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## “Code IA Stroke” *Anesthesia Care Invaluable to Rapid Stroke Response*



Associate Professors Dr. Mia Kang (L) & Dr. James Williams (R) were key members of a multi-disciplinary working group that facilitated adding an anesthesia care team to the “Code IA Stroke” program. Drs. Williams and Kang also served as faculty mentors to three UNC Anesthesiology residents who conducted a Q.I. evaluation on whether adding an ACT delayed critical time in responding to treating AIS.

During a stroke, every minute without treatment leads to loss of 1.9 million neurons. A 2006 *Stroke* article quantifying this rapid loss of human nervous tissue helped mainstream the critical period from symptom onset to treatment as “Time is Brain.” UNC’s stroke care team has traditionally treated an acute ischemic stroke (AIS) with intravenous tissue plasminogen activator (tPA). Today, patients presenting with large, relatively proximal blood clots are evaluated for neurovascular interventional (nVIR) management as part of UNC’s “Code IA Stroke” program. Initially, these patients were managed during their procedures with no or low sedation, and an anesthesia care team (ACT) was called only for patient decompensation when general anesthesia (GA) had to be administered. Adding an ACT to stroke care was considered a potential hindrance to “Time is Brain” model.

As studies further quantify rapid loss of brain function from AIS onset, hospitals have increasingly established organized systems of acute stroke management and treatment. To provide practitioner stroke care teams with a uniform set of recommendations for response, the American Stroke Association (ASA) and American Heart Association (AHA) first collaborated in 2013 to publish *Guidelines for the Early Management of Patients With Acute Ischemic Stroke* (Lead author: UNC Department of Neurology Chair Dr. WJ Powers). Most recently updated in 2018, the *Guidelines* provide the latest recommendations for AIS patient care, from pre-hospital, to emergency evaluation and treatment, to in-hospital management of supportive care and treatment of acute complications.

UNC’s Comprehensive Stroke Center adopted the ASA/AHA *Guidelines* for its stroke care team when first published. In 2015, the updated ASA/AHA *Guidelines* newly recommended endovascular stent treatment within six hours after AIS onset. The introduction of neurovascular interventional (nVIR) therapy in some AIS cases was supported by influential AIS clinical trials such as “MR. CLEAN.” This January 2015 *New England Journal of Medicine*-published study concluded intra-arterial treatment of AIS produced outcomes that are superior to standard intravenous tPA treatment for clot management.

Backed by the updated 2015 *Guidelines* recommendations and published clinical research, UNC’s Comprehensive Stroke Center transitioned to nVIR treatment for AIS cases. In December 2014, UNC’s Comprehensive Stroke Care Center created the “Code IA Stroke” program, initially bringing together three departments — UNC Neurology (stroke team), UNC Radiology (nVIR treatment) and UNC Neurocritical care (pre-treatment/therapy).

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Assistant Professor of Anesthesiology Dr. Ben Heller (L), Associate and UNC Stroke Program Coordinator Nicole Burnett, RN BSN, CNRN, SCR(N) (R) were also key members of the working group.

In June 2015, preparations began to add UNC Anesthesiology to the Code Stroke program. To ensure a smooth transition, numerous multi-disciplinary meetings were held. Within the department, a working group consisting of anesthesiology technicians, anesthesiology residents, CRNAs and staff anesthesiologists developed treatment concepts and resources for these cases. Since August 2015, all patients presenting for Code Stroke have been cared for during their procedures by the members of UNC Anesthesiology department.

A quality improvement evaluation was conducted on the effectiveness of adding an ACT to the Code Stroke program during its initial participation. For AY 2015-2016, Drs. Jordan Hancock (CA-3), Dustin Sitzmann (CA-2) and Daniel McMillan (CA-1) addressed these questions in their resident Q.I. project: *“Time is Brain”: Is the addition of an anesthesia care team a waste of brain?*, mentored by Drs. James Williams and Mia Kang, of the Neuroanesthesia Division. This project evaluated whether an ACT in the program could: 1) be involved without delaying time to treatment; 2) adhere to Code Stroke program consensus management goals in minimizing use of GA and sedatives; and 3) be notified about cases with an acceptable rate of false alarms.

To conduct their evaluation, the researchers analyzed UNC AIS case records from two periods: 1) prior to adding an ACT to the Code Stroke program (March–August 2015); and 2) after adding one (August 2015–March 2016).

Primary measures compared picture-to-puncture (P2P) and picture-to-catheter (P2C) response times (minutes) within these two periods. Also examined were intraoperative results across all levels of anesthesia care (none, sedation, GA) and Code Stroke team responses to a survey regarding thoughts on how adding an ACT impacted the program.

From pre- to post-involvement of an ACT, medical record analysis showed improvement of both skin P2P (Mean=15.3 minutes) and (P2C) with patient reperfusion (Mean=25.9 minutes). Although not statistically significant (sample size: n=26 pre-ACT/n=42 post-ACT), the project indicated reduced time to treatment when involving an ACT across the levels of anesthesia care (None=26%/Sedation=43%/ GA=31%). Among “Code IA Stroke” program team survey respondents, 94% believed adding an ACT didn’t slow the team’s response time (Average: 4.15/5 satisfaction score). When an ACT was added, the false alarm rate was 55%. The Q. I. review concluded that adding an ACT would not delay AIS case response. An ACT could serve invaluable as a Code Stroke program addition and ultimately preserve the “Time is Brain” model of care.

