and effect relationship but can serve as an important tool in gaining a meaningful understanding of why adverse events do occur. Employing a qualitative method via thematic analysis provides a more elaborate understanding of this phenomenon of interest.

Methodology: The method to conduct the research, inclusive of analytic processes, followed the Thematic Framework Approach. Modifications of the approach were slight and only due to the uniqueness of the dataset and documents in each closed-claim file. This method allowed the researchers to seek answers to the research questions.

Data Collection & Methods: The insurer, CNA, made available to the AANA Foundation Closed Claim Research Team 245 closed claim files. With the use of keywords as filters, data were extracted from the 245 files identified as cosmetic and/or plastic surgery. The authors reviewed the 25 claims and entered data from each claim onto a data collection instrument previously tested for interrater reliability. This allowed for capturing of detail from each claim file and for answering the research questions.

Results & Data Analysis: Following the described methodology, completion of analysis of the 25 cosmetic claims ensued. Three major themes emerged from the claims data: (1) normalization of deviance, defined as the gradual process through which unacceptable practices or standards become acceptable; (2) ineffective communication patterns, defined as being in stark contrast to effective communication patterns whereby the sender and receiver achieve a shared understanding and perceive content in the same manner; and, (3) non-adherence to the AANA Standards for Nurse Anesthesia Practice.

Discussion & Conclusions: Using an adaptation of the Framework Method for Thematic Analysis, three overarching themes emerged from the cosmetic closed claim files that mostly likely contributed to adverse patient outcomes. Normalization of deviance involved anomalous anesthetic techniques and aberrant patterns of human behavior and were often weaved within ineffective communication patterns. Non compliance with AANA Standards was identified. Rarely was any one theme a lone contributor to the adverse event.

Funding: AANA Foundation supported the ongoing research conducted by the closed claim research team.

A3

Cardiovascular Complications in Patients Undergoing Non-Cardiac Surgery: A Cardiac Closed Claims Thematic Analysis

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AANA Foundation

Introduction: Cardiovascular complications are the leading cause of death within 30 days of surgery. Anesthesia closed claims databases allow anesthesia providers to critically examine adverse outcomes that occur during an anesthetic or immediately following the administration of anesthesia to aid in improving patient care. The purpose of this study was to identify themes related to cardiovascular complications in patients undergoing non-cardiac surgery.

Literature Review: Over 200 million adults have non-cardiac surgery worldwide every year. Cardiovascular complications are the leading cause of death within 30 days of surgery. The incidence of anesthesia-related cardiac arrest is unknown, but has been estimated to be 0.5 per 10,000 anesthetics. To date, no studies exist related to qualitative analysis of cardiovascular complications found in closed claims.

Methodology: IRB approval was obtained by the American Institute of Research. Descriptive and thematic analyses were utilized to examine the relationship between a cardiac event and anesthesia care found in anesthesia closed malpractice claims. Qualitative analysis allowed the investigators to glean rich details in order to clearly understand the data.

Data Collection & Methods: The American Association of Nurse Anesthetists Foundation (AANAF) closed claims project team, in conjunction with CNA Insurance Companies, generated a database (N = 245) of closed claims. This database was queried for claims in which patients who were undergoing non-cardiac surgery had a cardiac event. The query produced 34 claims. The database included the following qualitative components for all claims: reviewer's narrative, reviewer's assessment, list of accusations, and lessons learned. Themes were developed from codes and categories. The investigative team discussed the themes and came to a consensus. All members of the investigative team were instructed on the use of thematic analysis; some members were experienced qualitative researchers.

Results & Data Analysis: The descriptive analysis revealed 65% of the claimants were female. Half of the patients had risk factors for a cardiac event. The type of anesthesia most commonly administered in these claims was general anesthesia. Death occurred in 85% of the claims. Twenty claims had payouts, which ranged from \$15,000 to \$1,000,000. The most prevalent types of procedures associated with cardiac closed claims were cosmetic, obstetric/gynecologic, and general surgical. Five themes emerged from the thematic analysis: pre-anesthetic evaluation, normalization of deviance, medications, hemorrhage, and knowledge deficit/ failed clinical reasoning.

