



***NorthShore University HealthSystem
School of Nurse Anesthesia
&
DePaul University School of Nursing
Class of 2017
DNP Poster Presentations***

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Evaluation of Entry-Level Nurse Anesthesia Educational Programs

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Background

- By January 1, 2022, all students matriculated into schools of nurse anesthesia must graduate with a practice doctorate.
- Only 51 of the nation's 116 nurse anesthesia schools offer an entry-level practice doctorate.
- The remaining schools may face numerous barriers to transitioning to a doctorate.

Objectives

The research questions that were addressed in this study included:

- What do program administrators of nurse anesthesia educational programs perceive to be the most significant barriers to transitioning their entry-level program from offering a master's degree to offering a practice doctorate?
- How did the transition from offering a master's degree to a practice doctorate affect various program functions and outcomes?
- Will the requirement for all NAEPs to offer a practice doctorate by January 1, 2022 result in a change in the number of graduates from nurse anesthesia programs by 2025?

Methods

Design

Descriptive, investigator-developed, online survey using Qualtrics was designed based on common themes emerging from extensive review of the literature.

Participants

Program administrators of all 116 of the nation's nurse anesthesia programs were invited to participate in the anonymous online survey.

Data Collection & Analysis

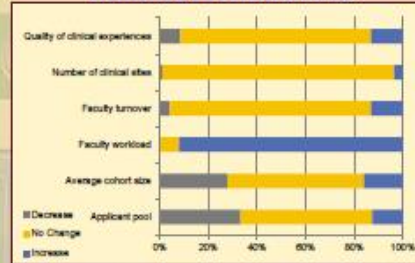
Online survey was kept open for 4 weeks after initial recruitment email was sent; a follow-up reminder email was sent halfway through data collection timeframe. SPSS version 24 was used for data analysis. Descriptive statistics, Chi-square test of independence, independent samples *t* test, and one-way ANOVA were utilized for data analysis.

Results

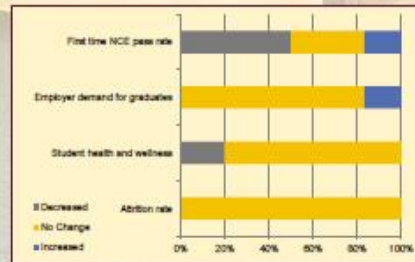
Study Participant Demographics

Demographic Variable	Frequency (%)
School Structure	
Hosted within school of nursing	n = 24 (42.11%)
Joint hospital and university program	n = 36 (31.6%)
Hosted within school of allied health	n = 6 (10.3%)
Freestanding/ autonomous program	n = 3 (3.3%)
Hosted within graduate studies	n = 3 (3.3%)
Other	n = 6 (10.3%)
Geographic Region	
Northeast	n = 18 (31.6%)
Midwest	n = 18 (31.6%)
South	n = 17 (29.8%)
West	n = 3 (5.3%)
No response	n = 1 (1.8%)
Accreditation Other Than COA	
No	n = 12 (21.1%)
Yes	n = 45 (79%)
CCNE	n = 23 (40.4%)
Program Administrators with Doctoral Degree	
No	n = 5 (8.8%)
Yes	n = 52 (91.2%)
Research doctorate	n = 18 (34.6%)
Practice doctorate	n = 31 (59.6%)
Multiple doctorates	n = 3 (5.8%)
Assistant Program Administrators with Doctoral Degree	
No	n = 13 (22.8%)
Yes	n = 44 (77.2%)
Research doctorate	n = 15 (34.1%)
Practice doctorate	n = 28 (63.6%)
Multiple doctorates	n = 1 (2.3%)
Didactic Faculty with Doctoral Degree	
> 75%	n = 27 (47.4%)
50 - 75%	n = 15 (26.3%)
25-50%	n = 6 (10.3%)
< 25%	n = 9 (15.8%)
Accredited by the COA to Offer a DNP/DNAP	
Yes	n = 28 (49.1%)
No, not planning to transition to DNP/DNAP	n = 0 (0%)
No, but planning to transition to DNP/DNAP	n = 29 (50.9%)
"Very likely" to transition by January, 1 2022	n = 25 (86.2%)
"More likely than not" to transition by January, 1 2022	n = 3 (10.3%)
"Not very likely" to transition by January, 1 2022	n = 0 (0%)
No response	n = 1 (3.4%)

Effects of Transitioning



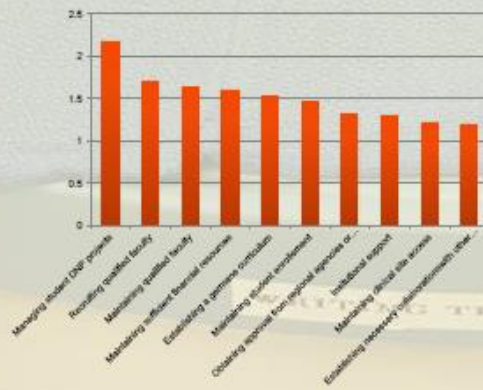
Outcomes of Transitioning



Data Analysis

- No statistically significant association between current DNP accreditation and various demographic variables were found.
- "Managing student DNP projects" was ranked as the largest barrier to transitioning to a doctoral program.
- Programs that had not yet transitioned to offering a doctorate were found to be significantly more likely to cite "establishing necessary collaborations with other academic institutions in order to offer a doctorate" as a barrier to transition than those that had already transitioned ($t = -1.962, df = 55, p = 0.007$).
- One-way ANOVA showed significant differences in how groups rated "maintaining student enrollment" as a barrier to transition ($F = 4.591, df = 3, p = 0.006$) and "maintaining sufficient financial resources" as a barrier to transition ($F = 3.239, df = 3, p = 0.029$).

Barriers to Transitioning



Additional Findings

- 40% of programs reported changing admission requirements after transitioning to a practice doctorate program.
- Only 6 programs reported to have graduated any cohorts with a practice doctorate.
- No programs reported to that transitioning to a practice doctorate by January 1, 2022 would be unlikely.

Conclusion

Managing Student DNP Projects

Professional groups such as the AANA and the COA could greatly assist NAEPs in the transition to offering practice doctorates by providing greater support for managing student DNP projects. Such measures could include developing a position statement on nurse anesthesia DNP projects, providing a central bank of completed DNP projects, establishing a means for collaboration of DNP projects across the country, and supplying strategies for project development and dissemination.

Late Adopters

Professional groups such as the AANA and the COA could help ensure that all programs are prepared to transition to offering a practice doctorate by 2022 by identifying those programs that, by virtue of their school structure, cannot offer a doctorate and offer early assistance in establishing the necessary collaborations to make the transition.

NCE First-Time Pass Rates

Programs that transition to offering practice doctorates should be made aware of the potential for a decline in first-time pass rates of the NCE resulting from the transition and develop strategies to prevent this.

Admission Requirements

Following the January 1, 2022 deadline for all programs to offer practice doctorates, professional groups such as the AANA and the COA could review all individual program admission requirements to determine if any new requirements are commonly seen for practice doctorate programs. If new trends are noted, considerations could be made as to whether changing minimum admission requirements at the national level would have any benefit.

Background

- Educational Needs**
- Educational need identified
 - NorthShore University HealthSystem, Evanston Hospital (NSUHS, EH) lacked a left ventricular assist device (LVAD) education program for Certified Registered Nurse Anesthetists (CRNA) and Student Registered Nurse Anesthetists (SRNA)
- Why the LVAD?**
- Heart failure (HF) is leading cause of morbidity and mortality in United States
 - 5 million diagnosed with HF annually in United States
 - ~\$32 billion per year spent on HF treatments
 - HF is multifaceted disease process
 - For those refractory to traditional HF therapies, left ventricular assist devices (LVAD) and heart transplant are primary treatment options
 - LVADs are becoming
 - **Why Video-Based Education?**
 - Video-Based Education
 - Several benefits over traditional education
 - Enhance teaching effectiveness
 - Improved knowledge transfer
 - Developed knowledge and skill retention

Purpose

- Purpose Statement**
- To produce an educational video for CRNAs and SRNAs based on the most pertinent LVAD components and parameters
 - To pilot a newly developed educational video intervention to evaluate the difference in CRNAs' and SRNAs' pre-test and post-test knowledge related to the LVAD and the LVAD patient population
- Clinical Questions**
- What components of the LVAD and what LVAD related anesthetic considerations were identified through the multi-disciplinary expert panel feedback as the most relevant to the care of the LVAD patient?
 - Did a video-based educational program improve the NSUHS CRNAs' and SRNAs' knowledge regarding the anesthetic care of the LVAD patient?

