A32
A comparison of two simulated central venous access teaching tools: An educational study to determine the feasibility of using a human cadaver to simulate central line access
Kevin A. Leach, RN, BSN; Michael W. Johnston, RN, BSN; Todd A. Meyer, RN, BSN; Annette S. Proctor, RN, BSN; Mary E. Shirk Marienau, CRNA, MS; Edward Thompson, PhD
Mayo School of Health Sciences, Department of Nurse Anesthesia, Rochester, Minnesota

Introduction: Proper placement is an essential prerequisite for using the central venous access catheter. Simulation of technical procedures is becoming more widely used in medical specialties. This prospective study was designed to determine the feasibility of using a specially prepared human cadaver model as a simulator for instruction of central venous access catheter placement. A comparison was done between two anatomically correct static mannequins and two specially prepared human cadavers.

Method: Two human cadavers were specially prepared by dissecting out the right internal jugular veins and carotid arteries. Resealable tubing filled with synthetic blood and pressurized to emulate the carotid artery pulsations were laid into the cadaver's original vessel positions and covered with the cadaver's native tissues. Two anatomically correct static mannequins were also prepared for central venous needle placement.

A convenience sample of 60 nurse anesthetist students, with no prior experience or contact with the two types of teaching simulators was used. To minimize repetitious learning, participants' station order was randomized. Each participant was prior instructed on the Seldinger technique for placing central venous access catheters. Each participant attempted accessing five right internal jugular veins in the mannequins and five in the specially prepared human cadavers. Data was collected for initial needle placement. Upon completion of the workshop a qualitative survey regarding the learning opportunity was conducted.

Results: Using the signed-rank test, a successful pass on the cadaver versus the mannequin had a significant p-value of 0.049, indicating greater success with the cadavers than the mannequins. Qualitatively analysis ascertained participants were highly satisfied with both learning simulators, but when asked to select, the cadavers were an overwhelming preference in every category.

Conclusions: Our research found the specially prepared human cadavers to be a feasible and preferred teaching tool when compared to the anatomically correct central line access static mannequin.

A33
Estimating workload in nurse anesthesia practice
Paul A. Evelyn, RN, BSN; Alfred E. Lupien, CRNA, PhD
Department of Nursing Anesthesia, Medical College of Georgia, Augusta, Georgia

Introduction: The anesthesia provider's role has often been compared to that of a pilot's, as those in both professions frequently face situations that require rapid critical decision-making. One difference, however, is that the aviation industry routinely evaluates workloads in various human-machine environments. One workload assessment tool is the National Aeronautic and Space Administration Task Load Index (NASA-TLX), which asks individuals to rate their perceived workload across six workload dimensions. The purpose of this study was to measure the daily work-
A34

Anesthetic care of the trauma patient: A web-based resource
Nicole K. Anderson, RN, BSN; Andrew D. Jones, RN, BSN; Erin E. Martin, RN, BSN; Renee F. Thies, RN, BSN; Nicole K. Anderson, RN, BSN; Andrew D. Jones, RN, BSN; Rachel M. Kendall, RN, BSN; Mary E. Shirk Marienau, CRNA, MS; Beth A. Elliott, MD

Introduction: The injured patient presents an unstable, rapidly changing, unpredictable situation. The need for treatment prioritization results in patients presenting to the OR with undiagnosed complex patterns of injury requiring unique anesthetic considerations. Adequate preparation on the part of the anesthesia provider promotes high quality care and decreases the likelihood of morbidity and mortality. Unfortunately, many trauma cases present after hours when support resources are less readily available. We determined that a website placed on the Mayo Intranet relating to anesthetic care of the trauma patient would be a readily accessible, user-friendly resource to promote improved care. Research has shown that adults are highly motivated to educate themselves when they perceive a need and possess the desire to learn. In recent years, media such as computers have become increasingly popular and accessible as effective learning tools.

Methods: A comprehensive literature search was completed on anesthetic care of the trauma patient and on adult/web based learning principles. Information was gathered from textbooks, research journals, existing web links on the Mayo Intranet, and staff at the Mayo Medical Center. Assistance was obtained from the Internet/Website Development Department at Mayo for actual creation of the website.

Results: The information gathered following a thorough literature search has been placed on a web page for utilization on the Mayo Intranet. The web page contains the following subject categories: Initial Considerations; Room Set-Up/Equipment; Unidentified Patient Arrival in the OR; Circulation and Fluid Resuscitation; Hypothermia; Facial, Neck and Airway Trauma; Head Trauma; Abdominal Trauma; Management of the Pregnant Trauma Patient; Thoracic Trauma; Pelvic and Extremity Trauma; Common Trauma Drugs; Patient Transfer; Intraoperative Death; and Glossary of Terms.

Conclusions: This website will provide beneficial information to anesthesia providers when providing care to trauma patients.

A35

Comparison of nitrous oxide gas waste anesthetic gas leakage among the face mask, LMA-classic, and king laryngeal tube
CPT Beverly Inocencio, RN, BSN; CPT Denise McFarland, RN, BSN; CPT William Whitacre, RN, BSN; MAJ Michael Loughren, CRNA

Introduction: The laryngeal tube is a new airway adjunct not yet well investigated. The purpose of this study was to compare the measured concentration of waste nitrous oxide (N₂O) gas leakage when delivering general anesthesia via the face mask, laryngeal mask airway (LMA), or laryngeal tube (LT) to spontaneously ventilating ASA I and II patients.

Methods: Seventy-five participants were enrolled in this prospective, randomized, post-test study. General anesthesia was maintained with a potent inhalation agent and 66% N₂O with oxygen using a semi-closed gas delivery ventilation system. Spontaneous ventilations were maintained unless end tidal carbon dioxide measurements were greater than 60 mm Hg, in which case assisted ventilations were administered. Nitrous oxide concentrations were measured in parts per million at the “Y” connector of the breathing circuit at four intervals:

DISCLAIMER: The views expressed in these abstracts are those of the authors and do not reflect the official policy or position of the Departments of the Air Force, Army, Navy, and Public Health Service; the Department of Defense; or the US Government.
(1) return of spontaneous ventilation after induction, (2) 15 minutes, (3) 30 minutes, and (4) 45 minutes thereafter using the Bacharach 3010 N₂O Monitor. 

**Results:** Analysis of variance did not demonstrate any significant differences among the various airway adjuncts in measured waste N₂O at any point in time. 

**Conclusion:** There was no significant difference in the amount of N₂O leakage when comparing the face mask, LMA and LTA. However, a trend was noted such that there was an increased amount of N₂O leakage from the LTA at data collection points one and four compared to the face mask and the LMA. We speculate that at data collection point one, greater stimulation was associated with placement of the LTA compared to the face mask or LMA. Therefore deeper anesthesia levels were required resulting in assisted rather than spontaneous ventilation. At data collection point 4, an accumulation of N₂O behind the pharyngeal cuff of the LTA, which was released upon pharyngeal cuff deflation, may have accounted for this trend.