Discussion & Conclusions: Three major lessons were learned from an analysis of these claims. First, a thorough pre-anesthetic patient evaluation is imperative to provide appropriate anesthesia care. Second, anesthesia providers must be cognizant of normalization of deviance that may be occurring in their practice setting. Third, anesthesia providers must continue life-long learning to remain current on drug therapies and anesthesia management of patient comorbidities.

Funding: AANA Foundation

A4

Clinical Site Integration of Student Registered Nurse Anesthetists: Challenges and Recommendations

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Introduction: The purpose of this scholarly project was to identify the key factors of Student Registered Nurse Anesthetists' (SRNAs) clinical site orientation that lead to successful integration.

Literature Review: Clinical rotations allow SRNAs to apply didactic knowledge to clinical practice. Unsuccessful clinical site integration can cause additional stress and decreased learning, contribute to CRNA clinical instructor fatigue, and may be a source of clinical errors with the potential to impact patient safety.

Methodology: SRNAs from throughout the United States were recruited to participate in an online Qualtrics (Qualtrics, Provo, UT) survey developed from a pilot study that identified themes important to SRNAs during clinical site orientation. The survey link was sent via email to all nurse anesthesia program directors with instructions to forward the link to their students.

Data Collection & Methods: The online Qualtrics survey was emailed to NAEP directors with a request that they forward the questionnaire to program SRNAs. All SRNAs with a minimum of three clinical site rotations were eligible to participate in the study. The survey was used to gather information about general orientation formats, student experience, resource orientation, charting orientation, and SRNA-CRNA clinical instructor relationships. The survey used open ended questions to allow SRNAs to state their own opinions regarding the effectiveness of the orientations they have experienced and offer suggestions for improvement.

Results & Data Analysis: Sixty-one completed surveys were included in data analysis and used to categorize critical elements of SRNA clinical site orientation that resulted in effective integration. Three categories were identified – SRNA factors, Certified Registered Nurse Anesthetist (CRNA) clinical instructor factors, and facility orientation factors.

Discussion & Conclusions: SRNA factors included case preparedness, clear expectations, professionalism, communication, flexibility, positive attitude, and personal introductions. CRNA clinical instructor factors included willingness to teach, allowing decision making, creating positive learning environment, and discussion of expectations. Facility orientation factors included a thorough and focused orientation period, facility familiarization, and break room sharing.

A5

Exploring the Impact of the Flipped Classroom on Student Registered Nurse Anesthetist Learning

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Introduction: Traditional educational models place students in a passive role as they receive information from a content expert. This method of learning is not intuitive to the way Certified Registered Nurse Anesthetists (CRNAs) practice. The aim of this project was to introduce the flipped classroom model into the nurse anesthesia curriculum at a Midwestern university and study the impact of its implementation on Student Registered Nurse Anesthetist (SRNA) learning.

Literature Review: The central theme of the flipped classroom is the substitution of traditional lecture during class time with student-centered learning activities to promote achievement of the higher order learning objectives, “analyze”, “synthesize”, and “apply”.

Methodology: A first-year nurse anesthesia course was flipped and compared to a historic, matched control group receiving traditional lecture.

Data Collection & Methods: A mixed-method approach included investigation of course assessment scores and an anonymous cross-sectional qualitative post-course survey.

Results & Data Analysis: Assuming equal variances, the mean values for the aggregate quiz grades ($p=.057$) and final exam scores ($p=.342$) were not statistically significant. Students felt the flipped classroom format enhanced their learning through the ability to identify and redirect study towards concepts of weakest understanding, correct errors in thinking, and integrate theory into practice. Qualitative thematic analysis of the data led to the emergence of seven major themes: in-class activities, preparation, acceptance, instructor presence, technology, collaboration and communication, and direction.