Methods

- Quality Improvement Project Design**
- Pre-test and post-test design
- Instruments**
- The CRNAs and SRNAs were e-mailed a link to the following instruments:
- Demographics survey
 - Pre-test and post-test
 - Link to video-based LVAD education module

Methods Cont'd

- Sample**
- A convenience sample of NSUHS, EH CRNAs and second/third year NSUHS School of Nurse Anesthesia SRNAs
 - Inclusion Criteria:
 - All NSUHS, EH CRNAs and SRNAs were eligible to participate
 - Exclusion criteria:
 - Any CRNA or SRNA not currently employed or rotating through NSUHS, EH
- Data Analysis**
- Survey data were summarized using descriptive statistics
 - A paired t test, Kuder-Richardson 20, and one-way ANOVA tests were used to analyze data using SPSS version 24

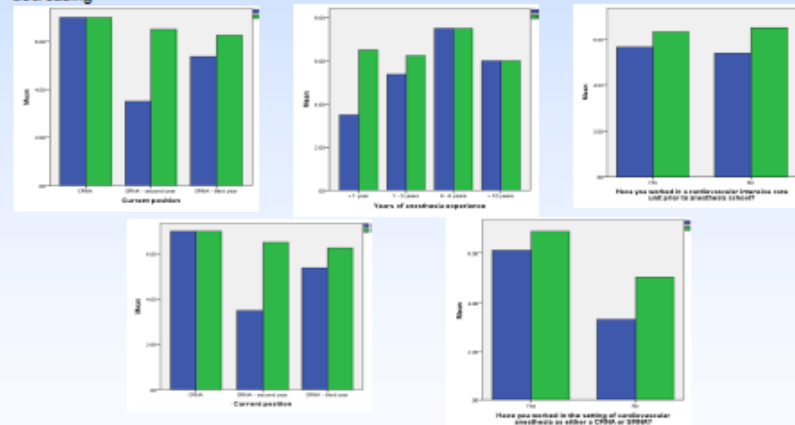
Results

Demographic Data
 3 CRNAs and 10 SRNAs participated, 100% were female, 61.5% were 3rd year SRNAs, 61.5% had 1-3 years providing anesthesia, 78.9% provided anesthesia in a CV setting, and 76.9% did not work in a CVICU prior to anesthesia school

Demographic Data			
		Frequency	Percentage (%)
Gender	Male	0	0.0
	Female	13	100.0
Age	26 – 30 years old	7	53.8
	31 – 35 years old	2	15.4
	36 – 40 years old	3	23.1
	41 – 45 years old	1	7.7
Current Position	CRNA	3	23.1
	SRNA - second year	2	15.4
	SRNA - third year	8	61.5
Years of Experience Providing Anesthesia	< 1 year	2	15.4
	1 – 3 years	8	61.5
	4 – 6 years	2	15.4
	> 10 years	1	7.7
Provided Anesthesia in the Cardiovascular Setting	No	3	23.1
	Yes	10	76.9
Worked in a CVICU Prior to Anesthesia School	No	10	76.9
	Yes	3	23.1

Results Cont'd

- Paired t-Test**
- Used to determine difference in mean values of pre-test scores to post-test scores
 - Demonstrated that post-test scores (M=6.46, SD=1.90) improved compared to pre-test scores (M=5.46, SD=1.71), but the improvement was not statistically significant (M=1.00, SD=1.87, CI 95% -0.13 to 2.13, p=0.078)
 - Statistical significance may have been demonstrated with a larger, more diverse sample
- Kuder-Richardson 20**
- Calculated to determine internal consistency
 - Pre-test (0.344)
 - Demonstrated that the pre-test was relatively difficult, most likely due to specialized nature of content
 - Post-test (0.518)
 - Demonstrated that the test became easier after viewing the video education module and that the CRNA's and SRNA's knowledge related to the anesthetic care of the LVAD patient improved
- One-Way ANOVA**
- Compared the mean pre-test and post-test scores based on demographic data with three or more groups
 - None of the ANOVA test results demonstrated statistical significance
 - May have been associated to relatively small sample size
 - Differences in pre-test and post-test scores based on demographic data were appreciated
 - Pre-test and post-test scores were relatively similar for participants who previously worked in a CVICU prior to anesthesia school
 - Mean pre-test and post-test scores were higher for those who provided anesthesia in a CV setting
 - Mean pre-test scores improved with a more advanced position (e.g., 2nd year SRNA < 3rd year SRNA < CRNAs)
 - Mean pre-test scores increased with the number of years of anesthesia experience, peaking at 4-6 years of experience and gradually declining thereafter
 - Mean pre-test scores improved with the age of the participant, peaking at 31-35 years old and subsequently decreasing



Limitations

- Small sample size
- Education content too specialized and difficult for non-cardiac anesthesia providers
- Lack of gender diversity
- CRNA "survey burnout" at NSUHS, EH

Conclusion

- Recommendations for future research
 - Duplicate project with a larger, more diverse sample
 - Avoid implementation at NSUHS, EH for a period of time
 - Potentially implement LVAD video-based education tool into annual computer-based training curriculum for CRNAs

NON-TECHNICAL SKILLS TRAINING FOR STUDENT REGISTERED NURSE ANESTHETISTS DURING AIRWAY OBSTRUCTION IN MAC ANESTHESIA

By: Pauline Tselonis, DNP and Laura Majewski, DNP
Committee: Dr. Julia Feczko, CRNA, DNP and Dr. Susan Krawczyk, CRNA, DNP



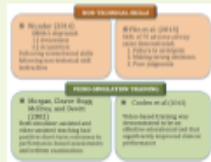
BACKGROUND

- Non-technical skills, defined as the cognitive, social and personal resource skills that complement technical skills and contributes to safe and efficient task performance
- Non-technical skills-key determinant of successful anesthesia during crisis management.
- Task-related non-technical skills, such as recognition, prioritization, and decision-making are essential for safe anesthesia.



LITERATURE REVIEW:

- Conducted using Pubmed, ProQuest, and CINAHL. 18 journal articles were selected (between 2002 to 2016)



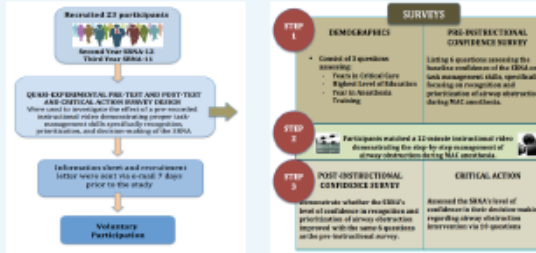
PURPOSE

To improve three non-technical skills (recognition, prioritization, and decision-making) in SRNAs new to the clinical setting with the use of an instructional video demonstrating the appropriate management of an airway obstruction during monitored anesthesia care (MAC).

RESEARCH QUESTION:

- Does an instructional video demonstrating the appropriate management of an airway obstruction during MAC anesthesia improve the task-management skill, *recognition*, among SRNAs?
- Does an instructional video demonstrating the appropriate management of an airway obstruction during MAC anesthesia improve the task-management skill, *prioritization*, among SRNAs?
- Does an instructional video demonstrating the appropriate management of an airway obstruction during MAC anesthesia improve the task-management skill, *decision-making*, among SRNAs?

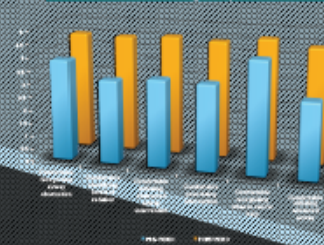
METHODS AND MATERIALS



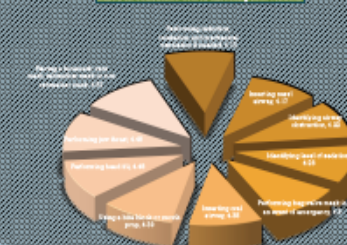
RESULTS

- The pre-instructional video survey-highest variable score in comfort recognizing when to call for help (4.29) and least comfortable variable in initiating advanced airway (2.9). Post-instructional video survey-highest variable in recognizing when to call for help (4.67) and least comfortable in initiating advanced airway (4.43).
- The highest mean score was achieved for the variable, placing a facemask: venti mask, rebreather and non-rebreather at a mean of 4.57 and the lowest mean score for the variable, performing induction, intubation, and mechanical ventilation if needed at a mean of 4.13.
- SRNAs 6-8 years of ICU - higher comfort level with a mean of 3.93 in pre-video survey and 4.70 mean in post-video survey. SRNAs with 3-5 years of ICU- comfort level mean score of 3.18 in pre-video survey, and 4.23 in post-video survey.