Of UNC Anesthesiology’s three+-year participation in the Code Stroke program, Dr. Williams concludes: “The [program] is notable for significant teamwork. Without intervention, these strokes are very morbid, and UNC has helped a lot of patients. UNC Anesthesiology is pleased to be advancing the care of patients with strokes.”

## Anesthesia Care in Acute Ischemic Stroke Interventions (“Code IA Stroke”)



### 1. Exam suggests large, proximal embolic stroke\*

- Last known normal – typically within 6 hrs
- PACU-G1 & charge CRNA paged; to contact attending

\*At UNC: 1/3 case volume; avg time 20–30 min; false alarm 1/3  
\*Outside UNC: 2/3 case volume; avg time 1–2.5 hrs; false alarm 2/3

### 2. CTA

- Large proximal occlusion
- Remains within 6 hours up to 24 hours in select patients

### 3. To nVIR for procedure

- After timeout often immediate start
- Many patients do not need sedation

# NUMBERS AT A GLANCE\*

UNC Department of Anesthesiology

## Code Stroke “Time to Brain”



**7.3** Average cases per month



**12** outside referring hospitals for “Code IA Stroke” activations



Average frequency of sedation use

**55%**

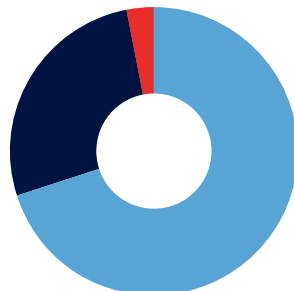


Average time for “arrival-to-arterial puncture” of IA catheter-treated patients

**29 minutes**

### Stroke Activations: Patient Last Known Normal to Arrival Times at UNC Medical Center

- 0 to 6 Hours: 70%
- 6 to 18 Hours: 27%
- 18 to 24 Hours: 3%



## Guest Column: Bobby Silvers

For 20 years, UNC Assistant Chief CRNA Bobby Silvers served as a model clinical leader and dedicated provider. Upon retiring in December 2018, Bobby wrote a heartfelt goodbye to his long-time Department family that we’d like to share with our readers.

UNC Anesthesiology Chair Dr. David Zvara noted: “I don’t think I can say it any better than this. So I won’t.”

Friends, I suppose that by now most of you have heard of my impending retirement. To get some of the inevitable questions about my retirement out of the way, I have supplied some answers: **1.** Yes. **2.** No. **3.** Quite possibly. **4.** Not likely. **5.** Goat herder, beekeeper, gentleman farmer, and maybe help my wife with her bookstore. **6.** Visit our new grandson and travel. **7.** I’d love visitors. **8.** 36 years...it’s time.

Thank you for indulging me in a little jocular.

One score years ago, I came forth to Chapel Hill (what? too soon?) to begin a new chapter in my life, and now that chapter is coming to an end, and a new one about to begin.

Little did I realize at the time, what an incredible place Chapel Hill was, and UNC Hospitals a place to work. I was to meet and practice anesthesia with so many talented and compassionate people here, I could scarce believe my good fortune. Over the years, that feeling has only gotten stronger. I feel that I have been truly blessed to be able to say that I have been part of a team that provides such excellent care to our patients.

All of us have been given gifts to use, and I feel that the gifts that have been given to each of us as anesthesia providers are some of the most important in the world. Our hands have been given the gift to ease pain and suffering, our voices the gift to calm and soothe the distressed and hurting, and we have been given the gifts of compassion and mercy. All of us have these gifts, whether we realize or not, else we would not have chosen this calling. All of us, from the newly hired anesthesia technician to the most seasoned providers, have the power to touch our patients, to ease their pain and suffering. I am proud to call myself a Nurse Anesthetist, and proud and privileged to have been a UNC CRNA for 20 years.

You have all been such an important part of my life, it is such an understatement to say that I am grateful and thankful for the opportunities you have given me: the opportunities to provide anesthesia care not only to the citizens of North Carolina, but also the chance to provide care in South America and in the West Bank, the opportunities in leadership, and opportunities to influence our practice here.

It is impossible for me to thank each of you individually for the impact that you have made on my practice and my life, but I do thank you. I have learned from each and every one of you, as I hope that I have been able to offer a little something of myself to those I have had the pleasure to work with and teach. I have the greatest respect and admiration for all of you, I will miss all of you, and wish all of you the very best that the future holds for you.

Til we meet again, Bobby Silvers, UNC Assistant Chief CRNA (1998–2018)

\*Silvers' farewell replaces Chairman's Note in this issue



## Introducing Assistant Chief CRNA Kyle St.Jean



**“UNC’s acuity level is unrivaled, and its CRNA staff is arguably the most talented group of clinicians I’ve ever encountered.”**

– Assistant Chief CRNA Kyle St.Jean

**T**he Department welcomed Kyle St.Jean as its new Assistant Chief CRNA in October 2018. Kyle brings to UNC almost 18 years of clinical experience as a CRNA. From 2001 to 2018, he worked across a wide range of healthcare settings, including: 1) Kent County Hospital (Warwick, RI); 2) Rhode Island Hospital (Providence, RI); 3) Short Hills Surgery Center (Millburn, NJ); and 4) Central Maine Medical Center (Lewiston, ME). Kyle received his Master’s degree in Nurse Anesthesia from Central Connecticut State University, and his BSN from the University of Rhode Island (summa com laude).

