

ALANA NewsBulletin

advancing quality anesthesia care, serving our members, promoting the nurse anesthesia profession



Celebrate National

**CRNA
Week**

January 22-28, 2017

President's Message...

Brent Ledford, MS, CRNA



If I have learned anything from watching Alabama and Auburn play this year it is the importance of a quarterback to the success of their team. In my previous tenure on the Board, and most certainly my current one, I have been blessed to work with some stellar leaders. All of us have CRNAs in our life that have influenced us, taught us, and motivated us to be better practitioners and advocates for our profession. I too have had several CRNAs mentor me along my way, and I particularly want to thank past-presidents Ronnie Whorton and John Morris, and our previous ED/lobbyist and current attorney Joe Knight. I was as green as you can be when I was first elected to serve the ALANA, but these gentlemen took their time to teach me more about leadership and Alabama CRNAs than I could ever learn in any classroom. Most currently, I have learned yet another lesson in leadership from Michael Humber. Last year Michael gave of his time and talents not only to our association, but to nursing in general. He spent many days traveling in support of CRNAs, APRNs, and RNs, not just in Montgomery but from Mobile to Huntsville as well. He has graciously agreed to help me by sharing this load over the coming year, and for that I am particularly grateful. I recognize that I have a tough act to follow, and while I don't expect to eclipse Michael by any means, I am compelled to continue to push our association forward and to work diligently towards my goal of providing a service that no member can do without.

While the quarterback is key to any team's success, he obviously cannot catch his own pass, block for himself, or take his own handoff. The greater the depth of experience the team brings to the table, the better the season. I have to tell you that I am both humbled and honored to be affiliated with this current Board of Directors. You have elected one of the most diverse and impressive group of CRNAs that I could ever have been blessed to work with, and I assure you that your interests will be very well represented this year.

We met for our annual Fall Retreat in early November, and as this meeting always involves several hours in a room going over contracts and grinding out a budget, we usually try and find something fun to do as well. After meeting for lunch and a few hours of committee work, we split into two teams and held a "cook-off" where we were given surprise

ingredients and competed to see which team could put together the best plate overall. Don't ever doubt the resourcefulness or competitive spirit of even the quietest CRNA.

Motivation was high to win, but even higher to perform well, as we had to eat what we cooked for dinner. Having survived our own meal, we met for a few hours the next morning to discuss the ideas presented by each committee, to prioritize the ones we felt offered the greatest value to our members, and to find a way to afford them. It is very gratifying to wrap up one of those meetings knowing that you were able to fund your association activities for the year, institute some new ideas to better serve and communicate with your members, and put a fair amount of cash into the investment accounts as well. Thanks to all of you that are AANA members, as well as to the previous boards that have demonstrated the fiscal restraint that allows your association to do its necessary business and be well prepared for the future.

The weekend after the Fall Retreat a group of us travelled to Rosemont IL to the AANA Fall Leadership Academy. This is a meeting that is geared toward equipping state leaders, government relations committee (GRC) chairs, state reimbursement specialists, and federal political directors (FPD) to meet the challenges of running an association. The AANA provided speakers on topics such as engaging membership and social media usage, but to me, the invaluable part of attending this meeting is the ability to sit down with other state leaders that have varying experiences dealing with the issues that are common to so many states.

Just as the Board has volunteered of its time to serve you, I am going to ask for a little time back from each of you. We developed a new web site that was unveiled in Destin a few months ago, and we are actively trying to develop it into a pertinent and current resource for all of our members. Please take a few minutes and look it over at www.alabamacrna.org. We have an area for members where we will be posting articles of interest, links to updates on advocacy issues, upcoming dates for meetings, and any other ALANA activities. Please feel free to email me any ideas you have regarding the website. The links to our Facebook and twitter

Calendar of Events | 2017

ALANA Spring Meeting

>>April 21 – 23, 2017

Hilton Sandestin Beach Golf Resort & Spa
Destin, Florida

AANA Mid-Year Assembly

>>April 5 – 9, 2017

Washington, D.C.

ALANA Annual Fall Meeting

>>September 22 - 24, 2017

Grand Bohemian Hotel
Birmingham, Alabama

AANA Nurse Anesthesia Annual Congress

(FORMERLY AANA ANNUAL MEETING)

>>September 8 – 12, 2017

Seattle, Washington

accounts are active, as well as to our PAC. One click on the PAC link and you can explore exactly what a PAC is, and why we need one. I tested it myself today, and I was able to sign on, donate, and get a receipt in under a minute. Please consider a one-time donation, or even better, becoming a buck-a-day-donor. It's just a hunch, but I bet an additional \$30 a month on your credit card would most likely go unnoticed. We recently switched over to a pay-pal based system, so even if you think you are already donating, please check your statement, as several folks have fallen off once their credit card expired.

The state president gets a list every quarter of CRNAs that recertified that are not members of the AANA. Members of your previous BOD went to several non-members one-on-one and as a result of that initiative and the regional meetings we saw an increase in membership this renewal cycle. I have heard a lot of reasons for not joining, often that "I can't afford it". For me personally, I know that I can't afford not to. FYI, if you are not a member did you know that you can pay quarterly now? Roughly \$160 on your card every 3 months to fully support the ONLY association that represents your professional interest. There are numerous financial benefits for you as a member too. You can learn more about that in this issue of the newsletter. The short story is that for about an hour's pay a month, you can fully support the AANA, the ALANA, and your state PAC. Try it, you'll like it!

Each day that I practice I ask God for his help, and I recall how lucky I am that he has placed me in the position of being there for my patients, at their side watching over them throughout one of the most stressful times of their life. I am proud to be a Nurse Anesthetist, I absolutely love what we do, and my plea to you is to do all you can to promote our wonderful profession. We are blessed with the ability to ease another person's suffering, and in doing so I find myself rewarded, and often renewed. I hope it is that way for you too. Thank you for allowing me to serve you again, and bless you for surrounding me with such amazing people.