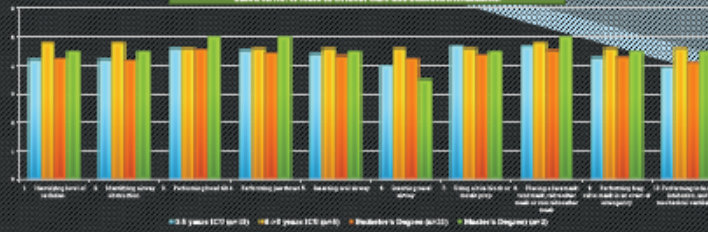
Pre and Post-Video Survey Results for Assessing Recognition and Prioritization during Airway Obstruction



Critical Action Survey Results based on each Score and its corresponding low/high



Post-Video Critical Action Survey Results for Decision-Making based on No. of Years in Critical Care and Education Background



RESULTS (con't)

Wilcoxon Signed Ranks Test demonstrated statistically significant differences in the participants' level of comfort in recognition and prioritization, pre and post-instructional video [Z= -3.507; p = .000 (2-tailed).]

Table 2. Wilcoxon Signed Ranks Test

Comfortable When Survey	N	Mean Rank	Sum of Ranks	Z
Pre-Video - Confidence	18 ^a	8.00	144.00	-3.507 ^{**}
Post-Video - Confidence	18 ^b	14.11	254.00	
Mean Score Pre-Video	46			D= .889 (2-tailed)
Total	23			

a. Comfort Mean Score Post-Video < Comfort Mean Score Pre-Video
b. Comfort Mean Score Post-Video > Comfort Mean Score Pre-Video

** Based on response
* Wilcoxon Signed Ranks Test

A positive correlation was demonstrated between comfort and confidence by using Spearman's r. pre-test mean (r=0.843) and post-test (r=0.931); characterized by significant correlation at the 0.01 level

Correlation Between the Mean Scores for Comfort Using Pre-Video Scale and the Mean Scores for Confidence Using the Critical Action Scale

Spearman's rho	Mean Score for Comfort	Correlation Coefficient (Sig. 2-tailed)	Mean Score for Confidence	Correlation Coefficient (Sig. 2-tailed)
	4.29	.843	4.43	.931
	4.67	.843	4.13	.931

** Correlation is significant at the 0.01 level (2-tailed).

Correlation Between the Mean Scores for Comfort Using Post-Video Scale and the Mean Scores for Confidence Using the Critical Action Scale

Spearman's rho	Mean Score for Confidence	Correlation Coefficient (Sig. 2-tailed)	Mean Score for Comfort	Correlation Coefficient (Sig. 2-tailed)
	4.43	.931	4.29	.843
	4.13	.931	4.67	.843

** Correlation is significant at the 0.01 level (2-tailed).

CONCLUSIONS

- There was a statistically significant results in improved comfort and confidence of SRNAs regarding task-management skills training: recognition, prioritization and decision-making during airway obstruction in MAC anesthesia with improved mean scores in all variables.
- Pre-and-post instructional video surveys and critical action survey results demonstrated a favorable response from the participants, providing preliminary evidence on the benefits of instructional video on task-management education to SRNAs.
- Further research should involve teaching SRNAs when to initiate an advanced airway.
- Further research should involve teaching SRNAs on performing induction, intubation and mechanical ventilation if needed.

REFERENCES

- Available upon request

CRNA's KNOWLEDGE AND ATTITUDES REGARDING ACUPRESSURE AS AN ADJUNCT TO PONV PREVENTION

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Abstract

Background: Postoperative nausea and vomiting (PONV) continues to be a problem for patients despite multimodal pharmacologic treatments available. Although acupressure has demonstrated clinical usefulness, it is still not widely used in mainstream anesthesia practice. **Objective:** The purpose of this descriptive survey design was to assess current knowledge and attitudes among CRNAs and SRNAs regarding acupressure for PONV treatment. A secondary objective was to develop an educational handout designed to increase the use of acupressure as an adjunct to postoperative nausea and vomiting prevention using the findings from this current study.

Methods: A descriptive, cross-sectional survey design was utilized to assess the current knowledge and attitudes among CRNAs regarding the use of acupressure for PONV treatment. **Results:** A total of 109 out of 1200 members of the Illinois Association of Nurse Anesthetists completed the survey (9% survey response rate). Overall, participants had adequate knowledge and positive attitudes regarding acupressure for PONV management. Out of the 14 knowledge and attitude questions on the survey, the items with lowest mean scores indicated deficits in the knowledge on effectiveness of acupressure for PONV treatment (M = 2.85; SD = .518), its impact on surgical outcomes (M = 2.71; SD = .638), and the enhancement of comfort for patients postoperatively (M = 2.87; SD = .511). Among sociodemographic variables examined, females scored higher in overall knowledge and attitudes for use of acupressure for PONV ($p = 0.12$).

Conclusion: Overall, CRNAs have adequate knowledge and positive attitudes regarding use of acupressure for PONV management, but lack knowledge on acupressure effects on patient comfort, efficacy of PONV relief and post-surgical outcomes. Areas of identified deficits were used to create an educational handout for CRNAs to further increase their knowledge and positive attitudes towards use of acupressure for PONV.

Relevance to Clinical Practice: The development of an educational handout, designed to increase the CRNA's knowledge and positive attitudes regarding use of acupressure for PONV, can potentially lead to standard implementation of acupressure in anesthesia practice, and a decreased incidence of PONV in surgical patients.

Keywords: postoperative nausea and vomiting, PONV, acupressure, adjunct, alternative treatment, anesthesia, complementary alternative medicine, CAM, CRNA, knowledge, attitude, multi-modal, perioperative, PK, prevention, and treatment

Introduction

Problem: Postoperative nausea and vomiting (PONV) continues to be a problem for patients despite multimodal pharmacologic treatments available. There is no current research on the knowledge and attitudes of CRNAs regarding the use of P6 acupressure for PONV.

P6 Stimulus: The P6 meridian is located two inches proximal to the distal wrist crease between the palmaris longus and flexor carpi radialis tendons. Acupressure is a similar technique to acupuncture, except acupressure uses mechanical or physical pressure instead of needles over the same meridians of the body. Scientifically, acupressure is thought to stimulate sensory nerves that travel to the brain, specifically the chemoreceptor trigger zone.

Most Compelling Current Evidence from Literature Review:

- 2015 systematic review concluded effect of P6 acupoint stimulation comparable to antiemetic in preventing PONV.
- 2013 study comparing acupressure and metoprolol found them to have comparable effects on PONV.
- 2012 study comparing "sham" acupressure device and acupressure wristband placed prior to anesthesia induction. Results showed that vomiting from 0-72 hours postoperatively decreased from 30% to 12% in the acupressure group.

*Using the search terms listed above, there did not appear to be any current data on CRNA knowledge and attitudes regarding the P6 stimulus as an adjunct to management of PONV.

Research Questions:

- What is the current level of knowledge regarding the use of acupressure for PONV treatment among CRNAs?
- What are the current attitudes regarding the use of acupressure for PONV treatment among CRNAs?

Methods

Design: A descriptive survey design was used to assess the current knowledge and attitudes among CRNAs regarding the use of acupressure for PONV treatment.

Sample: This study used convenience sampling as a method to recruit subjects. Participants were recruited to meet the following inclusion criteria: 1) able to read English, 2) members of Illinois Association of Nurse Anesthetists (IANA), and 3) anesthesia providers licensed to deliver anesthesia care in Illinois, either independently, under direct supervision of an anesthesiologist, or as a SRNA. Subjects who met the eligibility criteria of this study were recruited until the desired sample size of 100 participants was filled.

Subject Collection Procedure: Following approval from DePaul University's institutional review board (IRB), a survey was sent out to IANA members via email. CRNAs and Student Registered Nurse Anesthetists (SRNAs) were recruited as the target sample. IANA members received an enrollment email and an attached letter which informed potential participants of the voluntary and anonymous characteristics of the study.

Setting: Participants voluntarily opened the informative letter and proceeded on to the survey. A blind sampling of IANA members was accomplished via the email distribution. In addition to the informative letter, a copy of DePaul University's IRB approval form was attached to the email. Participants were emailed via an IANA administrator; thus primary investigators were blinded to potential study participants.