Prior to his years as a CRNA, Kyle spent 12+ years active duty in the United States Army Reserve, deploying multiple times to Iraq and Afghanistan. He transitioned his clinical skills from hospital settings to the battlefield, deploying in 2016 for a year commanding a split-based FST (Forward Surgical Team) in Afghanistan. Applying his clinical skills to leading a team in the field redirected Kyle’s focus toward pursuing a new provider role back in large healthcare settings once home in May 2017.

Kyle recalls: “I was a worker bee as a CRNA, yet I often felt I wasn’t living up to my true leadership potential. After spending time as a field commander in Afghanistan, I returned home and committed myself to pursue a management career path. I felt very blessed to be hired as [UNC’s new Assistant Chief CRNA] position following the retirement of UNC’s very experienced Assistant Chief CRNA, Bobby Silvers.”

“When Marc [Caruana, Chief CRNA] offered me the job last summer, I was prepared to do everything I could for a large department that covers many out-of-OR locations. UNC’s acuity level is unrivaled, and its CRNA staff is arguably the most talented group of clinicians I’ve ever encountered. I am humbled to lead such a qualified group that comes to work every day, caring for the sickest of the sick in a compassionate and patient-focused manner. My management team, [CRNAs] Marc Caruana and Julie Lowery, are very patient teachers and selfless mentors. I enjoy also working with UNC’s collegial group of faculty anesthesiologists and arrive at work every day willing to learn something new.”

Marc Caruana noted: “Kyle has been an excellent addition to our leadership team. He connects with others, he learns processes quickly and has great attention to detail when necessary. He brings a fresh perspective and he genuinely cares about our staff and our patients and has their best interest at heart.”

## UNC Anesthesiology Celebrates its CRNAs: Thanks for All You Do!

**D**uring the January 2019 National CRNA Week, UNC’s CRNAs hosted several events to celebrate their profession. Posters and table tents were displayed in OR waiting areas at both UNC Hospitals campuses (Chapel Hill and Hillsborough) and Chapel Hill’s ACC to educate the public on what CRNAs do in healthcare. Our CRNAs also broadened patient care to community give-back through preparing and serving dinner at the SECU Family House to family members of longer-term UNCH in-patients.

This past year, UNC CRNAs have donated over \$2000 to two charities: 1. The NC Food Bank of North Carolina, (for major 2018 State of NC natural disaster damage); and 2. Better Off Fed (small animal rescue organization). Julie Lowery coordinated donations to these organizations.



## 2019 Academy of Educators: Congrats to Our 5 New Members

The Department would like to recognize five faculty selected in April amongst the newest members of UNC School of Medicine's 2019 Academy of Educators. Those chosen have demonstrated excellence in teaching, as well as a commitment to developing curricula and scholarly research that enhances residents and fellows training at UNC. Congratulations to these dedicated faculty members!



**Dr. Greg Balfanz** | Assistant Professor



**Fei Chen, PhD** | Educational Specialist



**Dr. Kathryn Cobb** | Assistant Professor



**Dr. Chris Howard** | Assistant Professor



**Janey Phelps** | Associate Professor

## McNaull Named 2018 H. Fleming Fuller Awardee



2018 H. Fleming Fuller Award recipient Dr. Peggy McNaull

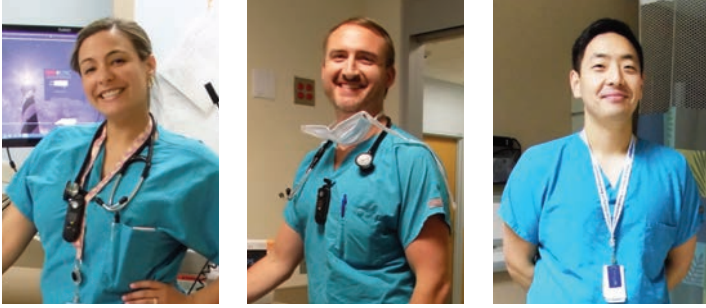
The Department would like to congratulate Associate Professor of Anesthesiology and Pediatrics Dr. Peggy McNaull for receiving the 2018 H. Fleming Fuller Award. Dr. McNaull was honored at the November 2018 UNC Health Care Board of Directors meeting. Introducing Dr. McNaull at this meeting, UNC Health Care's Chief Medical Officer Dr. Tony Lindsey described her as a "teacher and clinician revered by everyone."

Since the mid-1980s, a UNC medical staff member has been chosen annually as the Fuller Award recipient. Awardees are chosen for demonstrating the commitment to patient care, teaching, and public health interests embodied by Dr. H. Fleming Fuller, a Kinston, NC Obstetrician-Gynecologist and co-founder of the UNC Health Care Board of Directors. Fuller is credited with helping bring healthcare for women to mainstream American medicine, and for helping to destigmatize cancer. He served as Past President of the North Carolina Obstetrics and Gynecological Society, as well as Co-founder and Past President of the North Carolina Cancer Society.

Dr. McNaull is an established leader within the Department of Anesthesiology and across UNC Health Care System and UNC School of Medicine. In 2018, she was appointed the Department's Vice Chair for Patient Safety & Quality Improvement, as well as UNC Hospitals' Associate Chief Medical Officer for Quality and Safety. Since 2009, she has served as the Department's Pediatric Anesthesiology Division Chief and Physician Director of North Carolina Children's Hospital ORs.

Department Chair Dr. David Zvara stated: "The Fuller Award is rich with tradition here at UNC. This award recognizes our very best physicians, those who give back. I am so pleased to see this recognition go to Dr. McNaull."