Brent



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Hypercarbia with Undetected Crepitus due to Displaced Trocar

Sara A. Piel, BSN, SRNA
Samford University



Introduction

Since the first successful video laparoscopic cholecystectomy was performed in 1988, the laparoscopic technique has revolutionized surgical procedures.¹ Laparoscopic surgery is now a common alternative to open surgical techniques and offers many benefits to patients. Some of these benefits include a shorter hospital stay, more favorable cosmetic results, less risk of hemorrhage, and less postoperative pain. However, the creation of a pneumoperitoneum using CO₂ during laparoscopic procedures brings physiological changes and potential complications as well. One of the less common but potentially severe complications is the creation of subcutaneous emphysema.

Case Report

A 77 year old, 163 cm, 61 kg female with a history of pancreatitis, gastroesophageal reflux disease, thyroid cancer, anemia and rheumatoid arthritis presented for a laparoscopic cholecystectomy. Her past surgical history included a thyroidectomy, abdominal hernia repair, breast biopsy, hysterectomy and an endoscopic retrograde cholangiopancreatography with no history of anesthetic complications. Prescribed medications included ceftriaxone, enoxaparin, levothyroxine, metronidazole and pantoprazole.

Upon arrival to the operating room, standard monitoring was applied while preoxygenating and denitrogenating with oxygen 8 L/min for 5 minutes. Anesthesia was induced with fentanyl 100 mcg, lidocaine 80 mg and propofol 140 mg intravenously (IV). Rocuronium 30 mg IV was administered after confirmation of adequate mask ventilation. The trachea was intubated with a 7.0 mm endotracheal tube (ETT), the cuff inflated, correct placement confirmed with end-tidal carbon dioxide (ETCO₂) tracing, bilateral chest rise and equal, bilateral breath sounds and secured at 21 cm at the lips. The ventilator was set to volume auto flow mode with a rate of 12 breaths/min, tidal volume (TV) of 420 ml/breath, positive end-expiratory pressure of 5 cm H₂O and anesthesia maintained with isoflurane 1.1% end-expired concentration in a mixture of air 0.5 L/min and oxygen 0.5 L/min.

At the time of incision, the patient had a heart rate (HR) of 86, blood pressure (BP) of 98/56, SpO₂ 99%, esophageal temperature of 37°C, ETCO₂ of 30 mmHg and a peak inspiratory pressure (PIP) of 18 cm H₂O. CO₂ was used for insufflation and pressures were maintained at 15 mmHg or less throughout the procedure. Approximately 10 minutes after insufflation, the ETCO₂ rose to 48 mmHg and ventilator settings were increased to a rate of 15 breaths/min and TV 470 ml/breath. Ten minutes later, the ETCO₂ had risen to 54 mmHg and ventilator settings were increased to a rate of 16 breaths/min and TV 550 ml/breath. Despite increased ventilation, the ETCO₂ continued to climb above 60 mmHg. The surgeon was notified and insufflation pressures were verified to be less than 15 mmHg.

Approximately 30 minutes post-insufflation, ETCO₂ had risen to 63 mmHg and crepitus of the neck, face, and eyelids was discovered when verifying that the ETT had not migrated. The surgeon was notified and upon inspection of the surgical site, it was discovered that a trocar had migrated cephalad and into subcutaneous tissue. The trocar was removed and the procedure was completed within 15 minutes. ETCO₂ peaked at this point at 76 mmHg. The patient's HR was 98, BP was 160/92 and SpO₂ 99%. Neuromuscular blockade was antagonized with glycopyrrolate 0.6 mg IV and neostigmine 4 mg IV.

The intubated but spontaneously breathing patient was transported to the postanesthesia care unit and sedated with a dexmedetomidine infusion. Approximately 90 minutes later and after confirmation of normal arterial blood gas results and an adequate cuff-leak, the dexmedetomidine was discontinued and the patient was extubated to an open face mask

with oxygen 6 L/min. Over the next 24 hours, the subcutaneous emphysema resolved and the patient had no further apparent complications.

Discussion

Insufflation with CO₂ during laparoscopy allows the surgeon to visualize the surgical field using a magnified view. Although this technique provides benefits to the surgeon, it comes with potential complications. Once the pneumoperitoneum is created, physiological changes can occur including increased HR, increased mean arterial pressure, increased systemic vascular resistance (SVR), increased peak airway pressure, reduced venous return, reduced functional residual capacity and reduced pulmonary compliance.^{1,2} In addition, the laparoscopic patient is at risk of hypercarbia, arrhythmias, CO₂ embolism, vascular injuries, atelectasis, pneumothorax, pneumomediastinum and subcutaneous emphysema.² More than half of all laparoscopic complications are attributed to insertion of the trocars and entry into the abdomen.¹

The incidence of subcutaneous emphysema detectable during laparoscopic surgery ranges from 0.43% to 2.34%.³ Because significant subcutaneous emphysema during laparoscopy is rare, detection can be delayed as other more common causes for increasing ETCO₂ are typically ruled out first. During the case described here, hypercarbia was initially thought to be due to inadequate ventilation or absorption of insufflated CO₂. However, ETCO₂, HR and BP continued to rise in the presence of increased ventilation. Other causative factors considered were bronchospasm, ETT malfunction, exhausted CO₂ absorbent, inspiratory/expiratory valve failure, right main stem intubation and malignant hyperthermia. The crepitus was discovered when assessing for masseter muscle rigidity and ETT depth.