Instruments: The multiple-choice online survey designed for this study included two sections: (1) demographic questionnaire (six items); (2) current knowledge and attitudes regarding acupressure as an adjunct for treatment of PONV (15 items). The questionnaire on herbal supplement knowledge and beliefs developed was modified for this project. This modified online survey was used to measure knowledge and attitudes regarding the use of acupressure for treatment of PONV. We added two questions to assess participant's perception of how effective acupressure is as an adjunct to PONV treatment. A Likert scale was utilized to record participant responses. We included five demographic questions related to our survey. The questions included: years practicing as a CRNA, highest level of education completed, gender, ethnic origin, age, and work practice setting.

Ethical Considerations: Prior to data collection, the institutional review board from DePaul University reviewed the survey. There were no psychological or physical risks associated with this research and participants were informed that a stipend for participation will not be provided.

Data Analysis: Data was downloaded from Qualtrics to SPSS version 23. Descriptive statistics were utilized to describe the sociodemographic characteristics of study participants. Detailed description of means and standard deviations for each item in the knowledge and attitudes questionnaires were also generated using descriptive statistics. Non-parametric Kruskal-Wallis test by rank and Kruskal-Wallis H test were used to examine statistically significant differences in the mean scores on PONV knowledge and attitudes between dichotomous groups with different sample sizes (men versus women; partnered vs. non-partnered) and among three groups or more, respectively.

Discussion

The knowledge and attitude scores across all items were found to be positive with an average mean score of 3.22 out of 4. There were no other studies on this topic found in the literature to which to compare our results.

The results of our survey indicated that women have a higher knowledge level and positive attitude toward acupressure use for PONV when compared to men (mean score of 45.82 vs. 43.21). Gender was the only sociodemographic variable of statistical significance. Since this data did not have a normal distribution, we did not focus our attention on the education of acupressure for male CRNAs.

Items on the survey with the lowest mean scores for knowledge and attitudes toward acupressure for PONV indicated deficits regarding the enhancement of comfort for patients postoperatively and that acupressure is an effective treatment for PONV. Results also indicated a lower mean score on knowledge and attitudes toward acupressure use having an impact on surgical outcomes.

An educational handout was created and incorporated the knowledge and attitude deficits noted above. The development of this handout fell into the knowledge phase of our conceptual framework based on the diffusion of innovation theory. Future phases of the conceptual framework include: persuasion, decision, implementation and confirmation. These phases will occur sequentially once the handout is distributed to CRNAs. Positive responses from CRNAs could ultimately lead to use of acupressure and improved patient experience including increased comfort. Without nausea and vomiting there is also the potential to improve surgical outcomes. The conceptual framework provided a foundation for the handout while keeping the end goal in focus.

Results

Analysis of Sociodemographic Variables Using Dichotomous Groupings

Variables	Description	Frequency (N)	Percent (%)
Years practicing	0 years	21	19.3
	1-5 years	19	18.8
	>5 years	34	31.2
Education level	Bachelor	22	20.2
	Master	38	35.4
	Doctorate	28	22.8
Gender	Male	55	52.1
	Female	74	67.9
Ethnicity	White	98	87.2
	Other	11	10.1
Age	30-39	32	29.3
	40-49	27	25.2
	50-59	27	24.8
Practice setting	CRNA and Anesthesiologist	50	45.9
	CRNA, SRNA, and Anesthesiologist	49	44.9

There was statistically significant difference in scores between male and female ($p = 0.012$), with female having higher mean scores than male.

Descriptive Statistics for Knowledge and Attitudes Regarding Acupressure Use for PONV Scale* (N=109)

Scale Items	Minimum	Maximum	Mean	Best Item	Worst Item
1) Acupressure is an effective treatment for PONV	1	4	3.65	440	440
2) Acupressure is an effective treatment for PONV	1	4	3.65	440	440
3) Acupressure is an effective treatment for PONV	1	4	3.65	440	440
4) Acupressure is an effective treatment for PONV	1	4	3.65	440	440
5) Acupressure is an effective treatment for PONV	1	4	3.65	440	440
6) Acupressure is an effective treatment for PONV	1	4	3.65	440	440
7) Acupressure is an effective treatment for PONV	1	4	3.65	440	440
8) Acupressure is an effective treatment for PONV	1	4	3.65	440	440
9) Acupressure is an effective treatment for PONV	1	4	3.65	440	440
10) Acupressure is an effective treatment for PONV	1	4	3.65	440	440
11) Acupressure is an effective treatment for PONV	1	4	3.65	440	440
12) Acupressure is an effective treatment for PONV	1	4	3.65	440	440
13) Acupressure is an effective treatment for PONV	1	4	3.65	440	440
14) Acupressure is an effective treatment for PONV	1	4	3.65	440	440
15) Acupressure is an effective treatment for PONV	1	4	3.65	440	440



- *Items with lowest mean scores indicated deficits regarding:
- Enhancement of comfort for patients postoperatively
 - Efficacy of acupressure treatment for PONV
 - Impact of acupressure use on surgical outcomes

An educational handout was developed based on the knowledge and attitude deficits noted above.

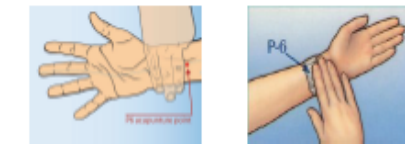
Educational Handout

Based off knowledge deficits noted from our survey results, we created an educational handout for distribution to survey participants.

Key Points:

- Postoperative nausea and vomiting continues to be a problem for patients despite multimodal pharmacologic treatments available.
- A systematic review from the Cochrane Library including 59 trials and 7667 participants, authors concluded that the effect of P6 acupoint stimulation is comparable to antiemetic in the prevention of PONV.
- Although complementary and alternative medicine (CAM) therapies such as acupressure have demonstrated clinical usefulness, they have not yet translated into mainstream anesthesia practice.
- Acupressure is thought to reduce nausea and vomiting by releasing endogenous beta-endorphins in the spinal cord which modify signals to the chemoreceptor trigger zone.
- The P6 acupressure point is located 2 inches proximal to the distal wrist crease between the palmaris longus and flexor carpi radialis tendons.
- To be effective, authors suggest that acupressure should be administered before the emetic stimulus.

P6 Acupressure Point and Position of Acupressure Band



Conclusion

This study found that all study participants including IANA CRNAs and SRNAs have an overall adequate knowledge and positive attitudes on acupressure for PONV management. However, they need more information on the effects of acupressure in terms of patient comfort, efficacy, and impact post-surgery. We identified that further education should focus on the effectiveness of acupressure, and its potential to improve patient comfort and surgical outcomes. Distribution of our educational handout has the potential to increase knowledge and attitudes in the deficit areas identified in this present study and is the first step in bringing this therapy into anesthesia practice. Additionally, this study provides preliminary evidence for female gender as a factor for a higher overall knowledge and attitudes on acupressure among CRNAs and SRNAs.

Limitations

One limitation of our study is that it only surveyed participants from Illinois; therefore, our results may not apply to other geographic locations. Also, we did not survey other anesthesia providers such as anesthesiologists or anesthesiologist assistants. A major limitation of our study was that 87.2% of respondents identified their ethnic origin as white, so we were not able to assess the effect of ethnicity on knowledge and attitudes. However, we found gender as a significant factor in the overall mean score for knowledge and attitudes on acupressure for PONV. Our initial data analysis showed inadequate reliability when all items in the survey tool were included. We had to eliminate question number seven to maintain the adequacy of survey's reliability. The item removed pertains to confidence of knowledge base for acupressure in IANA members.

Acknowledgements

We would like to thank Dr. Pamela Schwartz CRNA, DNP, committee chair, and Dr. Young-Me Lee RN, PhD, committee member for their tremendous contribution to this project. We would also like to thank Dr. Joseph Tietzen RN, PhD, ANP-BC, FAAN for his assistance with data analysis and editing support.