**A36**

The relationships among the factors of satisfaction and anticipated turnover of Air Force Certified Registered Nurse Anesthetists

*Capt Donald G. Ruch, RN, BSN, USAF, NC; Capt Christine L. Meves, RN, BSN, USAF, NC*

US Army Graduate Program in Anesthesia Nursing, University of Texas at Houston Health Science Center, San Antonio, Texas

**Introduction:** United States Air Force CRNA manning is currently 81%. A high turnover rate of CRNAs creates both financial and morale issues for the Air Force. This study's purpose was to identify the relationships among nine factors related to satisfaction and anticipated turnover of Air Force CRNAs.

**Methods:** This exploratory study utilized a web-based survey and a multistage theoretical model of nursing job satisfaction and anticipated turnover initially developed by Hinshaw and Atwood (1983). Active duty Air Force CRNAs were invited to participate (n=116). Spearman's rank order correlation coefficient was used to examine the extent to which the factors were correlated.

**Results:** Significant negative relationships were found between three sets of factors: status accorded (pay and rewards) and job related factors (work itself, knowledge, competence and enjoyment) (r=-.333; p=.003); practice issues (environment, autonomy, control over practice and collaboration) and status accorded (r=-.250, p=.029); professional/occupational job satisfaction (quality of care delivered and enjoyment of position) and anticipated turnover (separating from active duty before retirement) (r=-.251, p=.028).

**Conclusion:** Active duty Air Force CRNAs who feel they deliver quality care have adequate time to deliver care to patients, as well as enjoy their positions, are less likely to separate from the Air Force before retirement. These findings support the findings of Stamps (1997) who studied Air Force CRNAs and Cowan (1995) who studied Navy anesthesia providers. Further research into satisfaction factors may lead to improved manning through a decrease in anticipated turnover.

**A37**

Low-dose naloxone enhances reduction of desflurane MAC by morphine in female patients undergoing laparotomy

*Joe Lesser, CRNA, MSNA; Scott Hamann, MD, PhD; Annette Rebel, MD; Nicholas Hatch, BS; Peter Steyn, MD; Thomas McLarney, MD; Regina Fragneto, MD; Lawrence Kilinski, MD; Johann Doerfling, MBBS; Elzbieta Wala, PhD*

Department of Anesthesiology, University of Kentucky, Lexington, Kentucky

**Introduction:** Morphine (MOR) induces inhibition of pain-mediating neurons, thereby blocking pain transmission in the CNS. Simultaneous activation of high-affinity neuronal excitatory opioid receptors may counteract MOR analgesia. Previous studies have found that low doses of naloxone (NLX) enhanced MOR analgesia. Since infusion of MOR produces a reduction in minimum alveolar concentration (MAC) of volatile anesthetics by approximately 30%, we proposed that addition of low-dose NLX might enhance the analgesic effect, measurable by further MAC reduction.

**Methods:** After IRB approval, 40 female patients (ASA I-III) undergoing elective abdominal laparotomy were randomly assigned to receive one of five morphine-NLX treatments: a loading dose over 20 minutes of MOR (0.05 mg/kg) + placebo, NLX (0.31 ng/kg), NLX (0.9 ng/kg), NLX (9.2 ng/kg) or NLX (30.8 ng/kg), and a maintenance dose of MOR (0.025 mg/kg/hr) + placebo, NLX (0.15 ng/kg/hr), NLX (0.46 ng/kg/hr), NLX (4.6 ng/kg/hr) or NLX (15.4 ng/kg/hr). Each treatment group was independently used for determination of the MAC. The end-tidal DES concentrations varied from 3.0-7.6%. MAC of DES for each treatment group was determined using quantal analysis “up and down” Dixon method. In this method the end-tidal DES concentration at incision was determined by the surgical incision response of the prior patient within the same group.
Results: The MAC-reduction actions of MOR during DES general anesthesia were enhanced by all doses of NLX (p<0.01).

Conclusion: Low-doses of NLX enhanced MOR induced DES MAC reduction in female patients undergoing abdominal laparotomy. The enhancement of MOR analgesia and DES MAC reduction is likely due to selective antagonism of high-affinity opioid excitatory receptors by low-dose NLX.

A38
How do anesthesia providers routinely determine when to intubate using a non-depolarizing neuromuscular blocking drug in a non-emergent situation?
Charles Griffey, RN, BSN, CCRN; Becky Goldwasser, RN, MSN, ARNP; John P. McDonough, EdD, CRNA, ARNP; Nicholas M. Kalynych, CRNA, MSHS
Florida International University, North Miami Beach, Florida

Introduction: The purpose of this study is to assess the practice behaviors of anesthesia providers when attempting laryngoscopy using a non-depolarizing neuromuscular blocking drug in a non-emergent situation.

Method: A survey tool was developed to measure the frequency of use of subjective clinical indicators, nerve stimulator, time from drug injection, or a combination of the three methods for determining when to attempt laryngoscopy. The surveys were distributed to anesthesia providers at a major metropolitan teaching hospital and to nurse anesthesia students. A convenience sample of 61 subjects consisting of 30 student registered nurse anesthetists (SRNAs), 19 Certified Registered Nurse Anesthetists (CRNAs), and 12 anesthesiologists completed the survey appropriately for inclusion in the analysis.

Results: The data collected was collapsed into three categories for frequency of use: < 50% of the time, 50% of the time, and > 50% of the time and then analyzed using chi-square test of independence and mean score statistic Qs (an extension of the Mantel-Haenszel statistic for 2 x 3 tables). The categories showed no statistically significant differences between the individual practices of anesthesia providers. However, differences were seen when anesthesiologists directed other anesthesia providers. Only 9% of anesthesiologists used a nerve stimulator > 50% of time for laryngoscopy when directing SRNAs compared to 29% for SRNAs when they get to decide (P = 0.043). In contrast, 33% of anesthesiologists reported using a nerve stimulator > 50% of the time when they performed laryngoscopy (P = 0.122). The decision to perform laryngoscopy based upon elapsed time from drug injection was used > 50% of the time by 53% of CRNAs compared to only 17% when directed by the anesthesiologist (P = 0.046).

Conclusions: This study suggests that anesthesiologists change their practice behavior when directing other anesthesia providers to perform laryngoscopy. Repeated research is needed to confirm these findings and explore a possible cause and effect.

