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INSIDE...

PG. 1
Letter from the Editor

PG. 2
IANA Lobbyist Report

PG. 4
From the President + Updates on the Sunset of the Nurse Practice Act

PG. 5
2016-2017 IANA Election Results + Rush University Program Update

PG. 6
What is the Effect of Phenylephrine on Cerebral Hemodynamics in Anesthetized Patients in the Sitting Position?

PG. 10
Rosalind Franklin University of Medicine and Science Program Update

PG. 11
CRNAs in the VA: An Editorial

PG. 12
2016 AANA Mid-Year Assembly

IANA FALL CONFERENCE

October 1-2, 2016

Chicago, Illinois

Calendar Update 2016-17

September 9-13, 2016
AANA Annual Congress
Washington, D.C.

October 1-2, 2016
IANA Fall Conference
Northwestern Memorial Hospital
Chicago, IL

September 24-25
AANA Nerve Block Workshop
Park Ridge, IL

November 11-13
AANA Fall Assembly - Leadership Academy
Rosemont, IL

April 8-12
AANA Mid-Year Assembly
Washington, D.C.

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On the cover: Recent graduates from Rosalind Franklin University of Medicine and Science, along with the Assistant Program Director, Pete Kallio. They are all practicing at the Zablocki VA. Left to right: Deborah Meyer, CRNA, DNP; Emily Allred, CRNA, DNP; Kerri Coons, CRNA, MS; Casey Weis, CRNA, MS; Chris Uecker, CRNA, MS; Peter Kallio, CRNA, DNP

LETTER FROM THE EDITOR

What an exciting time for change in the realm of health care in general and nurse anesthesia care in particular! For those of you subscribing to and following AANAConnect, you have read about so many passionate CRNAs networking in positive and productive ways to advance patient safety and promote the efficient practice of nurse anesthesia all over the country. I have read that there are innovative public relations campaigns afoot to shine a bright light on the important role of CRNAs in every facet of health care delivery. We do not want to be the best kept secret in health care anymore.

This edition of the Journal of the IANA highlights the voice of one VA CRNA, but I expect that she speaks for many of them around the state and around the country. Additionally, we are bringing you an excellent review of the current literature that will ask you to reconsider your treatment of blood pressure in the sitting position. The implementation of an evidence based approach to anesthesia management in this information age takes a tremendous amount of effort to critically review the existing literature on practices that we have traditionally held without the requisite scrutiny. Practitioners are encouraged to take the time and dive into a similar project in their own facility.

Thank you to the many contributors to this edition of the journal, both students and experienced practitioners. I look forward to submissions for the next Journal of the IANA as we grow this publication.

Best Regards,

Jennifer Greenwood, CRNA, Ph.D

Your Illinois Association on Nurse Anesthetists
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LETTERS TO THE EDITOR

We want to hear from you! Please submit any comments, questions or letters to the editor at:

ianajournal@gmail.com

We are also looking for photo submissions for our future covers! Please submit high quality pictures of Illinois CRNAs or students in action.

As required by section 6033(e) of the Internal Revenue Code, we are required to inform you that $58.13 (or 25%) of your state membership dues are allocated toward expenses incurred by the Illinois Association of Nurse Anesthetists for state lobbying activities. This amount is not deductible for federal income tax purposes. All IANA members are also members of the AANA.

IANA Lobbyist Report

By Roger H. Bickel
IANA Lobbyist & Legislative Counsel Law firm of Freeborn & Peters LLP

Illinois General Assembly 2016 Spring Session Update

Greetings from our State Capitol to all of our CRNAs and students. Also, a special recognition to those among our association membership deployed to active duty in our Armed Forces – thank each of you for your service. The Illinois General Assembly convened its scheduled five-month Spring Session in mid-January amid two new significant variables: First, as widely reported, the Legislature and Governor had been unable to reach agreement on a new Fiscal Year 2016 operating budget. Second, unlike 2015, this fall will be the General Election where every House seat is up for re-election together with two-thirds of the Senate seats. As a consequence of the growing partisan divide over spending priorities and proposed business reforms, cautious lawmakers showed little appetite this Spring Session for taking on contentious issues between the licensed professions, including CRNAs.

Popular Senate President Pro Tempore Don Harmon (Oak Park) meets with CRNAs in his Capitol leadership office to discuss our CRNA legislative priorities.

Why you should get involved in your IANA Government Relations Committee…

DO YOU KNOW WHAT IS GOING ON UNDERNEATH THIS DOME?

Every year, there are literally thousands of new legislative proposals introduced by the General Assembly, many of which directly impact CRNAs. Let's briefly look at the 99th General Assembly strictly by the numbers.

Number of bills referencing "sedation" 36
Number of bills referencing "anesthetist" 49
Number of bills referencing "anesthesia" 65
Number of bills referencing "pain" 173
Number of bills and amendments referencing "nurse" 1367

JOIN OUR EFFORTS:

Do you care about potential IL licensure of AAs? IANA Members are encouraged to contact our President, Kent Fair, CRNA, at ianapresident@gmail.com to help our association educate your local legislators on our priorities and challenges. Also remember that your PAC donations are essential to supporting Members of the General Assembly that have stood with CRNAs in our effort to promote better patient care, safety, and healthcare access. Contact ILCRNA PAC Chair Christine Salvator, CRNA, MSN, APN at ilcrnapac@gmail.com with questions.