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Background

- U.S. population is more diversified
 - Decline in Caucasian population
 - Rise in Hispanic, Asian, and African American populations
- 291 million people in the U.S.
 - 80.5 million speak a language other than English within their home
 - 15.4% do not speak English well and 7% do not speak English at all
- 322 languages spoken in the U.S.
 - Spanish is the second most common language spoken in the U.S.
- Despite evidence of provider misuse of interpreter services and the resultant adverse outcomes that can and have occurred, few studies have assessed or addressed the gaps in knowledge and attitudes of certified registered nurse anesthetists (CRNAs) towards interpreter service usage when providing care for and consenting limited English proficient (LEP) patients

Purpose

Purpose Statement

- Identify CRNA knowledge and attitudes toward interpreter service usage for limited English proficient (LEP) patients
- Development of a competency educational tool to increase CRNA knowledge and consistency with appropriate interpreter service usage for improved safety and quality of care of LEP patients

Clinical Questions

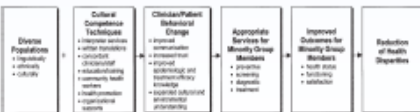
- In what areas does a lack of knowledge by CRNAs exist for how and when to access interpreter services?
- What are CRNA attitudes towards use of interpreter services for limited English proficient patients?

Conceptual Framework

Competence



Communication Model



Methods

Research Design

- A descriptive, online survey research design

Sample

- A purposive sample of 100 English-speaking CRNAs from the Illinois Association of Nurse Anesthetists (IANA)
- Inclusion Criteria:
 - English-speaking CRNAs licensed in the state of Illinois with current active practice.
- Exclusion criteria:
 - Student registered nurse anesthetists (SRNAs), non-English speaking and non-practicing CRNAs

Instruments

A survey contained the following four parts:

- Demographics
- CRNA knowledge of appropriate interpreter use
- Attitudes toward utilization of interpreter services
- Continuing education needs for interpreter service usage

Data Analysis

- Survey data were summarized using descriptive statistics
- Descriptive, *t* test and correlational statistics were used to analyze data using SPSS version 23

Results

Description of Sample

92 IANA members (7.9%) participated, 86.3% female, 89.1% White/Caucasian, 35.9% 21+ years of experience, 39.1% Urban practice setting

Variables	Frequency (N)	Values
Gender		
Male	81	30.4%
Female	31	69.5%
Age		
20-39 yrs old	25	27.5%
40-49 yrs old	25	27.5%
50 yrs or older	41	45.0%
Ethnicity		
White/Caucasian	82	89.1%
Black, African American	5	5.4%
Asian or Pacific Islander	3	3.3%
Hispanic, Latino or Spanish	2	2.2%
Years Practicing as CRNA		
Less than 2 years	17	18.5%
3-10 years	22	23.9%
11-20 years	20	21.7%
21+ years	33	35.9%
Practice Setting		
Urban	36	39.1%
Rural	15	16.3%
Academic/Teaching hospital	21	22.8%
Non-Academic/Non-Teaching Hospital	10	10.9%
Ambulatory Surgical Care/Other	10	10.9%

Results (continued)

Knowledge Assessment

- Participants had a significant lack of knowledge in ALL areas
 - Laws
 - Type of interpreter: Professional vs. non-professional
- A significant linear relationship
 - Females have greater knowledge regarding interpreter service use vs. males ($p = 0.001$)

Knowledge Questions	Correct	Incorrect
Which of the following guarantees limited English proficient (LEP) patients' legal rights to interpreter services?	32.6% (n=30)	67.4% (n=62)
When is it appropriate to use a friend or family member as an interpreter for an LEP patient?	38% (n=35)	62% (n=57)
Who can be used as an interpreter for an LEP patient if he/she declines a professional interpreter and requests an alternative individual?	7.6% (n=7)	92.4% (n=85)
All of the following situations require an interpreter for an LEP patient EXCEPT...	61% (n=55)	39% (n=37)
All of the following statements are true regarding LEP patients compared to English proficient patients EXCEPT...	42% (n=39)	58% (n=53)

Attitudes Assessment

- 5 out of 7 questions answered positively
 - Open to learning more about appropriate interpreter service usage
- 2 questions suggesting more education needed
 - Insufficient cultural competency training
 - Reliance on personal foreign language skills

Overall: Increased knowledge may improve compliance with interpreter use

Attitudes Questions	Disagreed/strongly disagreed	Agreed/strongly agreed
I do NOT receive sufficient cultural competency training that includes information about interpreter service usage at my primary place of practice	33% (n=30)	67% (n=62)
I prefer to use family members or medical personnel to interpret for LEP patients because it is more convenient	65% (n=60)	35% (n=32)
It is appropriate to rely on my own foreign language skills to interpret for an LEP patient if I feel I am competent	43% (n=39)	57% (n=53)
There is no difference between using a professionally trained interpreter and a fluent speaking family member or fluent hospital staff member to interpret for and LEP patient	61% (n=56)	39% (n=36)
I do NOT know how to access a professional interpreter when necessary	57% (n=52)	43% (n=40)
If time constraints exist, it is appropriate for me to rely on my own limited foreign language skills to interpret for an LEP patient	60% (n=55)	40% (n=45)
I prefer to use family members or medical personnel to interpret for LEP patients because I am dissatisfied with interpreter service availability at my primary place of practice	67% (n=62)	33% (n=30)

Limitations

- Kuder Richardson 20 score of 0.051 for the knowledge section
- SRNAs & anesthesiologists not included
- Generalization of findings to CRNAs

Conclusion

- The results of this study found that CRNAs are significantly lacking in knowledge in all the areas that were assessed.
- Assessment of the attitudes of CRNAs toward interpreter services demonstrated positive responses suggesting that CRNAs are open to increased learning.
- The results of the survey indicate that many respondents do not receive continuing education and support a need for continuing education on interpreter service use for CRNAs.
- 5 components should be included in a cultural competency: Laws, who can be used as interpreters, patient situations for use, adverse events for LEP patients & how to access interpreter services.

Intra-operative Awareness with Recall

Kelly Lannert RN, BSN, NAT & Dulcie Schippa RN, BSN, NAT
NorthShore University HealthSystems

Abstract

Intra-operative awareness with recall (AWR) is a well studied risk of general anesthesia (GA) accepted by anesthesia practitioners. A gap was identified between the perceived knowledge and practice related to AWR. The purpose of this quality improvement project (QIP) was to attempt to improve perceived knowledge and comfort related to assessment, evaluation and treatment of patients with AWR. To accomplish this, we disseminated an educational voice over power point (VOPP) to anesthesia practitioners at NorthShore University HealthSystem, including the following content: 1) a tool to assess for AWR 2) establish an appropriate timeline for assessment and 3) present resources available to assist in treatment of AWR sequelae. The efficacy of the educational VOPP was measured by comparing results from Likert-type pre and post-education surveys. Recommendations and conclusions are based on the results of the study.

Background

The Joint Commission (JC) defined AWR as "an unintended intra-operative awareness" occurring under GA (2004). "The patient becomes cognizant of some or all events during surgery or a procedure, and has direct recall of those events. Because of the routine use of neuromuscular blocking agents... the patient is often unable to communicate with the surgical team if this occurs," (JC, 2004). In 2004, the JC issued a sentinel event alert in order to notify anesthesia practitioners of the severity of this problem. Multiple studies have shown AWR incidence to be between 1:1,000 and 1:20,000, dependent on patients and procedures (Cook et al, 2014, p. 2; AANA, 2012). The subsequent impact of AWR for the patient includes nightmares, anxiety, depression, post-traumatic stress disorder (PTSD) and avoidance of future surgical intervention. Given the potentially catastrophic, psychological sequelae of AWR and the difficulty treating PTSD, there is a strong motivation to prevent AWR from ever occurring," (Avidan & Mashour, 2013, p. 449). The purpose of this quality improvement project (QIP) was to attempt to improve perceived knowledge and comfort related to assessment, evaluation, and treatment of patients with AWR.

Methods

The QIP utilized an online, quasi-experimental pre-and post-test design. Anesthesia practitioners were surveyed prior to the VOPP intervention in order to gather baseline perceived knowledge regarding AWR. Second, those surveyed received an interventional online educational VOPP. Following the educational VOPP, a post-survey was given in order to assess reports of improved perceived knowledge and comfort related to AWR.

Our target population included nurse anesthesia trainees (NAT) in at least their first clinical rotation at a NorthShore University HealthSystem (NUHS) site, anesthesia residents, certified registered nurse anesthetists and attending anesthesiologists between 25 and 70 years old, practicing GA in the NUHS. NUHS anesthesia practitioners meeting these inclusion criteria account for 120 potential participants and 30 are comprised of NATs and anesthesia residents being hosted by a NUHS site, yielding an absolute maximum expected entered number of 150.

A recruitment e-mail and information sheet including secure links to the validated surveys and the VOPP, was given to Dr. Kapanke to disseminate amongst anesthesia practitioners that met inclusion criteria, followed by 2 reminders at 2 weeks and one month. The survey results were securely downloaded into Qualtrics. Participation was voluntary and confidential.