Discussion & Conclusions: By utilizing technology to deliver traditional course content, class time can be utilized to place emphasis on the development of analytic skills and transference of theory into clinical knowledge. While preliminary results show improved assessment scores and perceived benefits to learning, additional studies are necessary prior to advocating for the widespread application of the flipped classroom within nurse anesthesia programs.

A6

The Development of a Common Clinical Assessment Tool (CCAT) for Clinical Evaluation in Nurse Anesthesia Education

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Council on Accreditation of Nurse Anesthesia Educational Programs

Introduction: There is currently a lack of standardization and consistency among clinical instructor evaluations of student registered nurse anesthetists' competencies during their clinical education. One reason for this deficit is that a CCAT that is competency based and methodologically validated does not exist. The COA standards require formative and summative evaluations of each Student Registered Nurse Anesthetist (SRNA) are conducted for counseling students and documenting student achievement.

Literature Review: A literature search was conducted on articles published in English between 2000 and 2016. The search included research articles, standards for nurse anesthesia educational program, standards of practice by Certified Registered Nurse Anesthetists (CRNAs), and information regarding the Delphi Study methodology.

Methodology: The design included a literature review, input from the communities of interest, results from the AANA professional practice survey, and analysis of the NBCRNA certifying examination content outline. A Delphi Study technique was used to obtain feedback from a panel of judges representing the community of interest after IRB approval.

Data Collection & Methods: The CCAT included four domains with domain descriptors. Twenty-five individual competencies were identified. Using a Delphi Study technique each domain and all domain competency items were rated by a Panel of Judges for relevancy with a Likert rating scale of 1 to 5 (1= not relevant to 5= highly relevant). The Panel of Judges included program administrators and faculty, clinical educators, and SRNAs. Domain competency evaluation categories include; are not applicable, safety concern, novice, advanced beginner, competent and proficient (entry into practice).

Results & Data Analysis: After completion of the third survey in the Delphi Study and a Call for Comments to program administrators, faculty, and SRNAs, four domains and domain descriptors were identified. A list of definitions was created and will be included with the CCAT to improve clinical instructor interpretability and usability. A "comment" section is present after each domain to allow clinical instructors to enter specific information regarding the learners' performance.

Discussion & Conclusions: Accurate evaluation of a learner's clinical performance is vital. The COA's CCAT will be the first nationally validated clinical assessment instrument in nurse anesthesia. The CCAT provides nurse anesthesia programs with a clinical evaluation tool that reflects the input from the communities of interest and is consistent with the COA's Standards. All revisions to the CCAT will be completed in 2018.

Funding: Council on Accreditation of Nurse Anesthesia Educational Programs (COA)

A7

Thematic Analysis of the Obstetric Anesthesia Cases from the AANA Foundation Closed Claims Databank

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Introduction: Maternal morbidity and mortality rates are high in the U.S. The pregnancy-related maternal mortality rate increased from 7.2 deaths per 100,000 in 1987 to 17.3 deaths per 100,000 in 2013. This translates to approximately 600-800 women dying each year from pregnancy related complications.

Literature Review: Qualitative analysis of obstetric anesthesia closed claims data affords the opportunity to identify patterns of injury and/or outcomes, precipitating events, differences in anesthesia technique, variations in infant delivery modes, and the nature of settlement payments made. The examination of these claims provides additional knowledge to develop obstetric anesthesia care recommendations, with the intent to ultimately improve maternal care.

Methodology: The AANA Foundation closed claims database was queried for obstetric claims. The database contains quantitative and qualitative data comprised of malpractice claims from the years 2003-2012, which are considered closed (i.e., completed the entire litigation process and the payout, if any, was disbursed) and involved either a certified registered nurse anesthetist (CRNA) or a student registered nurse anesthetist (SRNA).

Data Collection & Methods: A descriptive analysis of the 21 obstetric closed claims, using SPSS version 19 (SPSS Inc., Armonk, NY), and a qualitative analysis to identify emerging themes was conducted.