What were the major developments from 2016 Spring Session that a CRNA must know about?

How does the Overtime Session affect CRNA licensure issues and our scope of practice?

The Illinois General Assembly adjourned on May 31st at midnight without reaching agreement on either an FY 2016 or FY 2017 operating budget.

It is important to note that after May 31st, no bill can pass without being approved by a super-majority of state lawmakers versus a simple majority.

Brief takeaways from this Spring Session:

- ✓ The Illinois Society of Anesthesiologists bid (HB 3205) to enact the new licensure of Anesthesia Assistants did not advance this Spring and was held by the House – it is to be reconsidered in 2017.
- ✓ Efforts to finally approve the Nurse Licensure Compact lead by Senator Pam Althoff succeeded in the Senate, but met with resistance from organized labor and failed to advance in the House – the bill is dead for 2016.
- ✓ SB 2925, a proposal to deny licensure or renewal to CRNAs and other professionals where debts were owed to Cook County was blocked by IANA and a coalition of stakeholders - the bill is dead for 2016.
- ✓ Legislation (SB 2236) denying licensure for CRNAs and like professionals whom have defaulted on student loans remains unresolved at this date and may be reconsidered this summer. Recent amendments have stricken the language we sought removed impacting CRNAs.
- ✓ Senate Bill 460 which amends the Nurse Practice Act and provisions impacting APN licensure and national certification passed both chambers and was signed into law on May 27th. The bill, which was signed into law on May 27th, provides:
  - Amends the Nurse Practice Act. Provides that the requirement that an advanced practice nurse show proof of continued, current national certification in the specialty applies on and after May 30, 2020.
  - Provides that an advanced practice nurse who does not meet the educational requirements necessary to obtain national certification but has continuously held an unencumbered license under the Act since 2001 shall not be required to show proof of national certification in the specialty to renew his or her advanced practice nurse license.
  - Allows the Department of Financial and Professional Regulation to renew the license of an advanced practice nurse who applies for renewal of his or her license on or before May 30, 2016 and is unable to provide proof of continued, current national certification in the specialty but complies with all other renewal requirements.
- ✓ Our March 1st IANA Lobby Day was heralded by IANA Leadership as the most heavily attended, best coordinated and very productive meetings in the past decade. IANA and its attendees were formally recognized on the Floor of both the Illinois House and Senate during Session and meetings were coordinated with every Member of the licensure committees. We were particularly grateful for House Health Care Licenses Committee Chairman Mike Zalewski (Riverside) for taking the time to arrange a thirty minute private meeting with our 50 CRNAs and students visiting the State Capitol. He along with numerous legislative leaders expressed how impressed they were with the incredible participation by our Members.

House Health Care Licenses Committee Chairman Mike Zalewski (center) and IANA President Kent Fair (to his left), take a moment for a picture with the IANA Members and students assembled for LOBBY DAY on March 1st.

From the President's Desk

Kent Fair, CRNA
Marion Healthcare Ambulatory Surgery Center

We have been very busy this year in support of our members. The IANA is a member of the Illinois Coalition of Nursing Organizations, which is the group is working toward new language for the Nurse Practice Act (NPA). The Nurse Practice Act, which will sunset in 2018, governs the practice of all nursing, including Advanced Practice Nurses, within the state. The new law with amended language will be prepared and ready to be introduced by the end of this year. Micah Roderick, Executive Director of the IANA, and I have met with the coalition several times, and we are meeting in August to finalize the language with input from our member advisory committee. We expect there will be much resistance to the changes we are proposing concerning CRNA practice. Passage of the Act with favorable language will require a great deal of effort from our Government Relations team and a vigorous grassroots effort from all of our members. Updates concerning the NPA sunset will be coming to you via email along the way as we progress.

Also on the horizon, we expect the reintroduction of the Anesthesiologist Assistants (AA) bill, which was introduced two years ago by the ISA. This bill, if passed, would affect every CRNA practice in Illinois. If you are not currently aware of what AA's are and how they will impact you, I urge you to check the IANA website for more information. Also the AANA has much information under state Government Relations tab to help you stay informed about what the IANA is working on in Springfield. The IANA board continues to work to protect and preserve your scope of practice. I encourage you read the article by Roger Bickel, our attorney and lobbyist, included in the Journal. Take a few minutes to inform yourselves on these issues, as they are paramount to your practice.

Our popular Illinois Fall Meeting will be back in downtown Chicago at Northwestern this year. We are planning a very exciting meeting, and I hope you will attend to take advantage of earning several CEU's and enjoying the city of Chicago. Hope to see you there.