A39
Pollution of ambient air by volatile anesthetics: Comparison of four anesthetic management techniques
Capt Joy C. Barberio, RN, BSN, USAF, NC; Capt Jason D. Bolt, RN, BSN, USAF, NC
81st Medical Group, Keesler AFB, MS and Uniformed Services University of the Health Sciences, Bethesda, Maryland

Introduction: Prior investigations suggest that operating room personnel may develop health problems related to chronic waste anesthetic gas (WAG) exposure. There are four common combinations to control fresh gas flow (FGF) and vaporizer settings during the intubation period when mask ventilation is used in conjunction with an intravenous induction. The purpose of this study was to compare WAG concentrations resulting from four combinations of FGF and vaporizer settings.

Methods: Using a simulated patient/lung model, WAG was sampled three times each using four different combinations and three volatile anesthetics: 3% sevoflurane, 2% isoflurane, and 6% desflurane. The combinations were FGF off/vaporizer on, FGF on/vaporizer off, leaving both on and turning both off. WAG was measured using a MIRAN Ambient Air Analyzer placed at a level approximating the position of the anesthetist’s head. WAG was recorded during a simulated intravenous induction with mask ventilation of the model. One-way analysis of variance with a Student-Newman-Keuls post hoc test was used to compare the concentration of WAG between the combinations of FGF/vaporizer settings and between the agents for a given combination.

Results: Regardless of the agent, only the FGF on/vaporizer on combination resulted in a statistically different WAG level (p<0.005).

Conclusion: The results support using three of the four combinations examined when mask ventilation with a volatile agent accompanies an intravenous induction. Future studies should examine other methods of controlling WAG levels, exposure in other loca-
Conclusions: opportunity to teach students.

financial obligation, patient population, and an case types, and scope of practice. Weak factors were

Air Force, Army, Navy, and Public Health Service; the Department of Defense; or the US Government.

The views expressed in these abstracts are those of the authors and do not reflect the official policy or position of the Departments of the Air Force, Army, Navy, and Public Health Service; the Department of Defense; or the US Government.

A40
Factors considered by new CRNAs when choosing their first place of employment
Heather A. Poirier, RN, BSN; Jeff Johnson, RN, BSN
Wayne State University, College of Pharmacy and Allied Health School of Nurse Anesthesia, Detroit, Michigan

Introduction: Recent studies have demonstrated a national shortage of Certified Registered Nurse Anesthetists (CRNAs). The AANA cited that the reason for this shortage may be due to a decline in anesthesiology resident positions, an increase in office-based surgery and surgery in places other than hospitals. In 2002, the Kentucky Association of Nurse Anesthetists alerted Congress to the fact that CRNA vacancies were up 250% since 1997. The scarcity of CRNAs has prompted many hospitals to employ creative strategies to attract and retain anesthetists. Overtime and agency assistance to cover anesthetic needs are costly practices. The ability to attract anesthetists from the increasing pool of new graduates would offer hospitals an economic advantage. Currently there is no concrete information as to why graduate nurse anesthetists choose the hospitals in which they become employed.

Methods: A list of graduates from the years 2000 to 2004 was obtained from area anesthesia programs. Graduate addresses were obtained from the AANA. Survey material was mailed to recent graduates. An online form of the survey was available as well. The demographic data will be analyzed. Correlation coefficients for factors that influence job selection will be calculated. A model demonstrating the most significant factors in determining students’ selection of employment in Michigan over the last five years will be developed.

Results: Strongest factors were schedule flexibility, case types, and scope of practice. Weak factors were financial obligation, patient population, and an opportunity to teach students.

Conclusions: Most students chose overall job quality. Results varied between schools of anesthesia.

A41
A description of anesthesia practitioner resources and clinical environment during a voluntary medical mission in an underdeveloped part of the world, Guatemala
Martha M. Cleary, RN, BSN
University of Southern California, Department of Nursing, Program of Nurse Anesthesia, Los Angeles, California

Introduction: Providing voluntary healthcare to underdeveloped parts of the world is an undeniably valuable humanitarian effort to ease pain and suffering in such areas where medical assistance is in high demand and resources are sparse. However, delivery of anesthesia in such places can be a tremendously challenging experience as the anesthetic techniques utilized are dictated by the availability of supplies, a mixture of local and shipped equipment, and the needs of the clinical environment, a rural, mountainous region with limited access to any medical care. This paper describes the unique anesthetic clinical environment and available resources, in Guatemala, an underdeveloped region in Central America, in which the patient population, surgical procedures, and perioperative resources are quite different than those experienced in North America.

Methods: Providing voluntary healthcare in the role of an anesthesia practitioner to over 100 general and plastic surgical cases for 7 straight days in rural Guatemala.

Results: The standards for basic anesthesia monitoring were not always available, operating rooms were shared by two surgical teams at times, manual ventilation was commonly performed as mechanical ventilation was a rarity, and anesthesia providers took responsibility of 2 patients at times. A restriction of medicines available to treat common adverse anesthetic reactions added to the challenge, and long hours with limited resources contributed to making the work physically tiring. With no pre-operative clinic in the vicinity, typical tests and laboratory work commonly gathered were not available to the medical group and concurrent illnesses in the patient population were not found until after surgical incision.

Conclusion: Anesthetic delivery in an underdeveloped region of the world is quite primitive in comparison to the set standards here in North America. This is due to a high demand for medical and surgical assistance and a scarcity of resources.

A42
Predominant learning styles in student registered nurse anesthetists
Kathleen C. Thibeault, BSN, CCRN; Diane R. Orlando, BSN; Jeffrey Groom, CRNA, MS, ARNP
Florida International University, Miami, Florida

Introduction: The Experiential Learning Theory (ELT) defines learning as “the process whereby knowledge is created through the transformation of
experience.” Developed in 1971 by David Kolb, the Learning Style Inventory (LSI) identifies four statistically significant Experiential Learning Styles: Diverging, Assimilating, Converging, and Accommodating. Our healthcare system is facing an ongoing and increasing need for anesthesia providers. Entrance into an Anesthesiology Nursing Program is a rigorous undertaking and an enormous commitment. By identifying a Learning Style preference, prospective students can determine their compatibility with a given program. Awareness of an individual’s Learning Style has been demonstrated to reduce anxiety in the clinical setting. Additionally, since Experiential Learning is a dynamic process, the student can take measures to adapt to a more congruent style. Knowledge of predominant preferred learning styles can assist educators in designing more effective teaching strategies.

Methods: The LSI was administered to 68 first- and second-year nurse anesthesia students at a Southeast Florida Public University. Scores of 63 valid instruments were separated by class year and analyzed using frequency distributions.

Results: We hypothesized that (a) First-year students would not demonstrate a predominant learning style, and (b) Among senior students there would be clusters of preferred learning styles. In the first-year group, 47% were Assimilators (N=15), 44% were Convergers (N=14), 9% were Accommodators (N=3), and there were no Diversers. In the second-year group, 39% were Convergers (N=12), 29% were Diversers (N=9), and there were 16% in the Assimilator (N=5) and Accommodator (N=5) groups.