Results

N=24

Overall Results:

Pre-survey of perceived knowledge, comfort and attitudes on AWR resulted a $M = 2.59$; $SD = 0.45$.

Post-survey of perceived knowledge, comfort and attitudes on AWR resulted a $M = 3.41$; $SD = .29$.

Subset Analyses:

Perceived knowledge

$M=3.71$

$SD=2.61$

Cohen $d=1.466$

Cronbach alpha=0.72

Perceived comfort

$M=3.71$

$SD=1.86$

Cohen $d=1.17$

Cronbach's alpha=0.85

Attitude

Inadequate Cronbach's alpha; no analysis

There was no statistically significant difference in perceived knowledge of AWR in subsets

Age ($t = -0.090$; $df = 23$; $p = 0.090$)

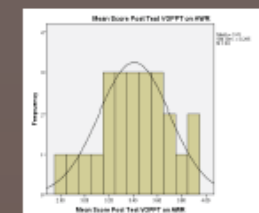
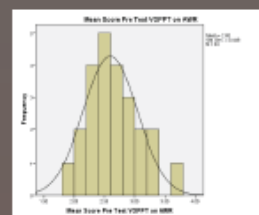
Experience ($t = -7.185$; $df = 23$; $p = 0.975$)

Discussion

Results from the pre-and post-survey revealed that the mean scores improved after practitioners viewed the AWR VOPP. This supports an increase in perceived knowledge and comfort, closing the gap between knowledge and practice concerning AWR. The QIP did not evaluate if the increased knowledge and comfort resulted in changes in practice; this is possible area future research.

Table 1. Sociodemographic Characteristics of Study Participants

Demographic	N	Valid %	N
Age in years			
Less than 40	16	67.1	
Over 40	11	42.9	27
Gender			
Female	21	75	
Male	7	25	28
Years of experience			
Less than 5	15	53.6	
Over 5	12	46.4	27
Did you receive AWR education in school and/or residency?			
Yes	20	71.4	
No	8	28.6	28
Have you had a patient who has experienced AWR?			
Yes	2	7.1	
No	26	92.9	28



Conclusions

This QIP showed that the VOPP on AWR was affective in improving the perceived knowledge and comfort of NUSH anesthesia practitioners regarding assessment, evaluation and treatment of AWR. The results are useful indicator for communication and training needs. Although an AWR brochure exists, our VOPP is an enhanced and updated educational module; its electronic nature, improves accessibility by additional and future NUHS anesthesia practitioners. Additional research in alternate settings is needed to provide a broader representation of anesthesia practitioners in the United States. Furthermore, a future analysis would provide insight into experiences of patients and anesthesia practitioners and their communication regarding AWR after initiation of our VOPP educational program as a standard protocol in a local practice setting.

Limitations

Low response rate
 $n=24$, 16% of target population
Limited to NUHS
Relied on self-reporting

References

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- The Joint Commission. (2004). Preventing, and managing the impact of, anesthesia awareness. Retrieved on April 27, 2015, from http://www.jointcommission.org/assets/1/18/SEA_32.PDF.

Acknowledgements

Committee Chair: Bernadette Roche CRNA, EdD
Committee member: Karen Kapanke DNP, CRNA
Committee member: Joseph Tariman PhD, RN, ANP-BC, FAAN

Background

2001: Crossing the Quality Chasm published by the Institute of Medicine stated the first breakdown in patient safety is handovers

2006: Joint Commission published recommendations for patient safety, including standardized handover of care

2012: Joint Commission cited breakdown in communication as responsible for 80% of hospital sentinel events and 91% of anesthesia-related sentinel events

2014: Joint Commission identified the root causes for breakdown in communication as ineffective communication methods and incomplete information provided

Despite numerous studies and agencies recommending the standardization of handovers to improve the quality and safety of patient care, intraoperative anesthesia handovers have remained unstandardized at many institutions.

Purpose

- Purpose Statement**
- To develop the preliminary Anesthesia Handover Report (AHR) and evaluate its accessibility, layout, and content using feedback from an Expert Sampling Group
 - Create the finalized AHR and evaluate the impact it had on the perceived quality of handover among anesthesia providers
 - To assess the uptake of the finalized AHR
- Clinical Questions**
- What is the usability and acceptability rate of the AHR during transfer of care in the intraoperative period among anesthesia providers?
 - Does a standardized AHR in the electronic health record improve anesthesia provider perceptions of conduct, teamwork, and quality of handover?
 - What is the rate of uptake for the AHR post implementation?

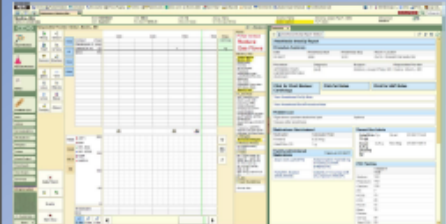


Figure 1. Anesthesia Handover Report

Conceptual Framework



Methods

Study location

- NorthShore University Health System (NSUHS) Evanston, Highland Park, and Glenbrook locations

Study Sample

- Phase 1: Purposive, Expert Sampling Group of five anesthesiologists and five Certified Registered Nurse Anesthetists (CRNAs) practicing at NSUHS and covered the three study locations
- Phase 2: 140 anesthesia providers at the three study locations
 - Inclusion criteria: English-speaking, legally licensed to provide anesthesia in Illinois, currently practicing anesthesia at NSUHS, Evanston, Highland Park or Glenbrook locations, and had utilized the AHR
 - Exclusion criteria: non-English speaking, not licensed to practice anesthesia in Illinois, not currently practicing anesthesia at NSUHS Evanston, Highland Park or Glenbrook locations, or had not utilized the AHR

Phase 1

- The Expert Sampling Group evaluated the preliminary AHR for its accessibility, layout and content using the Expert Sampling Group Questionnaire

Phase 2

- Using feedback from the questionnaire, the finalized AHR was created (Figure 1)
- Anesthesia providers at the three study locations were invited to utilize and evaluate the AHR during intraoperative anesthesia handovers
- Paper Anesthesia Handover Surveys consisted of demographic questions and 14 Likert statements regarding the handover conduct, teamwork and overall quality of the anesthesia handover (Table 1)

Phase 3

- Use of the AHR was queried every two weeks for the duration of Phase 2 to assess uptake of the AHR

Handover Characteristics	Disagree	Partially Disagree	Partially Agree	Agree
Conduct of Handover				
Handover followed a logical structure	1	2	3	4
The AHR sidebar was used to structure the handover when either giving or receiving report on the patient	1	2	3	4
Not enough time was allowed for the handover	1	2	3	4
In case of interruptions during handover, attempts were made to minimize them	1	2	3	4
All relevant information was selected and communicated	1	2	3	4
Priorities for further treatment were addressed	1	2	3	4
The person providing the handover clearly communicated her/his assessment of the patient	1	2	3	4
Possible risks and complications were discussed	1	2	3	4
Teamwork				
Questions and ambiguities were resolved (active category by the person taking on responsibility for the patient)	1	2	3	4
The team jointly ensured that the handover was complete	1	2	3	4
Handover Quality				
Documentation was complete	1	2	3	4
There was too much information in the AHR sidebar	1	2	3	4
Too much information was asked for	1	2	3	4
Overall, the quality of handover was very high when using the electronic AHR	1	2	3	4

Table 1. Phase 2 Anesthesia Handover Survey

Results

Phase 1

- 5 anesthesia providers completed the Expert Sampling Group Questionnaire
- Changes made to the preliminary AHR in response to feedback from the Expert Sampling Group Questionnaire included:
 - Removal of redundant information
 - More appropriate layout of information in sidebar
 - Addition of total drug dose given in medications panel
 - Additional hyperlink to anesthesia nerve block reports
 - Ensured correct information pulled into AHR

Phase 2

- 21 anesthesia providers completed the Anesthesia Handover Survey
- Table 2 summarizes the results of the demographic variables of participants
- Table 3
- Overall mean Likert score for handover conduct was 3.72 with SD of .475 (minimum 2, maximum 4), indicating the majority of the respondents perceived that the AHR improved the conduct component of handover
- Overall mean Likert score for teamwork was 3.76 with SD of .432 (minimum 3, maximum 4), indicating the majority of respondents felt the AHR improved teamwork during handover
- Mean Likert score for handover quality was 3.64 with SD of .511 (minimum 1, maximum 4), this indicated respondents felt the AHR improved overall handover quality