Kent Fair

Kent Fair, CRNA
President IANA

Looking Ahead

IANA & The Upcoming Regulatory Sunset Process of the Nurse Practice Act

Every ten years, all professional acts are set for review by the General Assembly as mandated by the Illinois Regulatory Sunset Act (5 ILCS 80). For the Nurse Practice Act, that review will be undertaken in 2017 coinciding with the Act's current expiration date of December 31, 2017. The Governor's Office of Management and Budget is required to study the performance of each regulatory agency and Act scheduled for termination and make recommendations of changes or continuation.

The Illinois Coalition of Nursing Organizations (ICNO) will be spearheading the sunset review process with open summits to be scheduled statewide in 2016 for solicitation of feedback and suggestions for improving upon the Illinois Nurse Practice Act.

Traditionally, the sunset reviews result in the most far-reaching amendments to our professional regulation and scope of practice. The IANA, a key member of the Illinois Coalition of Nursing Organizations, is poised to play a critical and active role in that process going forward.

Look for further details and announcements regarding this very important process on your IANA website Homepage. Your participation in the process is strongly encouraged. Please visit our website to contact the Government Relations Committee Chair, Pam Schwartz, CRNA.

2016-2017 IANA ELECTION RESULTS

CONGRATULATIONS TO THOSE WHOSE TERMS WILL BEGIN IN OCTOBER:

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Rush University College of Nursing

Nurse Anesthesia Program Update

Judith Wiley, DNP, CRNA, Associate Program Director

In December of 2015 twenty-four students became the first graduates from our entry level DNP program. They joined over forty other CRNAs who have completed DNP or PhD degrees at Rush. The program instituted the Alice Magaw Award which is given to the student or pair of students who completed an outstanding DNP project each year. The award is named for Alice Magaw a nurse anesthetist who pioneered anesthesia outcomes research. The winners in 2015 were Dwight Farmer DNP, CRNA and Mahalia Vanderpuije DNP, CRNA for their project "Incorporation of a Neuroanesthesia Handoff Tool into the University of Chicago Medical Center Electronic Health Record". This change was implemented in the summer of 2015 with the potential to be incorporated into the EHR for all University of Chicago Medical Center ICUs.

Also at the convocation ceremony graduate Renee Pederson DNP, CRNA was selected by the program faculty to receive the Agatha Hodgins Award which is given each year to the graduate who best personifies Ms. Hodgins' spirit of clinical and professional excellence. Additionally, each year the graduating class votes on a CRNA and an anesthesiologist who most contributed to their education. The 2015 winners are Amy Gawura MSN, CRNA and Parag Patel, MD.

During Nurses' Week 2016 two Rush nurse anesthesia students were selected to receive awards. Emily Lange RN, BSN won the Professional Nursing Staff Evidence Based Practice Research Grant. Ashley Holbrook RN, BSN was selected for a Professional Practice Award in the Relationships and Caring category.

In January of 2016, Rush students Aron Oakley RN, BSN and Joan Kircher RN, BSN organized a service project at the Chicago Food Bank to celebrate CRNA week. Students from three cohorts gathered twice to help pack and distribute food.

What is the Effect of Phenylephrine on Cerebral Hemodynamics in Anesthetized Patients in the Sitting Position?

Sandra L Larson PhD, CRNA, Erin Schmeling MS, CRNA, Lubov Byrum MS, CRNA
Rosalind Franklin University of Medicine and Science

Abstract

Research shows that the sitting position uniquely increases the risk of cerebral hypoperfusion in patients under general anesthesia, and this risk is enhanced in combination with anesthesia induced hypotension. Further, numerous case reports describe neurological deficits associated with general anesthesia in the sitting position. However, evidence-based anesthesia practice strategies promoting optimal cerebral perfusion are limited, especially in regard to vasopressor therapy.

A literature review was performed to synthesize best available evidence regarding the effects of the sitting position and phenylephrine on cerebral hemodynamics in patients under general anesthesia. The search was limited to publications from 2009 to 2014. Search terms included: sitting position, beach chair position, cerebral oxygen saturation, cerebral perfusion, cerebral oxygenation monitoring, and phenylephrine. Eight research studies were included in the analysis.

Our analysis showed that in patients under general anesthesia, the sitting position consistently decreased mean arterial pressure (MAP). Our analysis also showed that phenylephrine (PE) administration to treat anesthesia induced hypotension consistently (1) decreased rSO_2 despite a simultaneous increase in MAP; (2) consistently increased middle cerebral artery blood velocity (MCAv), which may indicate sympathetically mediated constriction of the cerebral vessel; and (3) frequently decreased cardiac output. The findings of the literature review suggest that more research is needed to clarify the effects of PE on cerebral hemodynamics, and to determine if it has potential to be a contributing factor for cerebral hypoperfusion.