## Word from Our 2018-2019 Chiefs



L to R: 2018-2019 Chief Residents: Drs. Katie Schott, Bryan Kidd & Jeff Park

**F**our intense, rigorous, happy, sad, touching, years are coming to a close. When we look back, it is easy to see that we have had a wide range of patient experiences and training that have prepared us for what is to come. Our class has had the great fortune of matching into competitive specialties of our choice or securing jobs that will suit us, and we have UNC Anesthesiology to thank for that.

We are so excited to move forward in our careers. We have all either found jobs in general anesthesia or secured a spot in fellowship. This year, we matched into pain, cardiac, intensive care, regional, and obstetric fellowships at prominent institutions: University of Pittsburgh, Washington University, Duke, and UNC.

UNC Anesthesiology is such a special place to work. Our residency not only provides us with a rigorous education and hands-on experience, but also with faculty that pour into our lives. The mentorship here is unparalleled. There are experiences along the way that we will never forget: learning the art of neuro anesthesia with Dr. McFarlane, our first time working with Dr. Zvara as a CA-1, placing an anatomy-guided central line with Dr. Bhatia and Dr. Barrick, taking Senior call for the first time and setting up for a middle-of-the-night red trauma with Dr. Balfanz, and deer cricothyrotomy lab with Dr. Kapeluk. These and many more things are not only cherished memories, but also vital experiences that have prepared us to be leaders in Anesthesiology.

From the start, UNC has felt like family to us. This was not a happenstance, but a culture that UNC nurtures. The inception and implementation of Family Anesthesia Experience Day is just one example of how dedicated we are to have our families and coworkers unite to support one another. We are thankful for what we have learned and are enthusiastic to continue our journey of being a physician.

## CA-3 Dr. Lindsey Gouker

### *A Resident's Wisdom on Learning Practice Management During Training*

**W**hen she began training in 2017, CA-3 Dr. Lindsey Gouker possessed a background few others do entering residency. She had worked four years in real-world practice as a pediatric oncologist. During these early-career years, Dr. Gouker's interest in healthcare administration took hold. Transitioning to anesthesiology, UNC's unique offer of allowing program recruits to obtain a Master of Healthcare Administration (MHA) during residency stood out. In her words: "This was the perfect combination of clinical and administrative training to serve my long-term career goals."



In 2018, her program leaders nominated Dr. Gouker as a highly qualified candidate for the American Society of Anesthesiology (ASA)'s Emerging Leaders Scholarship Program. Her selection along with other nominated CA-2s nationwide enabled her early 2018 to attend ASA's annual PRACTICE MANAGEMENT Conference. This long-time workshop teaches practicing and in-training anesthesiologists how to efficiently and effectively manage an anesthesia practice. Recently, it has offered a Resident/Fellows Track teaching trainees

foundational concepts in anesthesia practice management that are essential to meet and excel at non-clinical demands when starting practice. Months prior to starting her fall 2018 MHA studies, Dr. Gouker acquired timely and invaluable anesthesia practice management knowledge and mentorship that

would greatly assist her once past training and entering practice licensed in a new medical specialty.

Prior to the 2019 PRACTICE MANAGEMENT Conference, Dr. Gouker was among three 2018 Emerging Leaders Scholarship recipients chosen to recap her experience as a Resident/Fellows Track participant for publication on ASA's website. Excerpts of Dr. Gouker's words on the value of learning practice management while in residency are below:

"As I was preparing for the [UNC MHA] program, I looked for other opportunities to expand my knowledge of healthcare administration. I quickly recognized the value [of the] Resident/Fellows Track. ... [This] one-day course is solely dedicated to introducing basic concepts to trainees that have had a fair amount of clinical experience in an academic healthcare system, but lack meaningful exposure to other practice models or the financial and administrative structures of healthcare. I know I've asked myself and assume many of my co-residents and fellows have the same thoughts: why do I practice the way I do?, what influences my institution's processes and workflow?, and how can I be more efficient? This conference [provides] protected time with colleagues and mentors, all with similar goals and interests, to introduce some of those anesthesiology practice fundamentals. ... I left with new knowledge of our very nuanced and complicated healthcare system and some helpful tips on making my transition to attending in this whole new world less tumultuous and stressful. I would highly recommend it to any resident or fellow, regardless of interest in healthcare administration. It provides some great framework for a successful career as an anesthesiologist."



# Teaming Up with Peers for Immersive Learning

*Multi-institutional Collaboration Brings Hands-on Learning Across the Disciplines to Broad Scope of Trainees*



**(Left)** The Triangle CT Conference, an annual, collaborative UNC/Duke CT learning forum, brought anesthesiology residents and other CT-focused providers together in January 2019 to explore cardiac anatomy via an immersive, hands-on pig heart dissection workshop. **(Right)** In February 2019, the Southeast Regional Pediatric Anesthesiology 7th Annual Transition to Practice Fellowship Simulation Day brought fellows from four institutions together to participate in case presentation simulations using infant and child task trainers to instruct fellows on managing and responding to critical events inside and outside of the OR.

**M**edical education is shifting toward experiential learning. In academic medical centers, dedicated simulation space for teaching patient care provides the means. UNC's Clinical Skills and Patient Simulation Center, a.k.a. the "SIM Lab," has been used for 15+ years to facilitate experiential learning. Participants learn to take charge of simulated patient care, working their way toward procedural and diagnostic competence as UNC teaching faculty assess their application of critical thinking and provide feedback.