Considering the difficulty in early recognition of crepitus, massive subcutaneous emphysema can develop. There are published reports describing rising ETCO₂ despite increasing minute ventilation while subcutaneous emphysema remained undetected beneath the surgical drapes.⁴ Researchers have reported that certain factors increase the likelihood of subcutaneous emphysema during laparoscopic surgery. These include intra-abdominal pressure greater than 15 mmHg, multiple abdominal entry attempts, vessel needle placement outside of the peritoneal cavity, loose skin around the cannula site, use of more than 5 cannulas, use of the cannula as a fulcrum and procedures lasting more than 3.5 hours. If one of these factors is present, changes observed with subcutaneous emphysema include crepitus, insufflation variability with flow and pressure, ETCO₂ greater than 50 mmHg, hypertension, sinus tachycardia, arrhythmias, acidosis and changes in lung compliance.⁵

During laparoscopy, CO₂ is absorbed through the peritoneum and blood levels of CO₂ will rise. However, the resulting acidosis can usually be compensated by increasing the minute ventilation up to 30%.³ If minute ventilation is not increased, hypercapnia will stimulate the sympathetic nervous system leading to an increase in BP and HR, and the myocardium will become sensitized to catecholamines.³ Thus, the patient is at an increased risk for cardiac dysrhythmias. Furthermore, many laparoscopic procedures require trendelenburg positioning which results in physiological effects that can contribute to significant cardiopulmonary changes including arrest.⁶ The oxygen demand with increased venous return due to trendelenburg positioning combined with the increase in SVR and catecholamines due to insufflation can lead to a significant increase in myocardial workload that can be dangerous for patients with pre-existing cardiac disease.⁶

The increase in CO₂ due to absorption from insufflation is normally 26%. However when subcutaneous emphysema is present, CO₂ uptake has been known to increase 113%.² Researchers have found that up to 77% of laparoscopic patients have undetected subcutaneous emphysema and 20% have postoperative chest radiographs confirming a pneumomediastinum.² Furthermore, 56% of patients who have computed tomography scans within 24 hours of a laparoscopic cholecystectomy show otherwise undetectable subcutaneous emphysema.² The volume of subcutaneous emphysema is the concern as CO₂ gas insufflation is a required step of the laparoscopic process. Excessive subcutaneous emphysema can lead to airway compromise along with physiological changes due to increased CO₂ absorption and pressure on the lungs and mediastinal vasculature.

Subcutaneous emphysema should be considered early with increasing ETCO₂ during laparoscopic procedures. During the case described here, the primary causative factor was the displaced trocar. Although rare, this surgical error should be considered along with the other more common factors in the presence of rising ETCO₂ despite increased ventilation. Recommendations for the anesthesia practitioner include communicating with the surgeon, evaluating the patient for a pneumothorax, ensuring that the CO₂ absorbent is adequate, increasing minute ventilation and assessing the airway with a cuff-leak test before extubation to ensure there is no airway compression.²

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Take Pride in Your Profession...

Tammy Panayiotou



How did you get interested in a career as a CRNA?

After spending almost 7 years in the Trauma-Surgical ICU, I knew I wanted to do something different in nursing. I had several friends who went on to Nurse Anesthesia school who encouraged me to do the same. I liked that nurse anesthesia would take my critical care skills to a higher level and offer more independence.

How do you introduce yourself to your patients?

“Hi, I’m Tammy, I’m a nurse anesthetist and I’ll be doing your anesthesia today”

Outside of anesthesia, what activities do you enjoy?

I have two kids in high school, so I spend most of my time supporting them in cross country, track & field and soccer. In my spare time I like to travel.

What is the most rewarding aspect of your career as a CRNA?

Of course having my patients do well is most rewarding. However, it really makes me happy when a patient or their family thanks me for taking the time to make them feel less anxious about their upcoming surgery and anesthesia experience.

What is the most challenging aspect of your career as a CRNA?

I work at a regional medical center that serves several West Alabama counties. A large portion of our patient population are ASA Class 3 and 4, which can definitely be an anesthesia challenge. (Also, getting up at 5am and taking 24-hour call)

Do you recommend this career to others?

Absolutely! I love the independence combined with critical thinking skills. I also enjoy the variety of experiences the operating room has to offer.

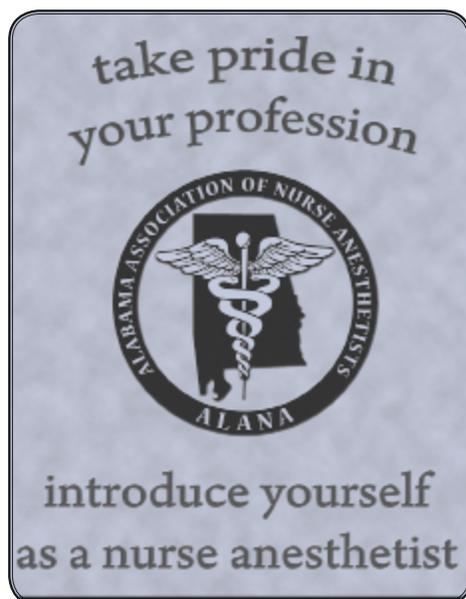
What advice would you give those contemplating a career as a CRNA?

Take time to research the career and the path necessary to get there. Talk to CRNAs about their job and

shadow one to see exactly what a day in the life of a nurse anesthetist is all about.

Why are you a member of the ALANA?

Because they serve as an advocate for every CRNA in the state of Alabama, as well as promote my profession in a positive manner on both the state and national level.