Conclusion: We found that there were indeed clusters of predominant learning styles in both first and second-year groups, although they were weighted in different quadrants. Both groups contrasted with a study by Sherbinski in 1994. Further study could determine if students actually adapt their learning styles as they progress through the phases from applicant to graduate.

A43 Chest wall mechanics immediately following abdominal aortic aneurysm surgery – Could they predict postoperative respiratory function?

Joseph E. Lesser, CRNA, MSN; Brenda G. Fahy, MD, FCCP, FCCM; George M. Barnas, PhD
Department of Anesthesiology, University of Kentucky, Lexington, Kentucky

Introduction: Although thoracic and abdominal surgeries may alter chest wall mechanics, postsurgical measurements of chest wall elastance (Ecw) and resistance (Rcw) are seldom reported. These properties determine intrathoracic pressure during mechanical ventilation and may correlate with postoperative respiratory dysfunction.

Methods: After institutional approval and informed consent, airway flow and esophageal pressures were measured in 5 patients during positive pressure ventilation immediately after aortic aneurysm repair. Measurements were repeated at different combinations of tidal volume (VT) and frequency (f) in the normal range of breathing. Different combinations included VT of 250, 500, or 800 ml with f at 10, 20, or 30 breaths per minute. From pressure and flow, Ecw and Rcw were calculated using discrete Fourier transform at the fundamental f. These values were compared using multiple regression to 17 patients measured as controls who had normal chest walls.

Results: After aortic aneurysm surgery, Ecw fell within the range observed in controls. However Ecw showed no decrease with increasing VT as observed in controls. Rcw decreased with increasing VT and f (p<0.05), as did controls but with lower absolute values than controls (p <0.05) considering all combinations of VT and f.

Conclusion: These changes compared to controls are felt to reflect fundamental changes in chest wall mechanical behavior after aortic aneurysm surgery as previous studies in all conditions and species showed Ecw to decrease with increasing VT. Further study may reveal a correlation with postoperative respiratory dysfunction and help predict those patients without postoperative respiratory dysfunction who can be quickly weaned from mechanical ventilation.
The effects of acupressure on nausea and vomiting in postoperative patients undergoing outpatient ophthalmic surgeries

Wendy J. Gibson, RN, MSN; Patrick Monaghan, PhD; Jeffrey Groom, CRNA, MS
Florida International University, School of Nursing, Miami, Florida

Introduction: Postoperative nausea and vomiting (PONV) is one of the most common complications of outpatient surgeries. Over the last twenty-five years, there has been little change in the incidence of PONV despite improvements in anesthetic drugs and techniques. Research has shown that applying acupressure to the Nei-Kuan acupressure point (P6), an Eastern philosophy of activating chi energy, is associated with abating nausea.

Methods: Upon Institutional Review Board (IRB) approval, thirty participants scheduled for outpatient ophthalmic surgeries were recruited and randomized in the Sea-Band (SB), placebo (P), or control (C) group. An experimental repeated measures design was used to determine whether the incidence and severity of PONV was decreased in patients treated with Sea-Band acupressure wristbands.

Results: The Rhodes Inventory of Nausea Vomiting and Retching (RINVR) was used to measure the degree of PONV. Results revealed that there was no significant difference between the three groups. However, chi-squared analysis revealed that participants with a history of PONV had a higher incidence of PONV on the forty-eight hour reading. There was no significant difference between the groups based on gender, type of surgery, intraoperative medications or home medications.

Conclusion: Continued economic pressures combined with remarkable advances in technology have empowered the successful growth of outpatient surgeries. Studies indicate that stimulation of the Nei-Kuan P-6 point with an acupressure wristband is an effective treatment for PONV in patients undergoing outpatient ophthalmic surgeries, however, we were unable to validate this claim. Future studies and analysis are needed to adequately assess this treatment method.

A46
Leadership styles among student registered nurse anesthetists (SRNAs) and certified registered nurse anesthetists (CRNAs)
Katarina Almskog, RN, BSN; Gilberto A. Soto, RN, BSN, RRT; Jeffrey Groom, CRNA, MS, ARNP
Florida International University, North Miami, Florida

Introduction: The purpose of this study is to describe situational leadership styles and their effectiveness as applied to specific situations involving SRNAs and CRNAs. There is well-documented literature on the national anesthesia provider shortage, including CRNAs as well as overall nursing shortage. Previous studies show that overall improvement in job satisfaction is often related to effective leadership and overall improves retention of currently practicing nurses and recruitment of new ones.

Methods: The Leader Effectiveness Adaptability (LEA) tool (Ken Blanchard, G. Biddle, 1996) is administered to SRNAs (N=40) and CRNAs (N=40) at three medical facilities and at the University. The 12-question tool measures self-perception on three aspects of leadership style (effectiveness). The Rhodes Inventory of Nausea Vomiting and Retching (RINVR) was used to measure the degree of PONV. Results revealed that there was no significant difference between the three groups. However, chi-squared analysis revealed that participants with a history of PONV had a higher incidence of PONV on the forty-eight hour reading. There was no significant difference between the groups based on gender, type of surgery, intraoperative medications or home medications.

Conclusion: Continued economic pressures combined with remarkable advances in technology have empowered the successful growth of outpatient surgeries. Studies indicate that stimulation of the Nei-Kuan P-6 point with an acupressure wristband is an effective treatment for PONV in patients undergoing outpatient ophthalmic surgeries, however, we were unable to validate this claim. Future studies and analysis are needed to adequately assess this treatment method.

A45
Leadership styles among student registered nurse anesthetists (SRNAs) and certified registered nurse anesthetists (CRNAs)
Katarina Almskog, RN, BSN; Gilberto A. Soto, RN, BSN, RRT; Jeffrey Groom, CRNA, MS, ARNP
Florida International University, North Miami, Florida

Introduction: The purpose of this study is to describe situational leadership styles and their effectiveness as applied to specific situations involving SRNAs and CRNAs. There is well-documented literature on the national anesthesia provider shortage, including CRNAs as well as overall nursing shortage. Previous studies show that overall improvement in job satisfaction is often related to effective leadership and overall improves retention of currently practicing nurses and recruitment of new ones.

Methods: The Leader Effectiveness Adaptability (LEA) tool (Ken Blanchard, G. Biddle, 1996) is administered to SRNAs (N=40) and CRNAs (N=40) at three medical facilities and at the University. The 12-question tool measures self-perception on three aspects of leadership style (effectiveness). The Rhodes Inventory of Nausea Vomiting and Retching (RINVR) was used to measure the degree of PONV. Results revealed that there was no significant difference between the three groups. However, chi-squared analysis revealed that participants with a history of PONV had a higher incidence of PONV on the forty-eight hour reading. There was no significant difference between the groups based on gender, type of surgery, intraoperative medications or home medications.

