IN the SPOTLIGHT

6 Building the Residency Program
7 Researchers Attract $8.8 Million Grant
8 Clinical Research Roundup
W arm greetings from Augusta! This past winter was cold even for those among us who are from “up North.” Temperatures dropped to near record lows in January and an ice storm knocked out power across the CSRA in February. Southern hospitality was evident despite the downed trees and power lines, as neighbors helped neighbors to stay warm and safe.

In a way, that was a continuation of the Christmas cheer we shared when our department filled 55 of the more than 500 stockings that Medical College of Georgia at GRU faculty and staff stuffed with toys, sketchpads, scarves, and mittens for children in need. I am proud that anesthesia took part in this great cause, and thank Crystal McCray for spearheading our department’s efforts. We also enjoyed our first ever joint Christmas party with the surgery department. The well attended event was very successful and I am hoping the food and fellowship we shared will become a new holiday tradition for us.

Speaking of which, teamwork is definitely evident among all members of the perioperative service line crew, and I am grateful for everyone’s support. We are in the process of recruiting faculty and nurse anesthetists for the perioperative service line which itself is evolving. We are improving patient flow with a new holding area, expanding our operating room services, and increasing the number of faculty, residents and mid-level providers in the operating room.

When it comes to research, Dr. Steffen Meiler has certainly set the bar high for the rest of us. He and Drs. Abdullah Kutlar and David Pollock were awarded $8.8 million in funding from the National Institutes of Health. This was a fiercely competitive application, as only eight of the 35 centers that applied, received funding. In addition to his important sickle cell disease research, Dr. Meiler has just started the business administration certificate program with the American Society of Anesthesiologists. The knowledge and skills he gains will surely help us to build and improve our program.

I would like to congratulate all of our residents for the incredible number of publications and posters they have been involved with in the past year as well the CA-1 residents for performing so well on the Anesthesia Knowledge Test. I look forward to the coming year under the joint leadership of Chief Residents Mark Banks and Sean Crane.

As for this year’s Match Day, we filled all 13 positions! Kudos to everyone, especially Interim Residency Program Director Mary Arthur and Residency Coordinator Susan Dawkins as well as our residents, who are truly ambassadors for our program, for all their hard work.

Congratulations also to our Cardiothoracic and Intensive Care Unit faculty for their recent publications in Anesthesiology, Anesthesia and Analgesia, Journal of Cardiothoracic and Vascular Anesthesiology, and European Heart Journal.

I have been serving as the interim chair for nearly a year now, and our department and our programs have become stronger and more cohesive. As our new leadership is gradually put into place, I am optimistic that we will continue to do well and reach excellence in all our academic and patient care responsibilities. In time, we will be able to turn our attention once again to the DeVore professorship and Gramling chairmanship. These are immensely important endowments that we must bring to fruition.

My deepest gratitude to Interim Executive Vice Chair Steffen Meiler, Interim Residency Director Mary Arthur, Surgery Chief Charles Howell, our division chiefs, faculty, residents, fellows, nurse anesthetists, and administrative staff as well as our surgical colleagues for their outstanding work and support. I also thank Dean Peter Buckley for his support.

Manuel R. Castresana, MD, FCCM
Professor and Interim Chairman
Interim Director, Perioperative Service Line for Health System

From the Interim Chairman

Anesthesiology and Perioperative Medicine

Interim Executive Vice Chairman
Dr. Steffen E. Meiler

Section Chiefs
Dr. Ines H. Berger
Dr. Caren Chaknis
Dr. Ivan Florentino-Pineda
Dr. James Heyman
Dr. James Mayfield

Program Directors
Dr. Mary Arthur, Residency (Interim)
Dr. Ines Berger, Pain Fellowship
Dr. Manuel R. Castresana, Critical Care Fellowship

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About the Cover
The next American Society of Anesthesiologists meeting will be in New Orleans, La., so we’re featuring the New Canal Lighthouse on our cover. Originally built in 1839 at the entrance of the New Basin Canal at Lake Pontchartrain, it was moved to a peninsula in the early 1900s. One of the many lightkeepers who operated the light was Maggie Norvell who is remembered for saving 200 people from a burning excursion boat. A replica of the lighthouse, which has been damaged by hurricanes in 1915, 1926, 2005, and 2006 (Katrina), incorporates wood salvaged from the 1890 lighthouse.
New Faculty