PLEASE JOIN OUR 5K TEAM ALABAMA CRNAS FOR THE

RED SHOE RUN

• BENEFITING THE RONALD MCDONALD HOUSE •

January 21st 2017 | 5K starts at 8:00 am
Soho Square Homewood, AL

Team Leader: Krista Niedermeier (kristan7@gmail.com if you have any questions)
Team Name: Alabama CRNAs

Register at www.redshoerun-bham.org
*Support the Ronald McDonald House and let's show
Birmingham how great the Alabama CRNAs are!!*



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Anesthesia Abstracts

REGIONAL ANESTHESIA

DOES SPINAL BLOCK THROUGH TATTOOED SKIN CAUSE HISTOLOGICAL CHANGES IN NERVOUS TISSUE AND MENINGES?

Reg Anesth Pain Med 2015;40:533–38 Ferraz IL, de Barros GAM, Neto PGF, Solanki D, Marques MA, de Vasconcelos Machado VM, Cabral LW, Lima RM, Vianna PTG, Navarro LHC, Ganen EM

ABSTRACT

Purpose The purpose of this study was to look for tattoo ink in regional anesthesia needles or spinal tissue. If found, the study would examine the effects of tattoo ink on neural tissue in an attempt to identify any harmful effects.

Background Tattoos on and around the lumbar area of the back have become more common in recent years. Anesthesia providers have long asked whether or not it is safe to place a spinal or epidural needle through tattooed skin. A common concern is that passing a hollow needle through a tattoo, even with a stylet in place, may entrap tissue containing tattoo ink and deposit the ink near the dura or even past the blood-brain barrier. Needles as small as the 25-gauge Quincke and Whitacre have been shown to produce tissue coring. A cadaver study demonstrated the presence of a skin surface dye on 27-gauge Quincke, Spotte, and Whitacre needles used for spinal injections.

Unlike other substances intended for application onto or into the body (e.g. cosmetics), tattoo inks are not regulated by the government. Their chemical composition is unknown. Often, tattoo ink has been produced as industrial pigments and not intended by the manufacturer for use in humans. No reports of complications following the placement of spinal or epidural needles through a tattoo have yet been published. Nevertheless, tattoo ink has been shown to contain hazardous, toxic, or carcinogenic compounds. Even if biologically inactive, tattoo ink could still induce arachnoiditis. Red tattoo ink is the color most commonly associated with skin irritation in persons who have received tattoos.

Methodology This was a prospective, randomized, placebo-controlled animal study. Prior to the insertion of block needles, animals in the Puncture Group and the Injection Group had their fur shaved off over the S1-2 area posteriorly. A working tattoo artist applied a 2 cm diameter red tattoo while the animals were anesthetized. The animals were then observed for 30 days.

All spinal needle insertions were performed in anesthetized adult rabbits with a 22-gauge Quincke needle. Proper needle placement was observed using ultrasound. If more than one attempt was needed to place the needle, the animal was removed from the study. Rabbits were randomized into one of three groups, 12 per group. Groups were as follows:

- **Control Group** - Needle placed through clear skin. Normal saline injected in subarachnoid space.
 - **Puncture Group** - Needle placed through tattooed skin up to ligamentum flavum. No saline injected.
 - **Injection Group** - Needle placed through tattooed skin. Normal saline injected in subarachnoid space.
- In the **Control Group** the meninges and neural tissue were examined for any effects of normal saline injection through skin without a tattoo (see method following Injection Group). In the **Puncture Group** the needle itself was examined for tissue coring and for the presence of tattoo ink. After inserting the spinal

needle to the level of the ligamentum flavum, it was withdrawn, the stylet removed, and saline injected through the needle onto a histologic slide. A smear was prepared with dye that adheres to tissue, thus facilitating the identification of any tissue that might have remained in the needle. In the **Injection Group**, the meninges and neural tissue were examined for the presence of skin tissue cores containing tattoo ink. After normal saline injection into the subarachnoid space in both the Control and Injection groups, rabbits were rested for six months and observed. This time allowed complications from injection of tattoo ink to develop if the ink was present. After six months animals were killed. The meninges and spinal cord were examined histologically. Two histologists familiar with the tissue effects of neurotoxicity independently examined the samples.

Result Animals in the Placebo Group weighed more than animals in either of the experimental groups. Otherwise the groups were demographically similar. During the six month observation period following puncture with the spinal needle, no animals exhibited changes in motor function or nociception. Histologic examination of the meninges and neural tissue were normal in the Control Group. In the Puncture Group smears from saline flushed through the needle after passage through tattooed skin and removal revealed microscopic red tattoo ink particles. Histologic examination of the meninges and neural tissue in the Injection Group showed meningeal injury in 4 of 12 animals in the group.

Conclusion Spinal needles passed through tattooed skin contain tattoo ink particles and transport these particles to deeper tissues. The stylet did not prevent tattoo ink from entering the spinal needle. Subarachnoid injections through spinal needles passed through tattooed skin resulted in histologic damage visible six months later in some animals. A lack of published case studies reporting complications following neuraxial anesthesia through tattooed skin should not be misconstrued as indicating the safety of this practice.

COMMENT

Having practiced and taught regional anesthesia regularly throughout most of my career, I have often been asked about the safety of placing a spinal or epidural needle through tattooed skin. Until now I've never had any scientific evidence upon which to base a good answer. For years I was on the lookout for a study that would help answer this question and there just weren't any. This is the first study I've found that starts to answer the question. I know we often aren't interested in animal studies, but the question of the safety of placing a neuraxial needle through tattooed skin will doubtfully ever be studied in humans, and rightly so. This animal study is methodologically sound. It clearly shows two things: 1) tattoo ink gets into a spinal needle even with the stylet in place when it is passed through tattooed skin and 2) when a subarachnoid injection is made through a needle placed through a tattoo, some subjects develop unmistakable signs of meningeal and neural injury over time. Given the magnitude of the risk and the small chance that we are going to get more good information on this topic any time soon, it is enough for me to answer, "it isn't safe" the next time I'm asked.