Conclusion: Continued economic pressures combined with remarkable advances in technology have empowered the successful growth of outpatient surgeries. Studies indicate that stimulation of the Nei-Kuan P-6 point with an acupressure wristband is an effective treatment for PONV in patients undergoing outpatient ophthalmic surgeries, however, we were unable to validate this claim. Future studies and analysis are needed to adequately assess this treatment method.

A46
Leadership styles among student registered nurse anesthetists (SRNAs) and certified registered nurse anesthetists (CRNAs)
Katarina Almskog, RN, BSN; Gilberto A. Soto, RN, BSN, RRT; Jeffrey Groom, CRNA, MS, ARNP
Florida International University, North Miami, Florida

Introduction: The purpose of this study is to describe situational leadership styles and their effectiveness as applied to specific situations involving SRNAs and CRNAs. There is well-documented literature on the national anesthesia provider shortage, including CRNAs as well as overall nursing shortage. Previous studies show that overall improvement in job satisfaction is often related to effective leadership and overall improves retention of currently practicing nurses and recruitment of new ones.

Methods: The Leader Effectiveness Adaptability (LEA) tool (Ken Blanchard, G. Biddle, 1996) is administered to SRNAs (N=40) and CRNAs (N=40) at three medical facilities and at the University. The 12-question tool measures self-perception on three aspects of leadership style (effectiveness). The Rhodes Inventory of Nausea Vomiting and Retching (RINVR) was used to measure the degree of PONV. Results revealed that there was no significant difference between the three groups. However, chi-squared analysis revealed that participants with a history of PONV had a higher incidence of PONV on the forty-eight hour reading. There was no significant difference between the groups based on gender, type of surgery, intraoperative medications or home medications.

Conclusion: Continued economic pressures combined with remarkable advances in technology have empowered the successful growth of outpatient surgeries. Studies indicate that stimulation of the Nei-Kuan P-6 point with an acupressure wristband is an effective treatment for PONV in patients undergoing outpatient ophthalmic surgeries, however, we were unable to validate this claim. Future studies and analysis are needed to adequately assess this treatment method.

A45
Leadership styles among student registered nurse anesthetists (SRNAs) and certified registered nurse anesthetists (CRNAs)
Katarina Almskog, RN, BSN; Gilberto A. Soto, RN, BSN, RRT; Jeffrey Groom, CRNA, MS, ARNP
Florida International University, North Miami, Florida

Introduction: The purpose of this study is to describe situational leadership styles and their effectiveness as applied to specific situations involving SRNAs and CRNAs. There is well-documented literature on the national anesthesia provider shortage, including CRNAs as well as overall nursing shortage. Previous studies show that overall improvement in job satisfaction is often related to effective leadership and overall improves retention of currently practicing nurses and recruitment of new ones.

Methods: The Leader Effectiveness Adaptability (LEA) tool (Ken Blanchard, G. Biddle, 1996) is administered to SRNAs (N=40) and CRNAs (N=40) at three medical facilities and at the University. The 12-question tool measures self-perception on three aspects of leadership style (effectiveness). The Rhodes Inventory of Nausea Vomiting and Retching (RINVR) was used to measure the degree of PONV. Results revealed that there was no significant difference between the three groups. However, chi-squared analysis revealed that participants with a history of PONV had a higher incidence of PONV on the forty-eight hour reading. There was no significant difference between the groups based on gender, type of surgery, intraoperative medications or home medications.

Conclusion: Continued economic pressures combined with remarkable advances in technology have empowered the successful growth of outpatient surgeries. Studies indicate that stimulation of the Nei-Kuan P-6 point with an acupressure wristband is an effective treatment for PONV in patients undergoing outpatient ophthalmic surgeries, however, we were unable to validate this claim. Future studies and analysis are needed to adequately assess this treatment method.

A46
Leadership styles among student registered nurse anesthetists (SRNAs) and certified registered nurse anesthetists (CRNAs)
Katarina Almskog, RN, BSN; Gilberto A. Soto, RN, BSN, RRT; Jeffrey Groom, CRNA, MS, ARNP
Florida International University, North Miami, Florida

Introduction: The purpose of this study is to describe situational leadership styles and their effectiveness as applied to specific situations involving SRNAs and CRNAs. There is well-documented literature on the national anesthesia provider shortage, including CRNAs as well as overall nursing shortage. Previous studies show that overall improvement in job satisfaction is often related to effective leadership and overall improves retention of currently practicing nurses and recruitment of new ones.

Methods: The Leader Effectiveness Adaptability (LEA) tool (Ken Blanchard, G. Biddle, 1996) is administered to SRNAs (N=40) and CRNAs (N=40) at three medical facilities and at the University. The 12-question tool measures self-perception on three aspects of leadership style (effectiveness). The Rhodes Inventory of Nausea Vomiting and Retching (RINVR) was used to measure the degree of PONV. Results revealed that there was no significant difference between the three groups. However, chi-squared analysis revealed that participants with a history of PONV had a higher incidence of PONV on the forty-eight hour reading. There was no significant difference between the groups based on gender, type of surgery, intraoperative medications or home medications.

Conclusion: Continued economic pressures combined with remarkable advances in technology have empowered the successful growth of outpatient surgeries. Studies indicate that stimulation of the Nei-Kuan P-6 point with an acupressure wristband is an effective treatment for PONV in patients undergoing outpatient ophthalmic surgeries, however, we were unable to validate this claim. Future studies and analysis are needed to adequately assess this treatment method.
that younger nurse anesthetists and SRNAs scored higher on the overall leader effectiveness than normative reference groups.

**Conclusion:** It is hypothesized that nurse anesthetists utilize leadership styles that promote job satisfaction and retention. Replication of the study utilizing a larger sample size in a different geographical location will attempt to validate the original obtained results.

**A47**

**Efficacy of ketorolac: Preoperative versus intraoperative administration**

Bruce A. Herr Jr, RN, BSN; Stephanie L. Grega, RN, BSN
Wayne State University, Detroit, Michigan

**Introduction:** Delays in discharge following outpatient surgery are costly occurrences. Uncontrolled postoperative pain continues to be identified as a common cause of prolonged recovery time. Patients cannot be discharged from the hospital until their pain is controlled. If narcotics are administered to control postoperative pain, this may also contribute to an increase in length of hospitalization. Non-steroidal anti-inflammatory drugs (NSAIDs) have demonstrated the ability to reduce pain and use of narcotics. The optimal point in surgery to administer these drugs has not been demonstrated. The purpose of this study is to evaluate time of administration of NSAIDs and the correlation between postoperative pain and narcotic usage in the recovery phase.