Results & Data Analysis: Five themes emerged from the qualitative analysis. Theme one related to care delays in recognition, diagnosis and treatment of complications. Theme two was associated with failed communication and theme three involved documentation. The fourth theme related to maternal hemorrhage and the final theme connected to provider vigilance. Some claims represented more than one theme.

Discussion & Conclusions: A thematic evaluation of obstetric anesthesia closed claims offers insight into the factors contributing to maternal and neonatal morbidity and mortality. Lessons learned from this analysis include adverse outcomes can be mitigated by: identification of potential triggers; preparedness with protocols and drills; and timely recognition and treatment of clinical events. In addition, streamlined communication and thorough documentation facilitate effective care.

Funding: AANA Foundation

A8

Application of the Science of Learning to Nurse Anesthesia Students to Improve Self-Efficacy: A Pilot Study

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Introduction: Nurse anesthesia programs place an immense amount of stress on students, leading to a phenomenon known as low self-efficacy, or a self-perception that success is doubtful. By providing a workshop on the science of learning, students can be presented with knowledge and strategies to enhance their self-regulated learning and improve their self-efficacy.

Literature Review: According to literature, cognitive psychology is correlated with increased self-efficacy, higher academic performance, and decreased anxiety and depression within medical schools. Within nurse anesthesia, 93% of students found that learning about cognitive psychology was helpful and only 3% had prior knowledge of it.

Research Design: The design of the study was a prospective, descriptive, multiple cohort design in which nurse anesthesia students attended a workshop on the science of learning at Rutgers

University. **Methods:** Students completed a pre-intervention survey, participated in a twenty minute presentation, and filled out a post-intervention survey afterwards. The sample consisted of Rutgers Nurse Anesthesia students and was conducted at Rutgers University. The surveys measured levels of self-efficacy, variables that may affect self-efficacy, and perception of the value of the workshop via likert scales.

Data Collection: The data collected consisted of a pre-intervention survey, the general self-efficacy scale, and the post-intervention survey. Data collected assessed baseline data on study habits and learning strategies, knowledge of the science of learning, and educational and professional experience.

Results & Data Analysis: Data was analyzed with SPSS using descriptive statistics and a Pearson R test. Data analysis showed that 66% of students found that the workshop was very helpful in its impact on future success, while only 1.6% found that the workshop was only somewhat helpful. A large majority of students (79%) had not had any formal training in cognitive psychology and there was a considerable decrease in self-efficacy scores for second year students.

Discussions & Conclusions: A majority of students felt that the workshop would improve their future success within the program, thereby improving their self-efficacy. Limitations included improperly filled surveys and a setting of only one program. According to literature, improved self-efficacy resulted in better academic performance consistently and its application to nurse anesthesia may be just as promising.

A9

Improving Patient Safety and Self Efficacy in the role of the Clinical Educator Through the Implementation of an Evidence-Based Preceptor Development Program

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Introduction: A CRNA clinical educator's (CE's) role is to ensure SRNAs emerge from their education with proficient clinical skills and a foundation for professional practice. Issues noted with CRNA CEs include: a lack of support, no formal training, and role burnout. Establishing strong CRNA preceptors is an integral piece of training CRNA practitioners and building the needed workforce to take on the future challenges healthcare is facing.

Literature Review: The literature regarding CRNA preceptor development is limited. Implementing an educational program for CRNAs showed increased knowledge and an increase in positive preceptor behavior. Increases in CRNA preceptor satisfaction, confidence and comfort were noted after the implementation of an educational workshop.

Research Design: The design for this project was experimental and included the implementation of a preceptor development program. Outcomes included self-efficacy (measured pre/post) and patient safety (measured throughout the intervention)

Methods: The preceptor development program included educational sessions, support, mentorship, and recognition. The sample size for this study (N=7) is fixed based on the number of CRNAs who were preceptors in the clinical area during SRNA orientation in 2017. The tools used for this project included the Physician Teaching Self-Efficacy Questionnaire (PTSQ) and a patient safety index.