Introduction

In 2007, the Anesthesia Patient Safety Foundation published a case study of a healthy 47-year-old female ndergoing shoulder surgery under general endotracheal anesthesia in the sitting position. Despite a seemingly uneventful intraoperative course, this patient suffered a severe brain injury.[1] This case report is not isolated, as several other case reports have been published describing neurological deficits associated with general anesthesia in the sitting position.[2-3] Subsequently, the ASA Closed Claims Project established a registry to investigate the mechanism of severe brain and spinal cord injury after shoulder surgery in the sitting position. The ASA stated, "the etiology of these catastrophic neurological injuries is unknown" and, "several theories speculate about the role of deliberate or permissive hypotension, cerebral perfusion in the beach chair position, dynamic vertebral artery stenosis or occlusion with rotation of the head, air emboli, or other factors."[4]

Research shows that the sitting position increases the risk of cerebral hypoperfusion in patients under general anesthesia, especially if there is associated hypotension[5-8]. It is also generally accepted that blood pressure measured at the brachial artery overestimates blood pressure at the Circle of Willis, for patients in the sitting position[9,10], and that cuff pressure measured in the calf further overestimates blood pressure at the Circle of Willis[11,12]. What is less understood is the effect of vasopressors on cerebral hemodynamics, and whether or not a normal MAP is a reliable measurement of adequate cerebral perfusion under general anesthesia. The purpose of our literature review was to synthesize research that helped primarily answer the following PICO question: What is the effect of phenylephrine on cerebral perfusion in adult patients under general anesthesia?

Methods

A literature search was performed using CINAHL, PubMed, Cochrane, and OVID search engines to investigate the effects of the sitting position and phenylephrine on cerebral hemodynamics in patients under general anesthesia. The search was limited to publications from 2009 to 2014. Search terms included: sitting position, beach chair position, cerebral oxygen saturation, cerebral perfusion, cerebral oxygenation monitoring, and phenylephrine. Abstracts generated from the search were reviewed to determine if they met inclusion criteria. Inclusion criteria were met when the study evaluated the effect of the sitting position on cerebral hemodynamics under a general anesthetic or evaluated the effect of phenylephrine on cerebral hemodynamics in patients under general anesthesia in the sitting position. All three authors used a standardized assessment tool to evaluate the methodological validity of the research that met inclusion criteria. Eight research studies were included in the final analysis.

Review of Literature

Sitting Position

Soeding et al.[9] investigated the effect of the sitting position on MAP and cerebral blood flow (CBF) during anesthesia for shoulder surgery. In this study, 42 patients without cardiovascular disease were given an interscalene block and randomly assigned to either sevoflurane general anesthesia or sedation. MAP was measured using intra arterial monitoring with the transducer placed at the level of the tragus. CBF was measured using Pulse Wave Doppler of the internal carotid artery on the non-operative side. MAP below 70 mmHg was immediately treated with metaraminol (500ug) and fluid loading (100-200 ml of 0.9% normal saline).

The researchers found that patients receiving general anesthesia experienced a significant decrease in mean arterial pressure (MAP) compared with patients receiving sedation when placed in the sitting position (34 $\pm$ 10 mmHg vs. 4 $\pm$ 2 mmHg; $p < 0.01$). In addition, patients receiving general anesthesia required significantly more vasopressor therapy compared with patients receiving sedation (17 vs. 2; $p < 0.01$). CBF was not significantly different between groups; however, this may reflect the effect of metaraminol to maintain MAP greater than 70 mmHg, and the effect of mild hypercapnia (46 $\pm$ 6 mmHg) in the patients under general anesthesia. Limitations of the research design are that it did not control for the effect of metaraminol and hypercapnia on CBF. Further, it did not evaluate CBF at MAPs < 70 mmHg, or the effect of phenylephrine on CBF.

Lee et al.[10] investigated the effects of sitting position and induced hypotension on regional cerebral oxygen saturation (rSO_2) in 28 healthy patients undergoing arthroscopic shoulder surgery under sevoflurane general anesthesia. MAP was measured using intra arterial monitoring with the transducer placed at the level of the tragus. Near infrared spectroscopy was used to measure rSO_2. $PaCO_2$ was maintained between 35-40 mm Hg using mechanical ventilation, and hypotension was achieved to a MAP between 60-65 mm Hg using an intravenous titration of remifentanyl and nitroglycerin.

The researchers found that patients experienced a statistically significant decrease in MAP and rSO_2 after sitting position was assumed compared with the supine position (74.8 +/-14.8 mmHg vs. 85.0 +/-16.1 mm Hg; $p < 0.05$; & 67.4% +/-4.9% vs. 74.0% +/-5.6%, $p < 0.05$ respectively). The reduction in rSO_2 may suggest that the sitting position decreases cerebral perfusion in the frontal cortex; however, it is important to note that with a MAP of 74.8 mm Hg, the absolute reduction in rSO^2 did not reach clinical significance. The researchers did find clinically significant declines in rSO_2 in two patients when MAP declined to 55 mm Hg in a healthy 41-year old female, and to less than 60 mm Hg in a 63-year old male with hypertension.