**Methods:** Randomized convenience samples of female patients undergoing laparoscopic gynecological surgery are placed in one of two groups. The first group receives ketorolac, 30 mg IV, prior to leaving the preoperative setting for OR. The second group receives ketorolac, 30 mg intraoperatively, upon instrument removal. In the recovery room, pain assessment with the visual analog scale (VAS) is completed upon arrival, thirty minutes postoperatively, and upon meeting discharge criteria. The results (pain scores, rescue pain medication, and time in recovery) will be compared for significance.

**Results:** Currently 27 patients are enrolled. Preliminary Mann-Whitney and ANOVA show significance in VAS scores upon admission to the PACU between the groups. Group A VAS mean 1.08, Group B VAS mean 3.5.

**Conclusion:** Research will continue until the 74 patients are obtained in order to properly test for significance.

**A48**

**The life, trial and aftermath of nurse anesthetist, Dagmar Nelson**

Ronald L. Van Nest, CRNA, MA

Georgetown University, School of Nursing Nurse Anesthesia Program, Washington, DC

**Introduction:** How did the history of medicine, of nursing, and of women in American society join with the political and economic events of the early twentieth century to have a confluent impact on the life and trial of nurse anesthetist, Dagmar Nelson? Born in 1892, Dagmar spent her young adulthood in St. Paul and Rochester, Minn, where she graduated from Nursing and Anesthesia Schools. She matured during the "Roaring Twenties" and then endured during the Great Depression. In 1932 an injunction was filed against her for practicing medicine without a license.

**Methods:** This is an ongoing multi-year historical research project. Data collection is being done at libraries and archives around the country and on the Internet. Primary records are being sought. Particular sources include: Library of Congress; National Archives; National Library of Medicine; Los Angeles County; Law libraries; St. Vincent's Medical Center, Los Angeles; St. Paul, Minn; Mayo Clinic, Rochester, Minn; Olmstead County Historical Society, Rochester, Minn; and American Association of Nurse Anesthetists.

**Results:** The court ruled in her favor, as did the California Supreme Court, on appeal. An argument used in the dismissal was that she was not practicing medicine because she was supervised by the physician surgeon. The California Supreme Court ruling was a landmark event in the history of nurse anesthesia.

**Conclusions:** Had Dagmar lost her case the practice of nurse anesthesia may not exist today. However, having won her case by the argument that she was supervised by the operating physician, not that she was competently trained and experienced, enhanced a problem that has lingered to this day.

**A49**

**An investigational survey of the Mayo Nurse Anesthesia Program alumni and the factors influencing their employment decisions**

Jeannie C. Mattson, RN, BSN; Shannon R. Monosmith, RN, BSN; Karla M. Peterson, RN, BSN; Mary E Shirk Marienau, CRNA, MS; Beth Elliott, MD

Mayo Clinic College of Medicine, School of Health Sciences, Master of Nurse Anesthesia Program, Rochester, Minnesota

**Introduction:** An emerging issue of the 1990s and the new millennium was the growing shortage of generic and advanced practice registered nurses, including Certified Registered Nurse Anesthetists (CRNAs). Mayo Medical Center experiences the loss of many of its graduating nurse anesthesia students to other institutions...
A50

Instituting guidelines: Their effect on anesthesia practice
Brooke L. Klein, RN, BSN; Barbara A. Eland, RN, BSN; Joseph A. Ricci III, RN, BSN; Paula A. Craigo, MD; Mary E. Marienau, CRNA, MS
Mayo Clinic Rochester, Minnesota

Introduction: With the increasing national attention on health care costs, anesthesia professionals must apply therapy in a rational manner. Although newer and more expensive drugs have been shown to be effective, it is unclear what constitutes the best strategy for prevention of PONV (Hill, Lubarsky, Phillips-Bute, Fortney, Creed, Glass, and Gan, 2000). Beginning April 10, 2003, the preoperative evaluation form (CDM) at the Mayo Clinic Rochester incorporated a list of patient and surgical risk factors for PONV that stratified patients into low, medium, and high-risk groups. Antiemetic prophylaxis regimens based on these risk factors were suggested. The impact of these anti-emetic guidelines on anesthesia practice needed to be evaluated.

Methods: Via a retrospective chart review, we studied two groups (one prior to guideline implementation, 141 patients, and one after, 141 patients) of female inpatients, ages 18-50, having undergone laparotomies or major gynecological surgeries. Patients who received steroid preparation perioperatively due to medical diagnoses were excluded. We examined the use of prophylactic antiemetics in each group, noting the specific drug, dose received, and time in the surgical experience it was received. We also noted whether the PONV CDM guidelines on these patients were completed by the anesthesia professional preoperatively. Only patients who gave research authorization at Mayo Clinic Rochester were studied.

Results: An increase in usage of antiemetics from 85% (a rate found in pilot data) to 95%; a 10% increase.

Conclusion: The guidelines are useful in tailoring care to prevent PONV in higher risk groups.

A51

Survey of determining factors for prospective nurse anesthesia students when choosing a school of nurse anesthesia
Julie Climie, RN, BAS, CCRN; April L. Hohe, RN, BSN; Jennifer J. Lara, RN, BS, BSN; Cheryl Hopkins, CRNA, MS; Lynn L. Lebeck, CRNA, DNSc
University of Michigan-Flint/Hurley Medical Center Anesthesia Program, Flint, Michigan

Introduction: There is minimal data regarding determining factors used by prospective students when choosing a nurse anesthesia program. This study attempted to elicit this type of information. Nurse anesthesia programs are very costly to institutions. By knowing what students look for when choosing a specific program, it may be possible for a program to utilize this information and increase recruitment and retention of students. The purpose of this study was to determine the primary factors used when choosing a school of nurse anesthesia. Factors examined included, but were not limited to: type of degree obtained, cost, geographical location, reputation of affiliated university, and duration of program.

Methods: Using the American Association of Nurse Anesthetists (AANA) database of 6,000 students and recent graduates, simple random sampling was used to select 1,000 subjects. Inclusion criteria included current students and CRNAs that have graduated
within the past two years. A survey consisting of 15 questions was sent to all subjects. The survey consisted of 2 demographic questions, and 13 questions using Likert scale responses regarding the subjects’ perceived importance of specific factors.

**Results:** With a 47% return rate, the primary determining factor was geographical location of the anesthesia program. Other prominent determining factors included geographical location of clinical sites, and the availability of financial aid. The least important deciding factors were the type of degree offered by the program.

**Conclusions:** Location of the anesthesia school is significantly most important to prospective students when choosing a school of anesthesia and had little to do with the type of degree offered.