Michael A. Fiedler, PhD, CRNA

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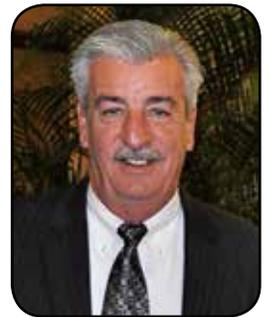
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CRNAs on Capital Hill



On the Hill

This year's AANA Annual Congress was held in the nation's capital. ALANA had a good contingent travel to D.C. for the meetings. While there, they took advantage of the location to visit our Alabama Congressmen. They are pictured with Congresswoman Martha Roby and Congressman Robert Alderholt.



Congresswoman Martha Roby

*Kerry Varner, Ray Dunn, Kris Fox,
Congresswoman Martha Roby, Michael Humber,
Kyle Vanderford and Brent Ledford*



Congressman Robert Alderholt

Fall Meeting Highlights



ALANA Program Co-Chair Kyle Vanderford, Samford's Terri Cahoon and Lisa Herbinger pose with Funderburg Lecturer Paul Santoro



Brent Ledford accepts the Passing of the Gavel from outgoing President Michael Humber



Samford students Jared Willis, Tyler Nutt, Precious Stallings, Holly Thomas, Mary Beth Williams, Meghann Redmon, Mollie Allen and Steven Beegle presented an updated White Paper



The ALA-CRNA PAC fundraiser is always exciting with lots of gifts to win



Brad Hooks, Matt Hemrick and Paul Santoro talk future of CRNA Practice



ALANA has the BEST Exhibitors

UAB Update

Susan McMullan PhD, MSN, CRNA
Associate Professor
Nurse Anesthesia Specialty Track Coordinator



The UAB Nurse Anesthesia Program is proud to honor its graduating class of 2016!

The rigor of the 28 month program requires perseverance and sacrifice by all students and their loved ones. In particular, we have eight students who not only persevered, sacrificed, and completed the program, but did so with a 4.0 GPA. Congratulations to Vanessa Brown, Drew Easterling, Erica Hesse, Maggie Hunt, Kelly Just, Curry Lee, Patrick Millican, and Ben Nahass. They accomplished what few are able.

Our program would not be successful without the expertise of our entire outstanding clinical faculty. This year we would like to pay a special honor to four clinical coordinators who have gone above and beyond to ensure our students have the best clinical experience. These outstanding clinical coordinators are Nita Morrisette from Children's Hospital of Alabama, Ryan Ritchie from UAB Highlands, Christine Lewis from Huntsville Hospital, and Rob Dorroh from Druid City Hospital. We want to thank you for your contributions to the education of our students and mentoring them to become the next generation of excellent CRNAs!



Pictured (L-R): Maggie Hunt, Callie Davis, Lauren Muse, Katie Woodfin (Director of Clinical Education), Morgan Reaves, Susan McMullan (Program Director), Laura Walker, Scott Sloop, & Darius Jamarr Henry



UAB at ALANA Fall Meeting. (L-R): Nathaniel Jones (podium speaker), Erica Globetti (podium speaker), Kelly Just (podium speaker), W. Patrick Milliacan (podium speaker); Darius Henry.



UAB Nurse Anesthesia Class of 2016, taken at their graduation ceremony



UAB Nurse Anesthesia Gurney Race Team (L-R): Matthew Matala, Jordan Doss, Sarah Thomasson, Ivy Heard.

Sugammadex: The Benefits of a Novel Neuromuscular Blocking Reversal Agent

Stephanie M. Shah, BSN, SRNA & Todd L. Hicks, DNP, MNA, CRNA

Appropriate neuromuscular blockade reversal plays a crucial role in postoperative patient recovery. If reversal is inadequate, this can lead to post-operative residual paralysis (PORP). Due to inadequate reversal, a patient can suffer respiratory complications ranging from airway obstruction to acute respiratory distress syndrome.¹ Post-operative residual paralysis also leads to increased length of operating room times and post-anesthesia care unit (PACU) stays, and subsequent economic consequences. Since the incidence of PORP is estimated to be as high as 60% of patients in PACU, it is vital to have a reliable means of complete reversal.² A new agent, sugammadex, has shown favorable outcomes over neostigmine in its reversal properties; it has been shown to decrease the incidence of PORP and improve postoperative recovery times.²

Sugammadex is a unique alternative to the “gold standard” reversal agent neostigmine. The benefits of sugammadex over neostigmine can best be appreciated through a contrast of their mechanisms of action. As a cholinesterase inhibitor, neostigmine works to increase acetylcholine at the motor endplate, thereby competing with neuromuscular blocking agent (NMBA) at the binding sites.¹ This leads to unreliable and incomplete reversal along with multiple cholinergic side effects, such as bradycardia, bronchospasm, salivation, and increased intestinal tone. In order to negate these effects, cholinesterase inhibitors are routinely administered in combination with antimuscarinic drugs, glycopyrrolate or atropine, which themselves can increase the risk of side effects resulting from muscarinic receptor antagonism, including tachyarrhythmias, urinary retention, nausea, and constipation.¹

Sugammadex, however, was designed to attract and encapsulate steroidal-NMBAs, such as rocuronium and vecuronium, rather than compete with them. This high-affinity binding renders the steroidal-NBMA ineffective; thereby allowing quick renal clearance, eliminating the possibility of recurarization, and avoiding the cholinergic and antimuscarinic side-effects.¹ The suggested disadvantages of sugammadex are extremely rare allergic reactions and transient alterations to prothrombin time.³