Phase 3

- Uptake did not increase as expected over the six-week monitoring window, but rather peaked during week four and quickly dropped thereafter
- Mean number of times the "Anesthesia Handoff" event button was clicked each week was 3.17

Table 2. Demographic Variables of Study Participants

Variables	Frequency	Number (N)	Percent (%)
Role	Resident/Anesthesiologist	5	23.8
	CRNA/SRNA	16	76.2
	Total	21	100
Years Providing Anesthesia	<1 year	8	38.1
	>1 year	13	61.9
	Total	21	100
Hours/Week Providing Anesthesia	<12 hours	2	9.5
	>12 hours	19	90.5
	Total	21	100
Gender	Male	6	28.6
	Female	15	71.4
	Total	21	100
Ethnicity	White	19	90.5
	Asian, pacific islander	2	9.5
	Total	21	100

Table 2. Demographic Variables of Study Participants

Limitations

- Phase 1:** Multiple functional limitations in design of AHR
- Phase 2:** Lack of participation
- 3 contributing factors:
 - Paper surveys – more time consuming than electronic surveys
 - Study location – participant burnout
 - Lack of educational component
- Phase 3:** inability to accurately track use of AHR

Table 3. Descriptive Anesthesia Handover Survey Results

Test Variable	Minimum Likert Score	Maximum Likert Score	Mean Likert Score	Standard Deviation	Frequency (N=21, 100%)
Handover Conduct (Mean 3.72, SD: .475)					
1. Handover followed a logical structure	2	4	3.67	.730	Partially disagree (N = 3, 14.3%) Partially agree (N = 1, 4.8%) Agree (N = 17, 81%)
2. The AHR sidebar was used to structure the handover when either giving or receiving report on the patient	3	4	3.66	.359	Partially agree (N = 3, 14.3%) Agree (N = 18, 85.7%)
3. Not enough time was allowed for the handover	3	4	3.57	.507	Agree (N = 12, 57.1%) Partially Agree (N = 2, 9.5%)
4. In case of interruptions during handover, attempts were made to minimize them	3	4	3.62	.466	Partially agree (N = 6, 28.6%) Agree (N = 15, 71.4%)
5. All relevant information was selected and communicated	3	4	3.71	.463	Partially agree (N = 5, 23.8%) Agree (N = 16, 76.2%)
6. Priorities for further treatment were addressed	3	4	3.67	.463	Partially agree (N = 7, 33.3%) Agree (N = 14, 66.7%)
7. The person providing the handover clearly communicated her/his assessment of the patient	3	4	3.65	.218	Partially Agree (N = 1, 4.8%) Agree (N = 20, 95.2%)
8. Possible risks and complications were discussed	2	4	3.76	.539	Partially disagree (N = 1, 4.8%) Partially agree (N = 3, 14.3%) Agree (N = 17, 81%)
Teamwork (Mean 3.76, SD: .432)					
9. Questions and ambiguities were resolved (active category by the person taking on responsibility for the patient)	3	4	3.71	.463	Partially agree (N = 6, 28.6%) Agree (N = 15, 71.4%)
10. Team jointly ensured that the handover was complete	3	4	3.81	.402	Partially agree (N = 4, 19%) Agree (N = 17, 81%)
Handover Quality (Mean 3.64, SD: .511)					
11. Documentation was complete	3	4	3.66	.359	Partially agree (N = 3, 14.3%) Agree (N = 18, 85.7%)
12. There was too much information in the electronic AHR sidebar	1	4	3.43	.626	Agree (N = 14, 66.7%) Partially agree (N = 3, 14.3%) Partially disagree (N = 3, 14.3%) Disagree (N = 1, 4.8%)
13. Too much information was asked for	2	4	3.43	.500	Agree (N = 13, 61.9%) Partially agree (N = 6, 28.6%) Partially disagree (N = 2, 9.5%)
14. Overall, the AHR resulted in high quality of handover	2	4	3.66	.476	Partially disagree (N = 1, 4.8%) Partially agree (N = 1, 4.8%) Agree (N = 19, 90.5%)

Table 3. Descriptive Anesthesia Handover Survey Results

Conclusion

- Phase 2 concluded the AHR did result in improved provider perception of conduct, teamwork, and quality of handover communication
 - 55% agreed or partially agreed the AHR improved handover conduct, teamwork and resulted in high quality handover
 - Phase 3 concluded the rate of uptake for the AHR did not improve, however rate of uptake may have been higher than indicated due to the event button having to be clicked in order to track its use
 - Directly addressed root causes of ineffective communication identified by the Joint Commission
 - Findings indicated the perceived quality of handover at NSUHS improved as a result of using the AHR
- Recommendations**
- Anesthesia departments should consider adopting this AHR as a standard of practice to promote safe, quality anesthesia care
 - EPIC, the electronic health record software this report was built in, should consider disseminating this AHR to anesthesia departments
- Future Research**
- This electronic AHR should be implemented and evaluated at a different study location with a larger participation size to allow for further statistical analysis and greater generalizability
 - Studies should be done to determine if this AHR standardized anesthesia handover

Intraoperative Blood Pressure and Effect of Volatile Anesthetic in Brain Dead Organ Donors

Alison L. Karmanian, BSN, RN

Abstract

Background: There is a large disparity between the number of people waiting for organ transplants and the number of organs available. Optimal hemodynamic management can influence transplant outcomes, therefore evidence-based hemodynamic management should be practiced to maximize scarce donor organs. **Purpose:** The purpose of this study was to examine intraoperative blood pressures and administration of volatile anesthetics during brain dead organ donor procurements. Use of volatile anesthetics was examined to determine how use and dose affected the ability to maintain mean arterial pressure (MAP) between 60 to 90 mmHg.

Design: This study was a retrospective chart review.

Results: Twenty-eight cases were analyzed using the mean MAP calculated for each donor. Mean scores ranged from 61.04 to 99.34 mmHg with a mean of $M=84.51$ mmHg. Twenty-two donors (78.6%) received volatile anesthetic gas, and six donors (21.4%) received no volatile anesthetic gas. Mean end-tidal concentrations of volatile anesthetic gas in the 22 donors who received volatile anesthetic gas ranged from 0 to 1.25% with a mean end-tidal concentration of $M=0.39\%$. Mean MAP in donors that did not receive volatile anesthetic gas was $M=78.49$ mmHg ($SD=9.78$ mmHg). Mean MAP in donors that received volatile anesthetic gas was $M=86.16$ mmHg ($SD=7.02$ mmHg). An independent samples t test performed between these two groups demonstrated that the difference between mean MAPs of the two groups was statistically significant ($t=2.182, p=0.038$), but no statistically significant correlation was found between mean MAP and mean end-tidal volatile anesthetic gas ($r_s=-0.184, p=0.414$).

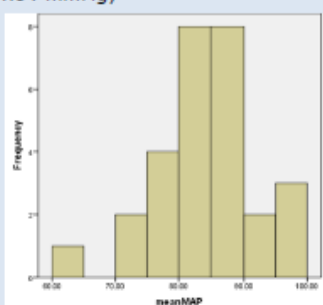
Conclusions: This study demonstrated that intraoperative hypertension is more prevalent than intraoperative hypotension, and volatile anesthetic gas is often used at this medical center during organ procurements at relatively low concentrations.

Background

- US organ transplant waiting list ~120,000 people
- Hemodynamic instability can lead to severe ischemic damage of donor organs → worsened quality and function of transplant
- Significant variations in practice exist among anesthesia providers in regards to management of BP intraoperatively for brain dead organ donors, and there is a lack of consensus and evidence in the available literature

Results

- Mean MAPs: 61.04 - 99.34 mmHg ($M=84.51$ mmHg)



- 22 donors (78.6%) received volatile anesthetic
- 6 donors (21.4%) received no volatile anesthetic gas
- Mean end-tidal concentrations: 0 - 1.25% ($M=0.39\%$)

	Mean MAP (mmHg)	Standard Deviation (mmHg)
No VA	78.49	9.78
VA	86.16	7.02

Discussion

- BP of donors was managed in a way that the majority of average MAPs fell within optimal range (60-90 mmHg)
 - No donor in this study demonstrated an average MAP below 60 mmHg
 - 5 donors had an average MAP greater than 90 mmHg

•Intraoperative hypertension is a more prevalent problem than intraoperative hypotension in this study

•Highest mean end-tidal concentration of volatile anesthetic gas for any donor in this study was 1.25% which falls well below MAC-BAR for either volatile anesthetic gas used in this study:

	MAC	MAC-BAR
Sevoflurane	1.8%	2.7%
Isoflurane	1.17%	1.76%

•Mean MAP was higher in donors who received volatile anesthetic gas than in donors who did not receive it

Procedure

Retrospective chart review

Data collected:

- MAPs collected every minute
- Volatile anesthetic gas (Y/N), type, and end-tidal concentrations every minute

Inclusion criteria:

- Brain dead organ donors
- Age 15 and older
- ACMC
- 5/1/15 – 4/30/16

Conclusion

•This retrospective review of records among brain dead organ donors aged 15 and older demonstrated that intraoperative HTN is more prevalent than intraoperative hypotension

•Volatile anesthetic gas is often being used at this medical center during organ procurements at relatively low concentrations.