Data Collection: The PTSQ was administered to all preceptors before the initiation of the preceptor development program and again following the completion. During a 7-week period preceptors recorded the number of near misses or errors.

Results & Data Analysis: Self-efficacy scores were compared pre/post intervention using the paired t-test. The safety index was dichotomized (any vs. none) and binary outcomes were analyzed using logistic regression to assess whether the frequency decreased over time. Preceptor self-efficacy did increase however this wasn't statistically significant (p-value <0.05). There was an increase in patient safety as shown by a decrease in reported events and near misses (p=0.044, p<0.001, p=0.002 for medication, delay in response and communication lapses, respectively).

Discussions & Conclusions: Preceptor self-efficacy did increase, however this was not found to be statistically significant. Measuring self-efficacy over a longer period of time may have shown different results. Providing preceptors with educational sessions on feedback, evaluations, and coaching led to enhanced communication in the preceptor/preceptee relationship leading to an increased culture of safety.

A10

Service and Knowledge in Nurse Anesthesia Students after Service Learning Program Implementation

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Introduction: Nurse anesthesia students are rarely exposed to under-served groups outside of the operating room to create meaningful connections to communities served, lead others into service work, and develop empathy for the under-served and underprivileged. The purpose was to determine if implementation of a service learning volunteerism project (SLP) would increase knowledge and participation in social, professional, or health volunteerism in Samford nurse anesthesia students.

Literature Review: The American Association of Colleges of Nursing (AACN) has stressed the importance of collaborative problem solving and health promotion using service learning activities in the community. American Association of Nurse Anesthetists (AANA) core values promoting community service include: professionalism, compassion, diversity, and interprofessional collaboration.

Research Design: A quasi-experimental control trial was completed using Samford graduate nurse anesthesia students.

Methods: The SLP consisted of “lunch and learn” sessions and the requirement to complete 20 hours of service, whether professional, community, and/or medical missions. Group 1 consisted of the freshman and junior classes (Classes of 2015 and 2016) who participated in the SLP and Group 2 (Control) consisted of 22 senior students, graduating in May, 2014, who had not participated in the SLP.

Data Collection: Both groups took a knowledge/opinion pretest and Group 2 took an attitudes survey prior to SLP implementation. Group 1 participated in the SLP and completed the attitudes survey two months prior to graduation. Both groups completed the knowledge/opinion post test and the participation survey six months after graduation.

Results & Data Analysis: Due to the small group sizes, the statistical analyses for both the knowledge/opinion survey and the participation survey were unable to meet the assumptions of chi-square statistic. However, the post-graduation participation survey demonstrated increased percentages in Group 1 for service during school, opportunities since graduation, service in first six months, and plans for service. The Mann-Whitney U analysis found no differences in service attitudes scale results between groups, possibly due to self-selection of students attending a faith-based university.

Discussions & Conclusions: Implementation of the SLP has resulted in increased service participation of the nurse anesthesia students as demonstrated by increased percentages of the treatment group serving. Aligned with the SLP, the nurse anesthesia program recruitment, admission process, and the self-selection of applicants has likely been a contributing factor to these findings. The SLP has become a discriminator for and distinct characteristic of the program

A11

The Educational Podcast: The Future Learner's Preference for Multitasking

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Introduction: Millennial SRNAs and CRNAs prefer learning in ways that are not fulfilled by existing educational resources. By defining the learning needs of the CRNA and SRNA through pre-implementation surveys and analyzing the download rate of the created podcast will establish a research basis for nurse anesthesia focused educational podcasting. Incorporating a learner's preferential form of education stands to increase the millennial's consumption of education.

Literature Review: Educational podcasts have proven to be an effective means of learning for students and practicing medical professionals. These groups have provided feedback indicating interest and satisfaction with existing podcast education models. However, advanced practice nurses, specifically the student and post-graduate nurse anesthetists, have yet to be studied.