There are several advantages to sugammadex over neostigmine: (1) decreased incidence of PORP; (2) the lack of muscarinic adverse effects; (3) and the speed to skeletal muscle recovery.³ In a study performed by Brueckmann et al., it was found that zero out of 74 patients treated with sugammadex had evidence of PORP.⁴ In contrast, of the patients treated with neostigmine, 46% showed evidence of partial paralysis.⁴ The lack of muscarinic adverse effects is due to the encapsulating properties of sugammadex and absence of interaction with muscarinic receptors.¹ Patients reversed with sugammadex have been shown to recover 3.4 times faster than those treated with neostigmine, with fewer side effects.^{1,2,3,5} Della Rocca et al. found that the time from reversal administration to 90% TOF with a deep block is on average 2.7 minutes with sugammadex and 16.2 minutes with neostigmine.⁶

Sugammadex has been shown to be particularly useful in specific patient populations. Gaszynski, Szewczyk, and Gaszynski’s study of morbidly obese patients receiving sugammadex suggests that it provides faster

and safer recovery as compared to neostigmine.² Sugammadex also decreases the frequency of respiratory complications in the patient with obstructive sleep apnea (OSA), and has been proven to reduce costs when used in this patients care.⁷ The need for an effective reversal agent is particularly important in surgical cases requiring profound relaxation, such as neurosurgical, laparoscopic, and select urological procedures. Sugammadex is the only agent that can provide sufficient reversal for a patient exhibiting a deep block with Train of Four twitches of 0-1.⁵

Sugammadex is a groundbreaking neuromuscular reversal agent that has the potential to almost eliminate the occurrence of PORP and increase operating room efficiency. Increased utilization of this agent can prove valuable to the patient, provider, and healthcare organization.

KEY POINTS

- Sugammadex decreases the occurrence of PORP more effectively than the neostigmine glycopyrrolate combination.
- There is a lack of muscarinic side effects following sugammadex use that are present with the use of neostigmine.
- All reviewed studies support the finding that its reversal time is shorter with sugammadex than neostigmine.
- Sugammadex has shown favorable outcomes with use in patients needing deep neuromuscular blockade, those with OSA, and with morbid obesity.
- Sugammadex has also been suggested for use for treatment in patients that are exhibiting an allergic response to rocuronium or vecuronium.⁸

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By Terri M. Cahoon, DNP, CRNA
 Chair, Department of Nurse Anesthesia,
 Ida V. Moffett School of Nursing



As 2016 comes to a close, the students and faculty of the nurse anesthesia program have a great deal for which to be thankful and to be excited. The Class of 2017 is looking toward program completion, is steeped in certification exam review, and continues to gain excellent clinical experience with knowledgeable preceptors. The Class of 2018 is finally completing a first year of didactics and looking forward to applying all that information to patients outside of the simulation lab. On January 3, 2017, the Class of 2019 will embark on their journey!

Outside the classroom, the service learning initiative continues for our students - to inform the students of professional, community, and ministry service opportunities and encourage involvement. Mrs. Paula Hughes with Grace's Kitchen (www.graceskitchen.org) shared with the students about the ministry's desire to "build relationships ... by feeding people as we feed our families." The students collected paper goods and supplies for Grace's Kitchen to use in Linn Park and Changed Lives Christian Center. The students also collected diapers to deposit in the Bundles of Hope Diaper Bank (<http://www.bundlesdiaperbank.org/>). Nancy Owen shared with the students, "Diaper need affects one in three families in our community. It's a need that often isn't talked about." Debby Bowers from MedHope Africa (<http://www.medhopeafrica.org/>) shared about opportunities to "support relief and development for low-resource communities in sub-Saharan Africa through medical, dental and vision care, community health interventions, and Christian and biblical training." Junior William Gafford plans to travel with MedHope to serve Uganda in May 2017.



Two students, Jared Willis and Joe Denhalter, helped with clean-up efforts in Baton Rouge, Louisiana after the devastating flooding. Jared shared, "The most rewarding experience I was involved with was an 80 year old widow lady that had walked away from her house due to the flood and hadn't been back for the two weeks until we arrived. We were able to completely gut the house (all drywall, carpet, and anything else up to 5 feet). She was very nice and grateful." William Gafford and Newton Tinsley regularly volunteer with Unless U, "committed to serving adults with



the devastating flooding. Jared shared, "The most rewarding experience I was involved with was an 80 year old widow lady that had walked away from her house due to the flood and hadn't been back for the two weeks until we arrived. We were able to completely gut the house (all drywall, carpet, and anything else up to 5 feet). She was very nice and grateful." William Gafford and Newton Tinsley regularly volunteer with Unless U, "committed to serving adults with

developmental disabilities and their families through continuing education, life skills, and social skills.” They assist with a variety of activities including basketball games and trips to the movie theatre.

At Samford’s Global Engagement Fair in October, Tyler Nutt and Haley Waddell developed and manned a booth to promote the medical mission and ministry work of Kenya Relief. Both senior students served in Kenya in July and September, respectively. Amy Snow also displayed the excellent service learning that is integrated into the nurse anesthesia program. Michelle Bruggeman is looking forward to participating in a medical missions trip to Bolivia in January.



The junior students received some extraordinary simulation experience and instruction from alumni Brian Tanner and Brandon Woods earlier in the fall. Brian shared his expertise in OB and regional anesthesia, and the students used task trainers to practice the skills. Brandon, based on his military anesthesia experience, taught the students about peripheral nerve blocks and the use of ultrasound. In the new simulation center, the students also completed stations lead by faculty; the stations included basic to complex airway management, central line insertion, induction sequence, and interscalene blocks with ultrasound.