McCulloch et al.[11] investigated the effect of the sitting position and induced hypotension on middle cerebral artery blood velocity (MCAv), during desflurane general anesthesia in nineteen patients. Inclusion criteria were age greater than 55, known cardiovascular or cerebrovascular disease, and elective arthroscopic shoulder surgery in the sitting position. MAP was measured using non-invasive upper arm cuff, as well as intra arterial monitoring with the transducer placed at the level of the tragus. Induced hypotension was defined as a cuff systolic pressure of 90 mm Hg for patients not at increased risk for perioperative cardiovascular complications, and 100 to 120 mm Hg for patients at increased risk. MCAv was measured using transcranial Doppler.

The researchers found a significant difference between non-invasive upper arm cuff pressures and intra arterial pressure measured at the tragus (96/58 vs. 76/33; $p < 0.0001$). Researchers also found a significant decrease in MAP (47% $\pm$ 7%, $p<0.0001$) and MCAv (22% $\pm$ 7%, $p < 0.0001$) when the patient assumed the sitting position. In other words, a cuff pressure of 96/58 (brachial artery MAP of 70 mm Hg) resulted in a 22% reduction in cerebral artery blood velocity. This indicates incomplete maintenance of autoregulation in

patients under general anesthesia in the sitting position despite a MAP of 70 mm Hg at the brachial artery. However, evidence suggests that cerebral ischemia does not occur until velocity reduction approaches 50-60%, and therefore, this finding is not clinically significant. It is also important to note that these findings are specific to patients with vascular disease. When these findings are considered with the broader literature that shows considerable patient variability in the lower limits of autoregulation[12] and that shows anesthetic agents impair autoregulation, it becomes reasonable to conclude that MAP is not a precise or reliable method to ensure adequate cerebral perfusion across all patients.

Gillespie et al.[13] investigated the effect of hypotension on cerebral ischemia in 52 patients undergoing shoulder surgery in the sitting position. Patients received an interscalene block and general anesthesia, and a neurophysiologist assessed cerebral ischemia using continuous electroencephalographic (EEG). Systolic upper arm cuff pressure was targeted at 90-100 mmHg. CO_2 was not controlled or recorded. With the exception of one patient who required labetalol, hypotension was achieved using anesthetic technique and the sitting position. If the neurophysiologist detected cerebral ischemia, the anesthesia provider was notified and took measures to increase the systolic blood pressure until the EEG normalized.

The researchers found that in order to provide hypotensive anesthetic technique, patients experienced an overall reduction in baseline systolic pressure and MAP of 36% and 42% respectively. Ischemic changes on EEG occurred in 3 of the 52 patients and corresponded with a systolic pressure and MAP decline of 47% and 49% respectively, and with an absolute systolic arterial pressure of less than 90 mm Hg. Ischemia resolved when blood pressure was increased; however, the researchers did not indicate what technique was used to raise the pressure. In contrast, no ischemic changes occurred on EEG in 27 of the 30 patients with a systolic pressure less than 90 mm Hg. Once again, this speaks to the variability among patients for lower limits of autoregulation, and shows that 6% of patients in this sample did develop cerebral ischemia using a hypotensive anesthetic technique with an upper arm systolic pressure near 90 mm Hg. This situation becomes even more concerning when practitioners measure systolic pressure in the calf, and maintain it near 90 mm Hg. The findings in this relatively healthy population, also contradict current recommendations to maintain a patient's blood pressure within 20% of baseline as being overly restrictive.

Phenylephrine

Ogoh et al.[14] investigated the effect of phenylephrine on MAP, MCAv, CO, rSO_2, and internal carotid artery and internal jugular vein blood flow in eight, non-anesthetized, healthy males between the ages of 23-29. Subjects remained in the supine position throughout the phenylephrine infusion.

The researchers found that PE significantly decreased cerebral tissue oxygen saturation (rSO2) despite a significantly increased MAP ($p < 0.001$). PE also caused a significant increase in MCAv ($p = 0.038$), which may indicate that cerebral vessels constrict in response to PE. These findings support the theory that the decrease in rSO2 during phenylephrine infusion may reflect a physiologic change in the normal intracranial ratio of venous to arterial blood, which is typically 70-75% venous. Future research is needed to gain better understanding of how the administration of phenylephrine leads to a decrease in rSO2, and to determine if it reflects an actual decline in tissue oxygenation.

Soeding et al.[15] evaluated the effect of phenylephrine on rSO_2, MAP, CO, and MCAv in 34 patients undergoing elective shoulder arthroscopy in the sitting position. Patients were randomly assigned to a phenylephrine infusion at a mean rate of 1.5ug/kg/min, or a normal saline infusion group at an equal flow rate. All patients received an interscalene block preoperatively and were induced with 1mcg/kg of fentanyl, 1.5-2mg/kg of propofol, and 0.5mg/kg of atracurium. Endotracheal intubation was performed on all patients and an $ETCO_2$ was maintained between 35-40 mm Hg. General anesthesia was maintained with sevoflurane.