Research Design: This cross-sectional quasi-experimental study targets CRNAs and SRNAs based in the United States. The research analyzes pre-implementation survey results which focus on current podcast listening habits, topics of interest for future podcast creation, and demographics. This analysis is utilized to inform the creation of a CRNA targeted educational podcast.

Methods: The quantitative research survey was fielded amongst a sample of CRNAs and SRNAs. Respondents were recruited through social media outlets including state level nurse anesthesia association Facebook, Twitter and Instagram accounts to specifically attract the target population of millennial learners. Analysis was performed to identify the most common podcast listening habits and topics of highest interest for the respondent population.

Data Collection: Respondents were provided a link to access an online survey hosted by Qualtrics, which ensured fidelity of data quality. Respondents completed the survey using the provided link on desktop and mobile platforms. Podcast data was also collected through iTunes, including number of downloads and subscribers.

Results & Data Analysis: Results & Data Analysis: Of surveyed individuals (n=287), 60% were CRNAs and 40% were SRNAs. Ages of the participants ranged from 24 to 75 years within the CRNA and SRNA categories. Analysis was broken down into four groups millennial and non-millennial CRNAs as well as millennial and non-millennial SRNAs. 75% of total participants, stated they currently utilize podcasts for educational purposes specifically pertaining to anesthesia topics. Desired topics for future podcast episodes showed a significant preference towards pharmacology (analgesics and opioids) and physiology (cardiac and pulmonology) within all four groups and overall frequency. Additional topics of interest include case study presentations and opioid free anesthesia practice guidelines.

Discussions & Conclusions: As the field of educational podcasting continues to grow, this study can contribute to the validation of podcasts as an education adjunct during and after the formal education of nurse anesthetists. Further comparisons of podcast versus traditional teaching methods would be beneficial as millennials and future generations of anesthesia providers continue to learn and consume knowledge through different modes of education.

A12

Using Video-Assisted Technology and Simulation to Transform a Nurse Anesthesia Machine and Equipment Course

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Introduction: Understanding how to use the anesthesia machine and how to troubleshoot when problems arise are paramount for nurse anesthesia practice. Simulation can provide a low-risk setting that allows students to learn in an environment representative of operational conditions. The purpose of this research was to determine if simulation was an appropriate teaching modality to incorporate into the anesthesia machine course and second to explore the outcomes of doing so.

Literature Review: A search of three literature databases (MEDLINE, CINAHL, and Scopus) revealed 2854 original research articles in peer-reviewed publications. After exclusion criteria were met, thirty one articles were included, showing high fidelity simulation possesses features to improve knowledge, technical skills, critical thinking, participant confidence, and satisfaction of educational experience.

Research Design: This quasi-experimental, nonequivalent control group design compared 2 groups of students: students from the previous semester enrolled in the lecture-based course and students from the simulation and active learning integrated course.

Methods: Using the FDA approved checklist, a simulation exercise was formulated to review the basic functions of the anesthesia machine. Students were divided and taken to the OR twice. The first session reviewed the FDA checklist and focused on the components and their intended usage and proper function. The second session discussed plausible machine failure scenarios.

Data Collection: Three written exams, a final oral exam, and course evaluations were used to measure pre- and post exercise mastery of material, competency, student satisfaction, and confidence.

Results & Data Analysis: There were no statistical differences in mastery of material or competency with the modified course. However, student satisfaction and perceived confidence increased.

Discussions & Conclusions: Use of simulation in the nurse anesthesia machine and equipment course allowed students to practice infrequent events that have grave consequences. Changing the way that nurse anesthesia programs teach this course could not only provide safer, more competent providers but also improve anesthesia safety overall.

A13

Advanced Practice Providers: How to Improve Organizational Engagement

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Introduction: Advanced practice providers (APPs) do not fit directly into the categories of nursing or medicine. A lack of role clarity can lead to inconsistent credentialing, privileging, and a lack of practice standards and shared governance, which can result in poor job satisfaction and retention. Establishing an Advanced Practice Provider Council (APPC) within the organization will improve job satisfaction among APPs, resulting in improved patient experience and outcomes.