Nurse anesthesia has also embraced interprofessional education (IPE). Mrs. Amy Snow met with students from athletic training to discuss and simulate the use of airway devices, such as the Combitube, the King airway, and laryngeal mask airways. Fifteen junior and senior students assisted with an undergraduate nursing critical care skills simulation day – teaching and manning stations related to ventilators, airway devices, defibrillators, IV starts, and pulmonary artery catheters. With the increasing complexity of healthcare, the collaboration with other providers is important to instill early in the education process.



Finally, thank you to the ALANA for allowing two student poster presentations: Lindsey Montgomery, “Tranexamic Acid and Total Joint Arthroplasty” and Mollie Allen et al. with the White Paper information.

These were a small representation of the senior capstone projects completed earlier in the fall.

Finally, the Samford nurse anesthesia program wishes Dr. Nina McLain all the best as she moves into a new chapter. Nina joined our faculty in 2005 while she was completing her PhD at Virginia Commonwealth University. Nina played a significant role in the development of both the current program and the upcoming DNP curriculum. Nina has taught the DNP course on grant writing since its inception. Nina's clinical experience ranging from solo practice to medical missions and her love of research have enriched nurse anesthesia students for more than eleven years. Nina has some incredible research opportunities in Mississippi in a fellowship and mentee role and will be leaving Samford at the end of fall semester. She will be missed by all students, faculty, and alumni of Samford nurse anesthesia.



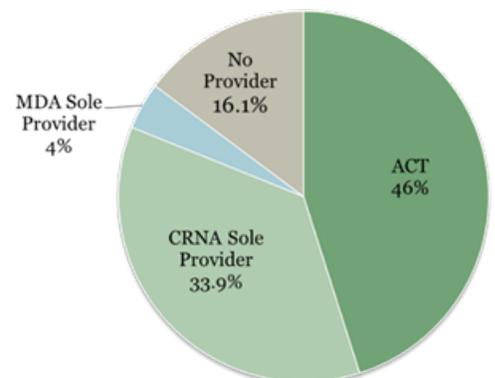
2016 ALANA White Paper – Samford University

Once again, at the request of the ALANA leadership, eight Samford senior nurse anesthesia students embraced the challenge to survey the anesthesia provider landscape throughout the state. The major objectives of the project were to determine: 1) the full-time equivalents (FTEs) of CRNAs, anesthesiologists, and anesthesia assistants working in each county in Alabama; 2) the practice model utilized in each facility including hospitals, surgery centers, and offices using anesthesia providers; and 3) the facilities and counties served by CRNAs as the sole provider. The White Paper, originally written in 2009 and revised in 2012, is utilized to educate policy makers of the impact of nurse anesthetists throughout Alabama and especially in rural areas.

Between April and October 2016, these students gathered information from 162 facilities throughout the state to inquire about the FTEs of anesthesia providers and practice model. The foundation was built on data collected in 2009 and 2012. The dynamic state of the data was highlighted when facilities closed operating rooms, re-opened operating rooms, and/or consolidated with others even after the presentation of the study findings at the ALANA Fall Meeting.

Some significant findings of the study included the number of counties and legislative districts that contain CRNA-only practices. In rural counties, 33.9% of hospitals, 33.3% of surgery centers, and 75% of office-based practices employ only CRNAs for anesthesia services. CRNAs are the only anesthesia providers in 15 counties. The anesthesia care team (ACT) delivery model is utilized in 55.2% of counties, however 47.8% of counties include facilities where CRNAs are the sole provider. The analysis of anesthesia providers in rural hospitals in Alabama is indicated here.

Anesthesia Providers in Rural Hospitals in Alabama



Class of 2017 nurse anesthesia students involved in the 2016 White Paper are: Jared Willis, Tyler Nutt, Precious Stallings, Holly Thomas, Mary Beth Williams, Meghann Redmon, Mollie Allen, and Steven Beegle.

Call for Nominations

Heather Joiner MSN, CRNA
Nominating Committee Chair



Let's make 2017 a great year by placing our best candidates forward!

The New Year will be here before we know it. The ALANA needs motivated, passionate, and hardworking members to fill the varying roles that will be open for the coming year. If you have been interested in becoming involved in our state association, now is your time to serve!

The following positions will be opening in 2017:

President-Elect, Vice President, 3 Board of Directors, and the Nominating Committee Chair.

This election will fill Board of Director positions from all three regions:

North, Central, and South. One Director is needed from each region.

If you or someone you know is interested in continuing the great work of our profession at the state level, please contact Heather Joiner hjoiner@samford.edu.

Med Aim CE Seminar

February 10-11, 2017

Friday 4:30-6:30 & Saturday 7:30-5:30

This program has been prior approved by the American Association of Nurse Anesthetists for 12.00 Class A CE credits; Code Number 1022022; Expiration Date 2/11/2017.



Want to learn about TEE exams with quality instruction and a simulator? A rare opportunity for CRNA cardiac instruction!

Need AANA approved Class A credits to keep your certification? This program has topics for any clinician!

Do you want a convenient and relaxed seminar for the clinical CRNA? Join us in the new Samford College of Health Sciences with lunch included!

Contact David Sanford, CRNA for information & Registration application. Discounted to \$400

MedAimEducation@gmail.com

205-296-5946

AANA Membership Update

Wes Canerday, MSNA, CRNA



Investing in Your Future

Budget: A mathematical confirmation of your suspicions!

AA Latimer 1949

We all live in a world where we have to be conscious of where our hard earned money is being spent. When split between mortgages, car payments, college tuition, and yes our own student loans that seem to hang around FOREVER, our money can seem to go out the door more quickly than it comes in. We all tend to look for investments that will provide the best return. My wife and I have frequent “What if” discussions. One of the most visited topics is “What if my pay takes a huge cut,” or “What if the powers that be succeed in limiting my practice as a CRNA?” Have you ever thought about these scenarios yourself?