The researchers found baseline rSO_2 to be comparable in the saline and PE groups (68% vs. 66%; $p = 0.65$). Following induction of anesthesia, rSO_2 increased similarly in the saline and PE groups (74% vs. 73%, $p = 0.38$ & 79% vs. 77%, $p = 0.38$ respectively). Following the treatment infusions, the saline group showed no decline in rSO_2; however, the PE group showed a 10% decline in rSO_2 ($p = 0.02$) despite significantly lower MAPs in the saline group (77mm Hg $\pm$ 2 vs. 97mm Hg $\pm$ 2, $p < 0.001$). There was no statistically significant difference in cardiac output between the two groups during the infusions despite a significantly higher heart rate in the saline group (55 $\pm$ 3 vs. 44mm Hg $\pm$ 2, $p < 0.001$). In addition, the PE group showed a significant increase in MCAv ($p = 0.038$). Once the upright position was assumed, both groups showed similar declines in rSO_2 of 11-12%. The significantly lower rSO_2 and the significantly increased MCAv in the PE group may indicate

that cerebral vessels constrict in response to PE, which reduces arterial volume to the frontal cortex despite a simultaneous increase in the MAP and maintenance of CO. As such, this study may expose a fallacy that many anesthesia providers become victims to: The assumption that maintaining a normal MAP equates with maintaining normal cerebral perfusion and across all situations.

Meng et al.[16] evaluated the impact of PE administration on rSO2, CO, and cerebral blood volume (CBV) in anesthetized patients during hypocapnia ($ETCO_2$ = 24 mm Hg), normocapnia ($ETCO_2$ = 38 mm Hg), and hypercapnia ($ETCO_2$ = 52 mm Hg). Anesthetic technique was total intravenous anesthesia using a propofol-fentanyl combination for induction and a propofol-remifentanyl combination for maintenance. The sample included 11 male and three female, Physican Status 1-2, adult patients undergoing non-neurosurgical elective surgery.

The researchers found that PE caused a significant decrease in rSO2 in all three groups ($p < 0.01$). The decline was greatest in the hypocapnic group and lowest in the hypercapnic group. PE also caused a significant decrease in CO in all three groups ($p < 0.001$), and a significant decrease in CBV during hypocapnia with PE compared with hypocapnia without PE ($p < 0.01$). These findings highlight the importance of maintaining normal carbon dioxide levels during anesthesia in non-neurosurgical procedures, and raise the question of whether or not constriction of cerebral blood vessels and/or a reduced CO caused the reduction in CBV.

Meng et al.[17] next evaluated the unique effects of phenylephrine and ephedrine on rSO2, MAP, and CO in 33 Physical Status 1-3 patients who experienced anesthesia related hypotension at least 10 minutes following the maintenance phase of anesthesia using a propofol-remifentanyl technique. Relative hypotension was defined as at least a 20% decline from baseline MAP or a MAP < 60 mm Hg. Data were collected prior to incision, and all patients were intubated and ETCO was maintained between 35-40mm Hg. Patients were randomly assigned to a phenylephrine (100-200mcg) or ephedrine (5-20mg) treatment group.

The researchers found that PE caused a decrease in CO (-2.1L, $p < 0.001$) and a decrease in rSO_2 (-3%, $p < 0.01$) while simultaneously increasing MAP. Ephedrine increased cardiac output (+ 0.5L, $p > 0.05$) and rSO_2 (+1.9%, $p > 0.05$); however, this did not represent a statistically significant increase from the normal baseline. Changes in rSO_2 correlated with changes in CO (R^2 =.74; $p < 0.001$). Changes in rSO_2 did not correlate with changes in MAP.

Discussion

Our synthesis of the research findings showed that in patients under general anesthesia, the sitting position consistently decreased mean arterial pressure (MAP). Our synthesis also showed that PE administration to treat anesthesia induced hypotension consistently (1) decreased rSO_2 despite a simultaneous increase in MAP; (2) consistently increased MCAv, which may indicate sympathetically mediated constriction of the MCA; and (3) frequently decreased cardiac output. Other isolated findings of clinical significance identified by individual studies were that (1) changes in rSO_2 correlated with changes in CO (R^2 =.74, $p < 0.001$), and did not correlate with changes in MAP, in patients under general anesthesia[12]; (2) hypocapnia enhanced the PE reduction of CBV[11]; and (3) cerebral ischemia was evidenced on EEG in 3 of 30 anesthetized patients during a decline in systolic upper arm cuff pressure to < 90 mmHg while in the sitting position[7].

A key implication of this analysis is that research is critically needed to clarify the sympathetic effects of PE on cerebral hemodynamics, and to gain a better understanding of the clinical significance of PE's effect on reducing rSO2 values. There is considerable debate in the literature regarding the effect of phenylephrine (PE) on cerebral hemodynamics among physiologists. Cerebral vessels are richly innervated by sympathetic fibers, and the historical perspective that their influence was unimportant is now being reconsidered.[18] PE is a synthetic non-catecholamine that directly stimulates $alpha_1$ adrenergic receptors. Stimulation of $alpha_1$ receptors results in peripheral vasoconstriction and an increase in systemic blood pressure. For anesthesia providers, understanding the pharmacological effects of PE on cerebral hemodynamics, as well as its effect on CO are extremely significant to anesthesia practice given the frequency of its use to manage anesthesia induced hypotension. Pending further research, practitioners should be made aware of these findings and consider the use of ephedrine in lieu of PE to manage anesthetic induced hypotension because ephedrine has been shown to not cause a reduction in rSO_2.[17, 19] Practitioners also need to appreciate that the research shows that some patients will be at increased risk for cerebral ischemia if they allow systolic cuff pressures to be < 90 mm Hg in the sitting position.