Methods: The objective of this project is to provide structural and psychological empowerment for APPs through a shared governance model by establishing an APPC. Implementing an APPC within the organization will increase APP visibility, peer support, job satisfaction, and accountability. With the collaboration and support of the medical staff, the APPC will have representation on the Medical Executive Committee and other medical staff committees within the organization providing a voice in medical staff decisions. A council charter was developed and aligned with the Medical Staff bylaws, granting the chair of the APPC full voting rights on Medical Executive Committee.

Analysis of the Evidence: Much of the current research related to the implementation of APPCs does not address the results of these councils as it relates to APP job satisfaction and patient outcomes within organizations. Therefore, the literature review focused on articles related to the professional opinions of APPs and organizations that incorporated APPCs, along with articles consisting of a descriptive study using quantitative data in the form of a survey, and a descriptive correlational study. The literature review focused on the areas of APP leadership, structural and psychological empowerment among APPs, and barriers to APP practice. A limitation of the current evidence is that APPCs are a relatively new concept within health care systems so there is a small sample size.

Recommendation for Practice: Advanced practice providers are integral members of the interdisciplinary team and provide high quality, cost-effective care within their organizations. However, there still remains a lack of role clarity among APPs. As the demand for APPs continues to expand and grow, along with organizations' desire to reduce health care costs, the development of an APPC is the first step in providing the APPs with a platform for increasing their visibility, peer support, and decision-making power within the organization. Providing APPs with a venue for structural and psychological empowerment will create a healthy practice environment, ultimately, reducing healthcare costs and improving the overall patient experience.

A14

Critical-Thinking Development in Nurse Anesthesia Learners: Addressing the Barriers to Problem-Based Learning

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Introduction: Training future nurse anesthetists presents the educator with many challenges such as: limited resources, staffing limitations, and time constraints. These factors limit the ability to offer alternative styles such as problem-based learning (PBL), which is recognized for facilitating the development of critical thinking skills. Many nurse anesthesia programs do not employ PBL, however these learners could benefit greatly from using this tool.

Methods: The PICO question was: What are the barriers to successful implementation (outcome) of PBL (intervention) in nurse anesthesia education (population)? Traditional lecture-based approach was the implied comparison. A literature review was performed using PubMed, The Cochrane Library, Education Resources Information Center, Google Scholar, and the Cumulative Index of Nursing and Allied Health Literature resulting in 47 potential evidence sources. Twenty descriptive studies (8 case reports, 3 mixed methods surveys, 9 surveys), 2 systematic reviews and 1 systematic review meta-analysis met the inclusion criteria. Study settings included medical schools, nursing educations, and other graduate medical education specialties.

Analysis of the Evidence: The evidence identified 3 categories of barriers to PBL implementation in graduate medical education. These categories were faculty, student and resources. The faculty barriers included a lack of buy-in to the value of PBL, lack of training, the need to commit additional time, and resistance to change. Student barriers were fear and discomfort due to inexperience with PBL and increased time commitment required to learn activities. Resource barriers included the need for more instructors to facilitate small groups, increased support personnel needed to coordinate activities, and the need for private rooms for PBL groups to meet.

Recommendation for Practice: Identifying barriers allowed for recommendations to improve the implementation of PBL. Interventions for faculty barriers included education and training about PBL, discussion of concerns, and allowing for additional faculty time. Interventions for student concerns included providing PBL examples and basic cases, discussing concerns, providing positive reinforcement and encouraging student input. Resource interventions included training for adjunct instructors and support personnel, and staggering PBL groups. These findings can be used to plan and implement PBL in nurse anesthesia curriculum and identify areas of future research such as the use of PBL in nurse anesthesia programs.