If I told you that I knew of one investment opportunity that would help secure \$100k, \$200k, even \$300k per year – would you invest??? I can sum up this investment in one word – MEMBERSHIP! Are you an AANA member? Have you ever thought of membership as an investment in your future? \$645 per year can and does help secure your ability to practice as a CRNA and, in turn, provide for your family.

The “Did You Know” section below lists a few of the benefits of membership in YOUR professional association that you may or may not have known. If you are a member, thank you for doing your part in protecting the profession that has given all of us so much! If you are not a member, I hope that you will take the time to read the items below and realize that membership is truly a benefit to ALL CRNA's. I hope that you will consider joining today!

AANA Membership Benefits - Did you know?

1. Legislation and regulation are avenues that have been used before to try to place limits on our practice at both the federal and the state levels. The AANA staff, as well as our lobbying group in Montgomery stay abreast of every single piece of proposed legislation or regulation that has anything remotely to do with the health care profession, and in particular, nurse anesthesia. They not only monitor each item, but work closely in conjunction with your BOD and our attorney to formulate a plan of action that represents our members professional interest.
2. For every CRNA that is a member of the AANA, our state association gets \$260 of the \$645. That money is vital to running our state association and being able to secure the services of our full-time lobbyists in Montgomery This money is spent directly on serving you, our Alabama members.
3. You can pay the \$645 quarterly? You can join with the option of a quarterly auto-draft of \$161.25.
4. You can actually save money by being a member?
 - a. 6 Free Class A Credits via the AANA Journal
 - b. Discounted registration fees for AANA meetings
 - c. Discounted products such as Life and Disability Insurance, and refinancing options

- d. 30% discounts on CPC Credits on the AANA website.
- e. Included CE tracking (\$300 for non-members using this service)
- f. Core Module Discounts
 - i. All 4 modules for non-member - \$850
 - ii. All 4 modules purchased separately as a member – 30% discount = \$595
 - iii. All 4 modules purchased together - \$299

While you can save money as a member, those of you that are doing a cost/benefit analysis will see that joining the AANA is not yet a break-even financial proposition, even with the benefits that have been delineated above. But, with the financial incentives the AANA has placed on membership, it is becoming more and more obvious that joining the AANA and supporting your profession is not just the “right” thing to do, but the logical one, based on the value you receive for your dollars. Remember, for about one hours wage a month you can fully support the AANA, the ALANA, and the ALANA PAC. No one else will look out for your practice like your national and state organizations. What is your practice worth to you?



At the Annual Congress in Washington DC, the AANA Foundation launched its RISE Above campaign to raise 1 million dollars over three years to support health policy research. This policy research will develop evidence of the safety, high quality, efficacy, and cost effectiveness of nurse anesthesia clinical care and services. Evidence from these studies can support policy when lobbying legislators, advancing practice of nurse anesthesia, and protecting our patients who depend upon our services.

The AANA Foundation recently kicked-off a new study with RTI International titled “How Health Care Executives Value the Cost and Care of CRNAs.” Currently 8 CRNA researchers representing the AANA Foundation and its affiliates are serving on the RTI Technical Expert Panel. As a mixed methods study, the qualitative arm of this study will examine how health executives perceive the utilization and cost effectiveness of CRNAs in their facilities. This study will also illuminate what decision makers believe are the greatest challenges and barriers to using more cost-effective anesthesia delivery models.

Information can be found on the RISE Above microsite –crnasriseabove.org– to answer questions about what the AANA Foundation is doing, and why. The Rise Above Campaign will support the practice of every CRNA in this country, whether they are clinicians, educators, administrators or researchers. In today’s competitive environment, it is essential that we provide the facts and evidence to back our claim that nurse anesthesia is the future of anesthesia care in this country.

Support RISE Above with your tax-deductible donation today, visit: crnasriseabove.org

ALANA Wellness Update

Kerry Varner, MSNA, CRNA



This year's ALANA Wellness Committee has been hard at work to enhance and encourage wellness throughout the anesthesia community in Alabama, both for CRNAs, as well as our students. As most of you are aware, there are several important emerging topics involving wellness that directly relate to anesthesia professionals.

As we all are aware, the environment in which we work, along with the stressors that we often face, can unfortunately lead to diversion and misuse of the powerful medications that we use on a daily basis. It is crucial that we not ignore the fact that 1 in 10 anesthesia professionals are affected. We must also understand and know the signs of drug diversion in order to protect and save the lives of our colleagues affected. The ALANA Wellness Committee and Board of Directors is in the process of developing a simple algorithmic document that can be accessed by all anesthesia departments within the state. This document will also be available on our association's website at <http://www.alabamacrna.org>. It is our goal to ensure that help is available to any anesthesia provider either in need of peer assistance or any provider concerned about a fellow colleague with signs of abuse.

Back in September at the AANA Annual Congress in Washington, DC., several members from our Alabama Association of Nurse Anesthetists (and family members) participated in the AANA Wellness 5K run/walk. This event, which took place on the banks of the Potomac River in Georgetown, was both physically beneficial to all of the participants, but also allowed for some exciting competition. Alabama's anesthesia community was well represented and included finishers that placed both first and second in the youth division. Proceeds from the walk/run went to the AANA Foundation, which supports anesthesia research and funds numerous scholarships and doctoral grants.



Kerry Varner, CRNA, MSNA with Region 7 Director and former ALANA President Heather Rankin, CRNA, DNP



Participants in the AANA 5K walk/run prepare for the event.



Michael Humber, CRNA with sons Hayden & Luke, who placed first and second in the youth division.