UNC and peer institutions with immersive, hands-on teaching facilities have come together to offer collaborative experiential learning workshops. Two such workshops were hosted by the UNC Department of Anesthesiology in early 2019.

The Triangle CT Conference, a quarterly, multidisciplinary conference launched in 2008 by Drs. Susan Martinelli (UNC) and Madhav Swaminathan (Duke), is an annual UNC/Duke collaborative CT learning forum. The conference has evolved from a focus on transesophageal echocardiography education to more interdisciplinary and immersive learning. Conferences are co-organized by Resident Cardiac Curriculum Director Dr. Emily Teeter and Director of Critical Event Management Dr. Lavinia Kolarczyk, along with Duke counterparts.

At January's quarterly conference, anesthesiology residents from each institution came together to explore the intricacies of cardiac anatomy via a hands-on pig heart dissection workshop. CT surgery residents, cardiology fellows, anesthesia and ICU faculty and sonographers also participated. The session aimed to provide participants with in-depth knowledge of cardiac anatomy and physiology in order to gain a deeper understanding of the surgical procedures that patients undergo.

Dr. Teeter noted: "The collaborative nature strengthens the relationship between [UNC and Duke], reminding our trainees that multi-disciplinary and inter-institutional initiatives are of great value. Hands-on exploration of cardiac anatomy and correlation with cardiothoracic procedures as well as echocardiographic correlates could not have been obtained as realistically using simulation or didactic learning. We plan to make this workshop an annual event."

In late February, the Southeast Regional Pediatric Anesthesiology 7th Annual Transition to Practice Fellowship Simulation Day brought together Pediatric Anesthesia faculty and fellows from UNC, Duke, Vanderbilt University and Children's Hospital of Wisconsin to participate in case presentation simulations at UNC. Expert facilitators used infant and child task trainers to instruct fellows on managing and responding to critical events inside and outside of the operating room, in a high-fidelity setting stressing team work and problem-solving. A "Professionalism" lecture given by Drs. Ann Bailey and Bill Greeley, nationally recognized leaders in pediatric anesthesia, enhanced the workshop's benefit to fellows.

Dr. Concetta Lupa noted: "Led by Dr. Kimberly Blasius, the work done by those on our simulation team has been phenomenally successful in creating a collaborative and inter-institutional approach to learning. When subspecialty fellows from multiple institutions have the opportunity to come together and share experiences, some magic happens - they engage at a higher level and have the opportunity to challenge themselves in new ways. Our educators are passionate not just about pediatric anesthesia, but creating a consummate professional."

## Dr. Priya Kumar: Collaboration is Key to Successful Clinical Research



Under the dynamic leadership of Samuel McLean, MD, Vice Chair of Research, and supported by the Department Research Expense (DRE) fund, the **UNC Anesthesiology Clinical Research** operation has conducted many successful industry-supported and investigator-initiated projects ranging from pain management trials, obstetric interventions, resident education projects and international multicenter trials aimed at minimizing perioperative complications. In 2017, Priya Kumar, MD, Professor of Anesthesiology, extended her longstanding involvement in collaborative clinical research and took on the role as the Department's Director of Clinical Research.

The DRE funds allocation overseen by the Committee for the Advancement of Clinical Research comprises departmental experts committed to supporting research activities. Funds are awarded for projects, posters, and student travel. Regular committee meetings provide a forum for investigators to share their research ideas and receive feedback.

The research support team is led by Vicki Sandlin, the clinical trials nurse who helps ensure adherence to protocols, compliance with relevant laws, regulations, policies and procedures. She also provides expertise to investigators in navigating the IRB process.

**The Department's success with completed clinical trials upholds its ability to sustain ongoing clinical research funding. Some of the recent DRE-supported projects include:**

### The Family Experience

Susie Martinelli, Fei Chen

With funding support from DRE and an Association of American Medical Colleges Group on Educational Affairs National Grant, the team comprehensively examined the impact of a series of wellness programs. The findings were disseminated via conference presentations and journal article publications. The abstract reporting the CA1 Family Experience event received the Runner-up Philip Liu Award for Innovation in Anesthesia from Society for Education in Anesthesia in 2018. The process of adapting this wellness initiative for UNC medical students as they transition from preclinical work to clinical work is currently ongoing.

### A Survey of Anesthesiology Residency Simulation Programs

Rob Isaak, Harendra Arora, Susie Martinelli, Fei Chen

The team designed and administered a survey to anesthesiology residency program directors in the United States for the purpose of analyzing the current state of US-based educational programming for structured oral examination and Objective Structured Clinical Examination component of the American Board of Anesthesiology Primary Certification process. The findings from this survey study were published in *Anesthesia & Analgesia*.



**(Top)** A January 2019 interview with Professor of Anesthesiology Dr. Priya Kumar in *Endeavors*, (UNC's research community publication) spotlights her dedication to collaborative clinical research since early career. **(Bottom) L to R:** Dr. Harendra Arora, Fei Chen, Dr. Kathleen Smith, Dr. Brian Specht (Pediatric Fellow) & Dr. Priya Kumar; Vicki Sandlin (Nurse Consultant), Drs. Meena Bhatia & Concetta Lupa; Lindsie Boerger (Research Assistant) \*Not Pictured: Drs. Susan Martinelli, Janey Phelps, David Mayer, Robert Isaak, Brooke Chidgey, Benjamin Cobb, Lacy Straube (OB fellow), Maryam Jowza, Christine McKenzie.