•There was a statistically significant difference ($p=0.038$) between mean MAPs in donors who received volatile anesthetic gas versus those who did not

•There was no significant relationship found between mean MAP and end-tidal concentration of volatile anesthetic gas

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PEDIATRIC EMERGENCE DELIRIUM ASSESSMENT: CURRENT PRACTICE AND PERCEIVED BARRIERS

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ABSTRACT

Background: Current literature addresses the complexity of identifying pediatric emergence delirium (PED), but does not address barriers to PED assessment and documentation. By identifying these barriers, further research can be conducted regarding prevention and treatment of PED.

Objectives: This study aimed to: 1) describe the current PED assessment and documentation practices among post anesthesia care unit (PACU) registered nurses and anesthesia providers at UIHHSS; 2) describe the perceived barriers to PED assessment and documentation; and 3) develop an evidence based educational program to aid in the implementation of a validated PED assessment tool.

Method: A descriptive, cross-sectional online survey design was used to survey a convenience sample of 133 perioperative care providers consisting of anesthesia providers (anesthesiology attendings, anesthesiology residents, and certified registered nurse anesthetists) and PACU registered nurses at UIHHSS. Questions associated with perceived barriers to PED assessment and documentation practice were answered using a 5-point Likert-type response scale, with 1= strongly disagree; 2=disagree; 3=neutral; 4= agree; 5=strongly agree.

Results: The study received 40 responses during the data collection period for a response rate of 30.0%. Study results revealed current PED assessment and documentation practices at UIHHSS to be inconsistent and varied. Of statistical significance ($p=0.036$), was the perceived barrier of "limited time" in the distribution of mean scores based on "how often do you care for pediatric patients." Preferred learning methods varied, however a majority of participants ($n=10$) preferred a multimodal approach.

Conclusion: The results of this study revealed the barriers to PED assessment and documentation at UIHHSS, as well as the preferred learning methods of the participants. These results will help facilitate the creation of an evidence based, three-phase educational approach to change of practice at UIHHSS.

BACKGROUND

• **Pediatric emergence delirium:** "A disturbance in a child's awareness of and attention to his or her environment with disorientation and perceptual alterations including hypersensitivity to stimuli and hyperactive motor behavior in the immediate postoperative period" (Dierdorf, Iohom, O'Connor, & Hogue, 2009, p. 210).

Risk factors

- Preschool aged children
- Use of Inhalation anesthetic sevoflurane
- Preoperative anxiety and/or behavior problems
- Head and neck procedures

Incidence: 20-80%

Consequences

- Increased postoperative complications
- Increased risk of injury to self
- Parental dissatisfaction
- Increased postoperative nursing requirements
- Nursing dissatisfaction
- Longer recovery times in the PACU
- Longer hospital stays

• **Pediatric Anesthesia Emergence Delirium Scale (PAED)**, developed by Slickich and Lerman, is the only validated scale for use in pediatrics

TABLE 1
Pediatric Anesthesia Emergence Delirium Scale: Circle One Number for Each Row

Scale	Not at All	Just a Little	Quite a Bit	Very Much	Extremely
The child makes eye contact with the caregiver	4	3	2	1	0
The child's actions are purposeful	4	3	2	1	0
The child is aware of teacher surroundings	4	3	2	1	0
The child is restless	0	1	2	3	4
The child is incontinent	0	1	2	3	4

PROCEDURE

- **Design:** descriptive, cross-sectional online survey
- **Setting:** University of Illinois Hospital and Health Science System (UIHHSS)
- **Participants** ($n=133$): PACU registered nurses ($n=26$), anesthesiology attending ($n=42$), anesthesiology residents ($n=58$), certified registered nurse anesthetists (CRNA) ($n=7$)
- **Survey:** developed based on department needs and pilot tested
 - Four sections: demographic information, current assessment and documentation practice, perceived barriers, future PED assessment and documentation practice

RESULTS

- Data imported into Integrated Business Solutions (IBM) SPSS Statistics version 23.0 and analyzed using descriptive and non parametric statistics
- 40 responses of the 130 available participants

Demographics

- **Role:** 40.0% PACU registered nurses ($n=16$), 27.5% anesthesiology attendings ($n=11$), 22.5% anesthesiology residents ($n=9$), and 10.0% CRNAs ($n=4$)
- **Years practiced in current role:** 52.5% of participants practiced 0-5 years ($n=21$), 22.5% of participants practiced 6-10 years ($n=9$), 12.5% of participants practiced 11-20 years ($n=5$), and 12.5% of participants practiced greater than 20 years ($n=5$)
- **Experience caring for pediatric patients:** 40.0% reported rarely caring for pediatric patients ($n=16$), 35.0% reported regularly caring for pediatric patients ($n=14$), and 25.0% reported occasionally caring for pediatric patients ($n=10$)

Current PED Assessment and Documentation Practice

- 21 participants stated they report PED while 19 did not
- Majority ($n=36$) report PED with a subjective scale
- Mixed responses when asked their reporting and documentation practice of PED

Perceived Barriers

- Non parametric t-test results not used because data highly skewed to the left
- Therefore, median was the best method of analysis for data
- Shown in the table below, limited knowledge and lack of an available assessment tool were perceived as barriers to PED assessment and documentation

Perceived Barriers	Mean	Median	Mode
Limited time	3.0	3.0	4.0
Limited knowledge	3.2	4.0	4.0
Lack of an available assessment tool	3.45	4.0	4.0

Note. 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree

Future PED Assessment and Documentation Practice

- Majority of participants ($n=31$) thought that PED should be documented by the PACU RN and anesthesia provider together
- 45.0% of study participants report PED should be documented in the PACU record ($n=18$), 25.0% in the anesthesia record ($n=10$) and the remaining participants chose other methods
- Results from the educational preference (shown below) helped facilitate in creation of an educational plan to implement the PAED scale

How would you like to be educated on a pediatric emergence delirium assessment scale?	Frequency	Percent
Handout, online learning module and in-service	10	25.0
Handout	8	20.0
In-service	7	17.5
Online learning module	5	12.5
Online learning module and in-service	4	10.0
Online learning module and handout	2	5.0

DISCUSSION

Lewin's Phases of Change

- Findings were used to introduce, implement, and evaluate change in practice, guided by Lewin's phases of change:
 - **Unfreeze:** Identifying current PED assessment and documentation practices
 - **Move:** practice change guided by Dreyfus & Dreyfus' developmental stages of skill acquisition
 - **Freeze:** completion of three phase educational approach

PAED Scale Three Phase Educational Approach

- Phase 1: Educational handout (below)
- Phase 2: Online learning module
- Phase 3: In-service training

Pediatric Emergence Delirium (PED) Assessment and Documentation

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
My knowledge of PED assessment and documentation is adequate.	0	0	0	0	0
I have the time to assess and document PED.	0	0	0	0	0
I have the resources to assess and document PED.	0	0	0	0	0
I have the training to assess and document PED.	0	0	0	0	0
I have the information to assess and document PED.	0	0	0	0	0
I have the skills to assess and document PED.	0	0	0	0	0
I have the motivation to assess and document PED.	0	0	0	0	0
I have the resources to assess and document PED.	0	0	0	0	0
I have the information to assess and document PED.	0	0	0	0	0
I have the skills to assess and document PED.	0	0	0	0	0
I have the motivation to assess and document PED.	0	0	0	0	0

CONCLUSION

- Perioperative care providers found lack of an available assessment scale, limited knowledge, and limited time to be barriers to PED assessment and documentation
- Results support the need for implementation and standardized use of a validated PED assessment scale at UIHHSS

ONGOING RESEARCH

- Evaluate compliance using PAED scale
- Incorporate the PAED scale into the EMR
- Chart auditing to facilitate future research projects looking at the use of Dexmedetomidine in the prevention of PED

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