---

**A52**

A correlational study of anesthesia student stress levels and their experiences

Andrew Berdasono, RN, BSN; Steve Sulewski, RN, BSN
Wayne State University School of Nurse Anesthesia, Detroit, Michigan

**Introduction:** Nurse anesthesia education is associated with many stressful factors. Research has shown that mild stress can promote learning by increasing focus, but severe stress can inhibit learning. If stress and anxiety can negatively affect learning, then measures to decrease stress might provide for a better education and lower attrition. The purpose of this study is to determine if there is an association between prior nursing experience, perceived stress and vital sign changes measured during induction of a general anesthetic in first-year nurse anesthesia students. The information obtained from this study will be used to develop strategies to decrease anxiety in future classes.

**Methods:** A convenience sample consisting of first-year students in the Wayne State University School of Nurse Anesthesia were enrolled in the study. Demographic data including age, gender, years of nursing experience and number of anesthetic inductions performed was obtained. Baseline vital signs, including heart rate, blood pressure and perceived stress levels were obtained in a relaxed setting. These measurements were taken again during the induction period of two general anesthetics at Detroit Receiving Hospital on a regularly scheduled clinical day. Data analysis will consist of descriptive statistics. Non-parametric correlations between student experience (years of ICU nursing experience and number of anesthetic inductions) and degree of anxiety (perceived stress score and change in vital signs from baseline) will be determined. Descriptive and inferential statistics were used for analysis. A p value of <0.05 was considered significant.

**Results:** No significant differences were noted with respect to demographic variables. There were significant increases in induction vital signs (heart rate and mean arterial pressure) when compared to baseline vital signs. There was a positive correlation between age and baseline perceived stress levels, although there was no correlation between age and induction stress levels. There was no correlation between student experiences (years of ICU nursing experience and number of anesthetic inductions) and changes of vital signs from baseline.

**Conclusions:** There is a significant increase in anesthesia student vital signs measured at induction compared to baseline regardless of their age, sex, or level of experience.

---

**A53**

Perceptions of US Army Certified Registered Nurse Anesthetists relating to retention in the US Army

CPT Michael Thomas, RN, MA, BSN; CPT Jeremy Jones, RN, BSN, AN
US Army Graduate Program in Anesthesia Nursing, University of Texas at Houston Health Science Center, Houston, Texas

**Introduction:** The study’s purpose was to describe perceptions of active duty US Army Certified Registered Nurse Anesthetists (CRNAs) (N=176) relating to retention in the military and to examine factors that predict retention. The dependent variable was retention.

**Methods:** The independent variables were divided into satisfaction and dissatisfaction factors. The Minnesota Satisfaction Questionnaire (MSQ), with a researcher-developed demographics section, was used. The research questions were: are there statistically significant differences between “stayers” and “leavers” in relation to satisfaction factors; are there statistically significant differences between “stayers” and “leavers” in relation to dissatisfaction factors; and what factors are predictive of retention of CRNAs in the US Army? Independent t-test was calculated for the two groups. To predict retention, multiple regression analysis was used.

**Results:** No significant statistical differences were found (p>0.05). In predicting retention, two factors were statistically significant at the p<0.01 level: company policies and recognition. A posthoc power analysis was performed.

**Conclusion:** The difference between those wanting to retire from the Army and those planning to retire from...
the Army (17.2%) is the target population for the Army with regard to maintaining its manpower strengths.

A54
The effects of fatigue on performance of anesthesia providers in a simulator setting
LCDR C. Cooper, RN, BSN; LT R. Nations, RN, BSN; LT L. Rhodes, RN, BSN; LT J. Volk, RN, BSN; LCDR J. F. Burkard, CRNA, DNSc; CDR J. Pellegrini, CRNA, DNSc
Navy Nurse Corps Anesthesia Program, San Diego, California

Introduction: This study proposed to correlate the effects of fatigue on anesthesia provider performance in response to a simulated anesthetic emergency.

Methods: A sample population of 62 anesthesia providers was recruited. This sample consisted of staff anesthesiologists and Certified Registered Nurse Anesthetists (CRNAs) as well as resident physicians and nurse anesthesia students. Subjects were scheduled for testing in the simulator either the morning after a night of in-hospital call, or the morning of a regular workday. The simulator scenario exposed all subjects to a standardized induction using a COPA device on a healthy ASA I patient. A simulated laryngospasm occurred to all subjects, at approximately the 30-minute mark, with the accuracy and timing of interventions scored according to the ASA Difficult Airway Algorithm. The entire process was videotaped, response times measured, and interventions scored by an independent “expert” and one investigator. Scoring terminated when participants secured the airway with an endotracheal tube. Data analysis is accomplished after scoring of all subjects is completed. Subjects are defined as fatigued or non-fatigued according to VAS-F score. An unpaired t-test was done to determine if variance exists in the responses of fatigued versus non-fatigued subjects. Cronbach coefficient $\alpha$ was used to determine the internal consistency of individual test items, with a coefficient greater than 0.6 considered adequate for internal consistency. Chi-square analysis evaluated demographic data.

Results: Of the 62 providers tested, 10 were fatigued and 51 were non-fatigued. The results showed a significant difference in the reaction time to recognition of laryngospasm and time to administration of succinylcholine in the fatigued group versus the non-fatigued group.

Conclusions: There is a clear correlation between the reaction time of fatigued versus non-fatigued providers. Further studies should be done focusing on the clinical significance of fatigue.

A55
Ohio CRNA job satisfaction
Jamie L. Nash, RN, BSN; Barbara C. Gray, RN, BSN
Wayne State University, Detroit, Michigan

A shortage of anesthesia providers has become increasingly evident in recent years. Estimates predict that by 2010 the supply will fill just slightly over half of the available positions. The purpose of this study was to assess the current level of satisfaction of CRNAs in Ohio. The data was analyzed for factors that enhance job satisfaction. Findings will be distributed to Ohio hospitals and professional organizations to assist in developing strategies to recruit and retain CRNAs for employment in Ohio.

Methods: A questionnaire was distributed to CRNAs throughout the state of Ohio via professional meetings and mailings. Demographic data was obtained, and job satisfaction was measured using a Likert scale. An open-ended question provided qualitative data regarding what factors would enhance job satisfaction.

Results: A total of 280 surveys were mailed with a 50% response rate. The most frequent factor for initial employment attraction was location (38%), followed by scope of practice (17.9%) and work schedule (14%) respectively. When comparing CRNAs who are satisfied with their current employment to those who are not, we found that pay and morale were the top two factors that correlated with job satisfaction. In response to variables defining the “ideal job,” the participants rated vacation time, pay scale and retirement benefits as the top three factors. The majority of people who responded to the final open ended question stated that improving the pay scale is the one thing they would change to improve their current level of job satisfaction.