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CRNAs in the VA System: An Editorial

Maureen A. Kawka, APN-CRNA, MS

I listened with great interest to the Town Hall phone call in early June hosted by AANA president Juan Quintana, which prominently featured the president of Association of VA Nurse Anesthetists (AVANA), Garrett Peterson. The conversation was lively and informative. One of the contributors stole my favorite line, but I will reiterate: "If you've seen one VA, then you've seen one VA." Because of this variability within the system, other VA nurse anesthetists in our state may have a very different idea of their practice in the VA system than I do, but I know without exception that the CRNAs are the backbone of the anesthesia departments at VA Hospitals. I also believe that out of all the issues facing CRNAs at this time in our practice, the Federal Register Proposed Rule for the full scope of independent practice for ALL APRNs is the most pressing and important one. With the sweeping changes in healthcare throughout the United States today, all CRNAs need to speak up for our rights to practice to the full scope of our training, competence, and education.

CRNAs at Hines VA. Left to right; Darrell Nemec, APRN-CRNA, DNP; (Kneeling) Gregg Cardin, APRN-CRNA, MS, Major US Army Reserves; Clayton Hagan, APRN-CRNA, MS, Major US Army Reserves; Maureen Kawka, APRN-CRNA, MS; Nancy Oberts, APRN-CRNA, MS; Steven Phipps, APRN-CRNA, DPN, Major US Army Reserved; Maria Davis, APRN-CRNA, MS; Allison Spelde, SRNA Rosalind Franklin University; Janelle Parslow, APRN-CRNA, MS; Patrick McElhone, Chief APRN-CRNA, MS, Major US Army Reserves

I joined the VA five years ago after nearly forty years in private sector healthcare. Like so many of you, I am familiar with the way the private sector works and how healthcare has been delivered outside the VA system. After nearly thirty-five years as a nurse anesthetist and forty years in healthcare, I have seen a multitude of changes in anesthesia care. The Affordable Care Act has not only upended civilian healthcare, but care provided by the VA system as well. Many veterans are now unemployed or have lost their private healthcare insurance and now depend on us at the VA to provide them with the care they earned in service to our country. As VA CRNAs, we are duty bound to provide quality care to those who put their lives on the line for us.

One of the responsibilities that I have as a CRNA at Edward Hines Jr., VAMC in the western suburbs of Chicago is to assist in the scheduling of anesthesia services for non-OR procedures in the GI Lab, the Pulmonary Lab, the Cardiac Cath Lab, the Cardiology procedure room, Interventional Radiology, CT as well as ECTs for our Veterans in need of mental health care. Because CRNAs are not allowed full practice authority and due to the staffing pattern in our facility, veterans wait as long as two months for anesthesia services for these procedures; sometimes even longer. You cannot understand my personal frustration in delaying the provision of care to our veterans because our staffing pattern demands a CRNA and supervising MDA in these areas. Not only is this practice model not efficient care delivery for our veterans, it is also not cost effective nor a good use of the resources we have in our department.

If we are to be honest with ourselves, our Veterans, and the taxpayers, we need to unleash the practice of CRNAs in the entire VA system and provide quality care to our veterans in a timely and cost efficient manner. It makes no sense that some VAs have only CRNAs providing anesthesia services while other VAs need one MDA to "supervise" one or two CRNAs for even the most basic level of anesthesia care.

The ASA is fearful that the remaining 33 states will opt out of the physician supervision provision for CRNAs in the Healthcare Financing regulations as 17 states have already done. They are worried that by the largest healthcare provider in the country – the VA – "opting-out" and allowing full practice authority to CRNAs, then other states will do so as well. It is hypocritical to say that CRNAs are good enough to care for our soldiers on the battlefield or in military hospitals alone but they need to be supervised in Chicago. We can collaborate like the private sector does and use healthcare provider to their highest potential. We can provide safe, quality care and be stewards of the VA and the taxpayer's money, all while providing prompt care and eliminating delays in diagnosing cancers or worse yet, a Veteran in need of ECT for depression committing suicide.

CRNAs and physician anesthesiologists work together all over the country in practice settings dictated by patient acuity and economics. Multiple studies from various sources have shown that the care provided by CRNAs is equal, and in some cases superior, to that of our physician counterparts. We have all been well versed on the studies confirming that anesthesia care is equally safe regardless of whether it is provided by a CRNA working alone, an anesthesiologist working alone, or a CRNA working with an anesthesiologist. I urge you to add your comments to the Federal Register proposed rule for the provision of independent full practice authority for ALL advanced practice nurses in ALL capacities at the VA – including CRNAs – as a means of increasing the ability of the VA to provide efficient, timely and fiscally responsible care to those who have given their Service to us.