**Opiate Consumption in OB Patients with Substance Use Disorder***Benjamin Cobb, Kathleen Smith*

Our institution is affiliated with a large substance use disorder treatment program for pregnant women. In preparation for developing a comprehensive pain protocol for this patient population, the investigators seek to determine the post-operative pain experience these patients are having following cesarean delivery compared to those women who are not on opioid maintenance therapy.

**Perinatal Nitrous Oxide National Data Registry***David Mayer*

This multicenter trial is collecting demographic, outcome, and satisfaction data on patients who are administered nitrous oxide for labor.

**Activated PTT and Anti-Xa Activity After Heparin in Pregnancy***David Mayer*

This study attempts to measure two different markers for ongoing heparin effects on coagulation; whether activated PTT (secs) and anti-Xa (IU/mL) change over time among pregnant women receiving prophylactic anticoagulation with unfractionated heparin and whether these levels correlate with each other and with time. It may allow shortening the window from last heparin dose to utilization of epidural analgesia in a select population of obstetric patients.

**Nitrous Oxide for External Cephalic Version***Kathleen Smith, Lacey Straube*

Obstetric anesthesiologists at UNC are seeking to determine if nitrous oxide can be used to reduce pain and anxiety during version procedures for patients with breech babies and if use of this medication can potentially improve success of the procedure. Enrollment was recently completed with a total of 50 subjects. Data are currently being analyzed to determine if this intervention made any difference in the outcomes.

**Virtual Reality in Pediatrics***Brian Specht, Janey Phelps, Concetta Lupa*

This study is designed to assess if a virtual reality experience, as compared to the control of an iPad, in the PACU affects pain scores, opioid consumption, overall analgesia consumption, and behavior changes after anesthesia in pediatric patients. The pilot project is currently ongoing.

**Pain Perception***Maryam Jowza*

The goal of the study was to determine if pain management specialists, who by definition are experts at treating chronic pain hold biases against patient with chronic pain syndrome. The study was recently completed across 9 centers surveyed with 52 responses and was presented at ASRA 2018.

**Perioperative ISchema Evaluation-3 (POISE-3)***Priya Kumar, Harendra Arora, Meena Bhatia*

After the successful completion of the POISE-2 trial leading to several publications in top tier journals, our department has recently embarked onto the POISE-3 trial. Investigators hope to answer some fundamental questions for the prevention of perioperative cardiovascular complications and death. The POISE-3 trial is an international RCT of 10,000 patients with cardiovascular disease who are randomized to TXA or placebo given intraoperatively. It will utilize a partial 2x2 factorial design to randomize

patients to perioperative hypotension-avoidance strategy vs. hypertension-avoidance strategy. POISE-3 will answer crucial management questions and influence future perioperative practices around the world.

**Postoperative Opioid Prescription***Brooke Chidgey*

This patient safety project aims at guiding the postoperative opioid-prescribing schedules to optimize the doses prescribed. The team hopes to avoid opioid misuse and accidental overdose by minimizing unused opioids available in the community and in homes.

**Post Cesarean Analgesia***Christine McKenzie*

This is an ongoing project with an aim to decrease opioid use after cesarean delivery. Data are being collected on opioid-prescribing patterns to track compliance and to encourage opioid reduction. It has helped cut opioid use and may continue to further reduce it.

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**“It takes a village! We have excellent leadership from Dr. Sam McLean, and my Committee Vice Chairs Drs. Sarah Linnstaedt and Matt Mauck. We have a motivated team of support staff including Vicki Sandlin. The investigators selflessly devote time and energy to these projects despite their busy full-time clinical commitments.”**

*– Dr. Priya Kumar*

At the SOAP 51st Annual Meeting in Phoenix, AZ, in May 2019, UNC Anesthesiology was well-represented and recognized! Congratulations to Drs. Lacey Straube and Stephanie Woodward, recognized among other “Top Poster” awardees. Dr. Straube was additionally chosen to present at the “Best Case Reports – You Did What?” session. **PHOTO (L to R):** Drs. Elizabeth Snow, Lacey Straube, Kathleen Smith, Leslie Mathews, & Stephanie Woodward

## Photo Gallery



**L to R:** CA-3s Drs. Candy Ezimora & Bryan Kidd, Professors Drs. David Zvara & Harendra Arora, Associate Professor Dr. James Williams and CA-2s Bryan Whitlow, Andres Rojas, Elizabeth Snow & Matthew Hallman at the 2018 ASA Annual Meeting Resident Meet and Greet.



UNC Anesthesiology resident CA-3 Dr. Soshana Clerizier got to meet US Surgeon General Dr. Jerome Adams during her March 2019 health policy rotation at Georgetown University. Dr. Adams discussed with participants how he approaches his position, as well as vaccines and the opioid crisis.



CA-1 Dr. Michael Richman with his proud father, anesthesiologist Dr. Mark Richman, at the ASRA annual meeting in March 2019.



The UNC Transition to Practice (TTP) Seminar is an annual daylong event in which invited guest speakers, current faculty, and residency program alumni educate current residents and fellows on what to expect after training. Topics discussed typically include: a day in the life of an anesthesiologist, billing, financial planning, and contract negotiations. For the past several years, UNC Anesthesiology has held this event in collaboration with Duke University's Department of Anesthesiology.