A15

Does a Formalized Preceptor-Training Program Reduce Barriers and Improve Learning for SRNAs and CRNAs in the Clinical Setting

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Introduction: The proper training and development of certified registered nurse anesthetists (CRNAs) to the role of preceptor facilitates the psychosocial and developmental needs of student registered nurse anesthetists (SRNAs) and CRNAs. Preceptors are the main facilitators of clinical teaching, critical thinking, educational proficiency, and professionalism. The proper development of preceptors not only influences the healthcare delivery in the present but also for future iterations.

Methods: The purpose of this evidence-based project was to answer the following clinical question: For CRNA and SRNA students, does a CRNA preceptor program versus no preceptor training program reduce barriers in learning, increase preceptor satisfaction, and improved preceptor effectiveness. Inclusion criteria addressed preceptor training and nursing student outcomes in nurse anesthesia. Study characteristics included author, publication year, conceptual framework, design, sample size, major variables, measurements, data analysis, findings, and level of quality based on Johns Hopkins Evidence-Based Practice Research Evidence Appraisal Tool. Eight articles were included for analysis: 3 randomized controlled trials, 2 cross-sectional survey descriptive studies, and 3 descriptive quantitative studies.

Analysis of the Evidence: A quasi-experimental design evaluated a preceptorship program in decreasing nurses' turnover rate, cost, quality, and satisfaction of preceptor's teaching. Turnover after the preceptorship program was 46.5% less, with a savings of \$186,102 in 3 months. An experimental design looked at a formalized preceptor training program for RNs and found that the implementation of a preceptor training program improved RNs' knowledge of teaching and teaching strategies. A descriptive correlation design determined interrelationships between variables pertaining to preceptors' perceptions of benefits and reward. The study concluded preceptors will be committed to the preceptor role.

Recommendation for Practice: The empirical evidence shows a formalized preceptor program establishes the role and responsibilities of preceptors in instructing new nurses and addresses the concerns of turnover, cost, quality of care, communication, and independent decision-making. The preceptor's role is critical in explaining, encouraging and translating concepts into practice and decreasing the theory-practice gap. A formalized preceptor training program will provide positive outcomes for all stakeholders to enhance student learning and decrease barriers of learning. Preceptor development has a positive impact on the preceptee development allowing for the development of the preceptee into the new role of CRNA.

A16

Strategies to Mitigate Production Pressure to Improve Patient Outcomes

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Introduction: The purpose of this literature review is to summarize the state-of-the-science on production pressure in hospital settings to identify evidence-based strategies to minimize the adverse consequences of medical errors.

Methods: In May 2018, the electronic databases PubMed, Embase, and Scopus were queried using the keywords work pressure or production pressure. No time limit was used because of the paucity of published articles that directly mention production pressure. The initial query identified 659 articles. Inclusion criteria included the mention of either production pressure or work pressure in the hospital setting. Exclusion criteria included non-peer reviewed or non-English based articles. The articles were first evaluated by titles and abstracts, and then by the full manuscripts. There were 11 articles included in this literature review that met all inclusion and exclusion criteria, and had publication years ranging from 1994 to 2017.

Analysis of the Evidence: Production pressure has been consistently identified as a contributor to medical errors that include medication errors, impaired patient safety, and increased patient mortality. What this review adds to the body of literature is a summary of available quantitative metrics to measure production pressure in healthcare settings, evidence-based strategies to mitigate the adverse impact of production pressure on medical errors, and identification of important areas for future research. There are evidence-based strategies to mitigate the contribution of production pressure to medical errors and can be classified as administrator, educational, or workflow related.

Recommendation for Practice: Evidence-based strategies to mitigate the contribution of production pressure to medical errors and can be classified as administrator, educational, or workflow related. Administrators can create a culture of safety by maintaining appropriate clinician workload levels and quality improvement initiatives. Educational training for clinicians needs to focus on effective communication skills, and organizational workflow/procedures. Providing clinician education has been shown to reduce perceived workload while improving efficiency. Workflow strategies include the use of mandatory safety checklists for high risk events, and maximizing the movement of patients in the perioperative setting.