AP44-Proposed Rule for Advanced Practice Nurses has a comment period that ends on 07/25/2016.

2016 AANA Mid-Year Assembly

Meghan Ragsdale, SRNA Southern Illinois University- Edwardsville
Nadi Akileh, SRNA Millikin University and Decatur Memorial Hospital
Andrea Hargis, SRNA Rosalind Franklin University of Medicine and Science
Kelly Sinutko, SRNA Rush University
Jennifer Kudirka, SRNA Northshore University Health System

The AANA Mid-Year Assembly was a magnificent adventure! Being in the presence of so many remarkable CRNAs, this meeting undoubtedly left us with an unparalleled feeling of humility, along with a bona fide gratefulness for the individuals that dedicate so much of their precious time to better our futures as nurse anesthetists. As student representatives to the IANA, we were privileged enough to attend Mid-Year Assembly (MYA) through the generous donation of the IANA and its members. All five of the Illinois schools of nurse anesthesia were represented. We were so impressed that of the 1,200 members in attendance, nearly 500 were students. This is a very positive light for our future and says a great deal about those who are new to the profession wanting to be involved with advocacy. Our organization had a great representation, with over 60 students attending the meeting. We hope that we made IANA proud. The purpose of MYA is to educate our profession for a sole purpose: the role of CRNAs in the future of anesthesia care! Throughout the meeting we learned that persistence and hard work are the key to political success.

Meghan Ragsdale worked very closely with the federal political director to plan the trip, which was an exciting though daunting task. "I had absolutely no idea what I was getting myself into, and it was rather shocking at first. I worked very closely with the IANA Federal Political Director, Ed Grandman, as well as Dr. Andy Griffin and Micah Roderick to ensure a successful trip. This turned into a once in a lifetime opportunity and for that I will be forever be grateful." As the future of the CRNA profession, it is imperative that we are aware of the issues facing the future of our profession and take an active role in supporting the safe, quality care we provide everyday.

Attending the AANA MYA was a unique opportunity to study the current issues that our profession faces, and apply these lessons to the grassroots of policy in our nation's Capitol. Although we have learned about some of these issues in the classroom, the act of advocating for our profession in Washington, D.C. makes these topics more relevant and palpable. Furthermore, the sense of camaraderie that we felt while rallying with our peers and mentors on Capitol Hill was nothing short of inspirational. It was then that we fully realized that the future of our profession lies the hands of our generation. During the MYA, we grew both personally and professionally in ways that we could never fully describe. This was a transformative experience for us as future leaders in our profession. We look forward to continuing to aid in efforts to advance our profession, and support the upcoming professionals that are looking to contribute in a similar fashion. The generosity of the CRNA's that we met at this event won't be forgotten as we embark on our anesthesia career, and we will be proud to be a part of this remarkable profession for years to come.

Before we speak about what we learned on the issues at hand, we wanted to mention that the friendships and professional networking we found have been invaluable. The overwhelming sense of success and victory was something we will never forget. Despite all our differences, we were able to come together as a profession and focus on the support for the profession as a whole.

We mainly focused on three of the four key issues defined by the AANA on our legislative visits. Deliberating in the same room as the individuals we hope to someday emulate left us feeling ambitious. We started out every visit by explaining what a CRNA does and the value CRNAs add to the healthcare system as a whole. Our primary focus was the VHA bill that will ensure veterans access to high quality health care. CRNAs are highly trained and educated and are fully capable of full practice authority. Published research about the safety of CRNA care is important to mention. It shows evidence that 40 states have no supervision requirements in their Boards of Medicine and 17 states have opted out of a Medicare supervision requirement on CRNA services. The AANA, Association of Veterans Nurse Anesthetists along with 53 nursing organizations and many Veterans organizations are in support of this issue.

Jennifer Kudurka took the opportunity to participate in the AANA mentoring program while in Washington D.C. This program pairs a student with an AANA leader as a way to help them become more engaged in the organization. Jennifer had the honor of being paired with Randall Moore, former IANA president and Region 3 Director and recently elected AANA Treasurer. She saw firsthand how much energy and hard work goes into running our organization. So many components of our practice that we take for granted were established and fought for by this group of dedicated individuals on a national and state level.

Ultimately, the AANA MYA was a powerful, inspiring experience that demonstrated the power and importance of coming together with many CRNAs from around the country to defend the future of our profession. We look forward to attending again as CRNAs, and will continue to be advocates in our state, as well as on the national level. We would like to extend a heart-felt thank you to the IANA and especially to Ed Grandman, Michael Almeida, and Kent Fair. These CRNAs are amazing mentors who took us under their wing, guiding us every step of the way! Lastly, thank you to Kent Fair, our IANA President. He has set a high bar through his generosity, guidance, and evident dedication to the future of the anesthesia practice today.

Photos from the 2016 AANA Mid-Year Assembly were provided by Meghan Ragsdale, SRNA, and other Assembly attendees.

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