Conclusion: Overall, most CRNAs in Ohio are satisfied with their current employment. Many of the CRNAs responding to this survey have greater than 21 years of practice in their profession (30%). When this group retires, there may be an increased need for anesthetists in the state. To lessen this possibility it may be worthwhile to improve current pay scales and morale within departments to aid in recruitment and retention of CRNAs.

A56
A prospective educational research study on anesthesia machine fault detection
Eric R. Larson, RN, BSN; Brian D. Ogren, RN, BSN; Dean D. Severson, RN, BSN; Sarah A. Wood, RN, BSN; Mary E. Shirk Marienau, CRNA, MS; Gregory A. Nuttall, MD

A shortage of anesthesia providers has become increasingly evident in recent years. Estimates predict that by 2010 the supply will fill just slightly over half of the available positions. The purpose of this study was to assess the current level of satisfaction of CRNAs in Ohio. The data was analyzed for factors that enhance job satisfaction. Findings will be distributed to Ohio hospitals and professional organizations to assist in developing strategies to recruit and retain CRNAs for employment in Ohio.

Methods: A questionnaire was distributed to CRNAs throughout the state of Ohio via professional meetings and mailings. Demographic data was obtained, and job satisfaction was measured using a Likert scale. An open-ended question provided qualitative data regarding what factors would enhance job satisfaction.

Results: A total of 280 surveys were mailed with a 50% response rate. The most frequent factor for initial employment attraction was location (38%), followed by scope of practice (17.9%) and work schedule (14%) respectively. When comparing CRNAs who are satisfied with their current employment to those who are not, we found that pay and morale were the top two factors that correlated with job satisfaction. In response to variables defining the “ideal job,” the participants rated vacation time, pay scale and retirement benefits as the top three factors. The majority of people who responded to the final open ended question stated that improving the pay scale is the one thing they would change to improve their current level of job satisfaction.

Conclusion: Overall, most CRNAs in Ohio are satisfied with their current employment. Many of the CRNAs responding to this survey have greater than 21 years of practice in their profession (30%). When this group retires, there may be an increased need for anesthetists in the state. To lessen this possibility it may be worthwhile to improve current pay scales and morale within departments to aid in recruitment and retention of CRNAs.
Introduction: A literature review of the past ten years found no studies related to the detection of anesthesia machine errors by anesthesia providers. This prospective educational research study on anesthesia machine fault detection utilized practical errors that should be detected using a standard checklist whether that be AANA, FDA, or manufacturer. The study focused on a CRNA populous alone and compared three levels of anesthesia experience.

Methods: A prospective educational research study was formatted. An anesthesia machine was altered to create five faults. The faults included a leak in a water trap that required pressure testing, a sticky expiration valve that required a trial ventilator test, an empty oxygen cylinder, a dead battery, and the removal of the N2O/O2 fail-safe chain that prevents a hypoxic mixture. Subjects were given ten minutes to detect as many faults as they could find following their normal pre-anesthetic machine checks. Subjects were categorized into three different groups based on experience, 0-2 years, 2-7 years, and >7 years.

Results: Volunteer participants from various practice settings across the United States were tested. Of the 87 subjects tested, 29 had 0-2 years, 23 had 2-7 years, and 35 had >7 years of CRNA experience. In comparing the groups’ ability to detect errors, the 0-2 group averaged 3.68 errors detected, the 2-7 year group averaged 3.60 detected, whereas the >7 group averaged 2.29 errors detected.

Conclusion: The outcomes suggest a decreased ability to detect anesthesia machine errors by those with >7 years of anesthesia experience. Those subjects with 0-7 years of experience appeared to follow the pre-anesthetic checklists more closely. Continued education may be necessary in assuring anesthesia errors are detected.

A57

Effects of fiberoptic vs laryngoscopic intubation as measured by the bispectral index (BIS)

LT Kelly Miner, RN, BSN; LT William Covill, RN, BSN; LT Eileen Herrera, RN, BSN; LCDR Joseph Burkard, CRNA, DNSc; CDR Joseph Pellegrini CRNA, DNSc Navy Nurse Corps Anesthesia Program, Bethesda, Maryland

Introduction: Fiberoptic and rigid blade laryngoscopy are stimulating to the patient but may differ in degree and timing of stimulation. The primary purpose of this study was to determine if a difference in the degree and the timing of the stimulation, as measured by a BIS monitor, would be different between groups of patients intubated using a fiberoptic or rigid blade laryngoscopy technique.

Methods: A sample population of 76 patients was enrolled in the study. Exclusion criteria included a Mallampati class of 3 or higher, obesity, use of beta blockers within 24 hours of surgery, psychogenic illness, and the inability of the provider to complete intubation within 200 seconds. The patients were induced using a standardized protocol that utilized propofol, muscle relaxant, opioid, and inhalation agent. Intubation was performed by either fiberoptic or rigid blade technique. BIS, heart rate, and blood pressure values were recorded. Recall was assessed by a 24 hour postoperative follow-up and questioning to determine if patients had recall of a key phrase spoken to them after anesthesia was induced. Data analysis was accomplished using inferential and descriptive values. A p-value of <0.05 was considered significant.

Results: Of the 76 patients observed those who received fiberoptic placement of the ETT displayed significantly increased hemodynamic and BIS changes compared to the rigid blade group. None of the patients tested experienced recall and all evaluated their anesthesia experience as excellent.

Conclusions: Increased hemodynamic response to fiberoptic placement of an ETT may be due to increased time required to secure placement. It is possible that the rapid redistribution of propofol leaves the patient vulnerable to stimulation as time progresses. A well-timed rigid blade laryngoscopic placement of an ETT seems to present little additional stimulation. Hemodynamic variables were only slightly increased during direct laryngoscopy.
Methods: This web-based, exploratory study used demographic and Likert-scale questions to address factors of job satisfaction and turnover. All active duty Air Force anesthesiologists were invited to participate with n =12 responses. Spearman’s rank order correlation coefficient was used for correlation amongst demographic and job satisfaction factors and anticipated turnover. Regression analysis would be performed on those factors significantly related to anticipated turnover.

Results: Five significant relationships were found between factors. Only one factor was found to be significantly related to anticipated turnover and therefore a regression analysis was not performed. Interpersonal relations (which includes group cohesion, team support, and team respect) was found to have a positive relationship to anticipated turnover (r = .766; p = .004).

Conclusion: This study contradicts the earlier study of Navy anesthesia providers by Cowan (1995). These findings also differ from Stamps’ results (1997) on Air Force nurse anesthetists. Further research is needed to clarify the relationship between Air Force anesthesiologist job satisfaction and turnover.

DISCLAIMER: The views expressed in these abstracts are those of the authors and do not reflect the official policy or position of the Departments of the Air Force, Army, Navy, and Public Health Service; the Department of Defense; or the US Government.