**L to R:** TTP Former Resident Panel Moderator: Dr. Kimberley Nichols (Associate Professor, UNC Anesthesiology); Former UNC Anesthesiology Resident Panel: Dr. Kristina Mayo (Anesthesiologist, Duke University – Community Division), Dr. Hayden Kirby (Staff Anesthesiologist, American Anesthesiology of the Carolinas); and Dr. Amy Penwarden (Staff Anesthesiologist, American Anesthesiology at Alamance Regional Medical Center).



# Featured Publications, Awards & Presentations

## July to December 2018

### ABSTRACTS

**Serrano R**, Tanner M, Du E, **Isaak R**, **Kolarczyk L**, **Hance L**, Hackman T. Enhanced Recovery After Surgery in Otolaryngology: A Multidisciplinary Approach to Improving Patient Care. Scientific Abstract Presentation. American College of Surgeons (ACS) Quality and Safety Conference. Orlando, FL. July 2018.

**Linnstaedt SD**, Pan Y, Kurz MC, Pearson C, Hendry PL, Lewandowski C, Domeier R, **McLean SA**. Sex-dependent risk factors of persistent axial pain development following motor vehicle collision trauma: results of a preliminary analysis. 2018 International Association for the Study of Pain, Boston, MA. September 2018.

Chen C, Yu S, Pan Y, Kurz MC, Pearson C, Hendry PL, Lewandowski C, Domeier R, **McLean SA**, **Linnstaedt SD**. Genes known to escape X chromosome inactivation predict comorbid musculoskeletal pain and posttraumatic stress symptom development in women following trauma exposure. 2018 International Association for the Study of Pain. Boston, MA. September 2018.

**Nagar R**. Physical activity is not associated with improvement in chronic pain after intervention. Pain Society of the Carolinas (PSOC) Annual Meeting. September 2018.

**Woody N**, Gilmore J, Mann J, Nielsen M, McCall C, Maltais T, **Chidgey B**, **McNaull P**. Improving Opioid Stewardship: Standardizing Physician Prescribing Methods. High Value Practice Academic Alliance National Conference (HVPAA). Baltimore, MD. September 2018.

**Whitlow B**, **Michael R**, **Mauck M**. Cannabinoid utility and legality in the chronic pain patient. ASRA 2018 Annual Pain Medicine Meeting. San Antonio, TX. November 2018.

**Swearingen J**, **Teeter E**, **Chen F**, **Smeltz A**. "Seeing is Believing: Rapid Visual Assessment of Right Ventricular Systolic Function." December 2018.

### PRESENTATIONS

**Kolarczyk L**. "Perioperative ACE-Inhibitors: The Controversy Continues." Mexican College of Anesthesiologists, XLIV Annual Refresher Course in Anesthesiology and Perioperative Medicine. World Trade Center, Mexico City, Mexico. July 2018.

**Kolarczyk L**. "Updates in Thoracic Analgesic Techniques." Mexican College of Anesthesiologists, XLIV Annual Refresher Course in Anesthesiology and Perioperative Medicine. World Trade Center. Mexico City, Mexico. July 2018.

**Kolarczyk L**. "Thoracic Analgesic Techniques: An Update for Surgeons." Cardiothoracic Surgery Grand Rounds. UNC. August 2018.

**Isaak R**. Perioperative Pulmonary Embolism Management. American Osteopathic College of Anesthesiologists 66th Annual Convention. San Diego, CA. September 2018.

**Isaak R**. Goal Directed Fluid Therapy: Using Dynamic Indices for Fluid Management. American Osteopathic College of Anesthesiologists 66th Annual Convention. San Diego, CA. September 2018.

**Isaak R**. Oral Exams - Assessing surgical technical skills in Initial Certification: How can we ensure physicians are ready to practice following residency? American Board of Medical Specialties Annual Meeting Surgical Symposium. American Board of Anesthesiology Representative. Las Vegas, NV. September 2018.

**Unnithan A**, **Chidgey B**. "Chronic Pain: Managing Expectations." Pain Society of the Carolinas Annual Meeting. Greenville, SC. September 2018.

**Teeter E**. "Enhanced Recovery After Thoracic Surgery." Anesthesiology Grand Rounds, Wake Forest University. November 2018.

### MANUSCRIPTS

**Bhatia M**. Fellowship Spotlight: Cardiothoracic and Critical Care Anesthesia. ASA Newsletter. Summer 2018: pgs. 3-4.

Laks S, **Kolarczyk LM**, Strassel P, **Isaak RS**, **Hance L**, Kim HJ. Increased Intraoperative Vasopressor Use as Part of an Enhanced Recovery After Surgery Pathway for Pancreatectomy Does Not Increase Pancreatic Fistula. *J Pancreat Cancer*. 2018 Jun 1;4(1):33-40. doi: 10.1089/pancan.2018.0007. eCollection 2018.

**Bhatia M**, **Kumar P**, **Martinelli S**. Surgical echocardiography of the mitral valve; focus on 3D. *Semin Cardiothorac Vasc Anesth*. 2019 Mar;23(1):26-36. doi: 10.1177/1089253218789409. Epub 2018 Jul 18.

**Nanda M**, **Cobb K**. "Ketamine and electroconvulsive therapy: So happy together?" *Curr Opin Anaesthesiol*. 2018 Aug;31(4):459-462. doi: 10.1097/ACO.0000000000000607.

**Chen F**, Lui AM, **Martinelli SM**. In response to Vanneman et al. "Studies on the effectiveness of flipped classrooms." *Med Educ*. 2018 Aug;52(8):877. doi: 10.1111/medu.13597.

**Linnstaedt SD**, Riker KD, Rueckeis CA, Kutcho KM, Lackey L, McCarthy KR, Tsai Y, Parker JS, Kurz MC, Hendry PL, Lewandowski C, Velilla MA, Datner E, Pearson C, Domeier R, Kaushik S, Laederach A, **McLean SA**. A functional riboSNitch in the 3'UTR of FKBP5 alters microRNA-320a binding efficiency and mediates vulnerability to chronic posttraumatic pain. *J Neurosci*. 2018 Sep 26;38(39):8407-8420. doi: 10.1523/JNEUROSCI.3458-17.2018. Epub 2018 Aug 27.

**Gouker L**. Editorial: An Introduction to Hierarchical Condition Categories (HCC). American Society of Anesthesiology. "Timely Topics in Payment and Practice Management (2019)." September 2018.

**Whitlow B**, **Mozingo C**, Fardelmann K. Hemabate Induced Bronchospasm in an Asthmatic. American Society of Anesthesiologists (ASA) 2018 Annual Meeting. San Francisco, CA. October 2018.

**Bhatia M**, **Kumar PA**. Pro: Venous-arterial extracorporeal membrane oxygenation should always include placement of a left ventricular vent. *J Cardiothorac Vasc Anesth*. 2019 Apr;33(4):1159-1162. doi: 10.1053/j.jvca.2018.11.004. Epub 2018 Nov 13.

**Linnstaedt SD**, Pan Y, **Mauck MC**, Sullivan J, Zhou CY, Jung L, Rueckeis CA, Blount JD, Carson MS, Tungate AS, Kurz MC, Hendry PL, Lewandowski C, D'Anza T, Datner E, Bell K, Lechner M, Shupp JW, Cairns BA, **McLean SA**. Evaluation of the Association Between Genetic Variants in Circadian Rhythm Genes and Posttraumatic Stress Symptoms Identifies a Potential Functional Allele in the Transcription Factor TEF. *Front Psychiatry*. 2018 Nov 15;9:597. doi: 10.3389/fpsy.2018.00597.

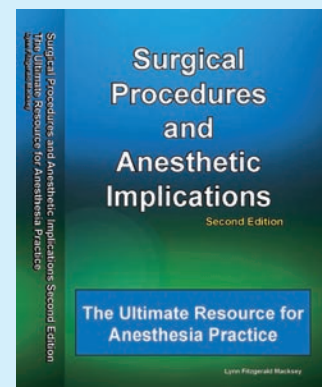
**Henley M**, **Arora H**, Farber M, **Teeter E**, **Kumar PA**. Anesthetic Considerations for Three-Branch Endovascular Total Aortic Arch Aneurysm Repair. *J Cardiothorac Vasc Anesth*. 2018 Nov 30. pii: S1053-0770(18)31100-5. doi: 10.1053/j.jvca.2018.11.048. [Epub ahead of print]

Green LK, Lee JY, Roberts MW, **Anderson JA**, Vann WF. A Cost Analysis of Three Pharmacologic Behavior Guidance Modalities in Pediatric Dentistry. *Pediatr Dent*. Vol 40, No. 7, November–December 2018, pp. 419-424(6).

**Yu S**, **Chen C**, **Pan Y**, Kurz MC, Pearson C, Hendry PL, Lewandowski C, Domeier R, **McLean SA**, **Linnstaedt SD**. Genes known to escape X chromosome inactivation predict co-morbid chronic musculoskeletal pain and posttraumatic stress symptom development in women following trauma exposure. *Am J Med Genet B Neuropsychiatr Genet*. 2018 Dec 11. doi: 10.1002/ajmg.b.32706. [Epub ahead of print]

### BOOK CHAPTERS

**Martinelli SM**, Bowe EA. The Interactive Classroom. In: Bowe EA, Schell RM, DiLorenzo A. *Education in Anesthesia: How to Deliver the Best Learning Experience*. 1st ed. New York: Cambridge University Press; 2018, pgs. 160-185.



The Department would like to congratulate CRNA **Lynn Macksey** on her March 2019 publication of *Surgical Procedures and Anesthetic Implications* (2nd ed.). This latest edition gives anesthesia providers a reference tool to review specific surgeries night before and day of "unexpected" scheduled cases. The book is available on Lynn's website and amazon.com.



# 2019 Upcoming Events

## June 8

**Resident & Fellows Graduation**  
George Watts Alumni Center • Chapel Hill, NC

## June 19-22

**32nd Annual Carolina Refresher Course**  
Kiawah Island, SC

## October 19-23

**American Society of Anesthesiologist 2019 Annual Meeting**

- Oct. 19 – Resident Meet & Greet
- Oct. 20 – ASA Alumni Reception

Orlando, FL

For more information regarding the events listed below,  
please visit [www.med.unc.edu/anesthesiology](http://www.med.unc.edu/anesthesiology).



## 2019 CRNA Week: Giving Back at SECU Family House

**Top (L to R):** David Brentz, Marc Caruana, Jessica Molnar, Marcia Guine, Cindy Struick, Nancy Roberts  
**Bottom (L to R):** Brittney Padachowski, Tyler Smith, Lindsey Caruana, Amanda Greer, Julie Lowery,  
Seph Guine, Tammy Meath, Shirley Sopko, Amy Hueske, Kristin Carver