Dr. Francis Pham
Assistant Professor
General OR

Allison Jester
Certified Registered Nurse Anesthetist

Palmer Hummel
Certified Registered Nurse Anesthetist

Charity Morehouse
Pediatric Anesthesia

Pain Medicine Fellows

Dr. Marly Dows-Martinez
Louisiana State University (college and medical school); Emory University

Dr. William Ry Patrick
University of Georgia; Medical College of Georgia (medical school and residency)

Dr. Gregory Spellman
University of Mississippi; Medical College of Georgia; Ochsner Clinic Foundation

Dr. Myung Jae Yoo
The Catholic University of Korea (medical school and residency)

Dr. Matthew Bean
Arizona State University; A.T. Still University

Dr. Tyler Evans
University of Utah; Western University of Health Sciences

Dr. Andrew Friskey
Michigan State University; Michigan State University

Dr. David Fritz
Georgia Institute of Technology; University of South Florida

Dr. Vandy Gaffney
Morehouse College; Medical University of South Carolina

Dr. Matthew Bean will obtain joint appointments with the department of surgery.

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Drs. Sanjay Dwarakanath and James Heyman are Activity Co-Directors of the Georgia Society of Anesthesiologists 2014 summer meeting.

Karen Sheppard, CRNA, spoke at the Georgia Society of Gastroenterology Nurses and Associates meeting in February. She is chief nurse anesthetist and has worked at GRU since 2005.

Administrative Staff

Dr. Sachin Bahadur
Sawai Man Singh Medical College

Dr. Michael Drinkwater
University of South Carolina-Aiken

Dr. Gustavo Munoz
Universidad Experimental Francisco de Miranda

CA-1

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Dr. Banks, who earned his biology degree at the University of Louisiana at Monroe, played NCAA Division I intercollegiate football (2003-2005) and was named to the CoSIDA First Team of the 2004 Academic All-District football team (CoSIDA stands for the College Sports Information Directors of America). He attended medical school at Louisiana State University Health Sciences Center in Shreveport.

“Football taught me many lessons,” Dr. Banks said, “and leadership, perseverance, and teamwork were the most important. A coach once told me that there is no such thing as a silent leader. Being a ‘silent leader’ means you’re just doing your job. Being a true leader, on the other hand, means speaking up and speaking out. Pushing ourselves through practice and drills as one cohesive unit, with one person picking up when another is struggling, is what helped our team to win. Those concepts definitely apply to residency. It’s tough on everyone, so you have to push through the struggles and help others when you can.”

He says that his dad started working at the local paper mill from the time he finished high school. “He had always told me that I wouldn’t be following in his footsteps, and that he’d make sure I would make the most of my education. My parents pushed me to do my best and influenced my decision to practice medicine,” he said.
He and his wife Amber, to whom he has been married for nearly 9 years, have two boys, 4-year-old Bentley and 3-year-old Anderson, and will soon be welcoming “another miracle” into their home. They recently joined In Focus Church in Evans, Ga., “which has been an amazing experience,” he said. “Last but not least, I love college football. Geaux Tigers and Go Warhawks!”

Dr. Banks, a voting member of the American Society of Anesthesiologists Resident Council, represented the Resident Component of the Georgia Society of Anesthesiologists at the 2013 ASA national convention.

His co-chief resident, Dr. Crane, completed his undergraduate education at the University of Georgia then went on to Meharry Medical College (Nashville, Tenn.). Dr. Crane, whose family is originally from Guyana, was born in New York. His family moved to Kennesaw, Ga., when he was 11 years old and he has since adopted Georgia as his home state, he says. He was a member of his high school’s track and field team.

As a college student, he participated in GRU’s Student Educational Enrichment Program (SEEP), a competitive summer program for those interested in the health professions. That was when he met Dr. Wayne Lawson, assistant professor, who has been a SEEP advisor for almost 15 years.

“As I recall, Sean seemed to know what he wanted to do even then. He was confident but not cocky, cordial, and respectful. He was eager to learn and showed a keen interest in medicine. In general, the students chosen for the program are very bright and a joy to work with,” said Dr. Lawson.

Dr. Crane, who is engaged to be married, says he enjoys watching sports, particularly the Atlanta Falcons, Georgia Bulldogs, and New York Knicks. He received the Robert S. Crumrine, M.D., Award, which is presented to an exemplary CA-1 resident, in 2013, and has co-authored two papers published in the Journal of Trauma and Acute Care.

The co-chiefs say they plan to divide the responsibilities of making the call schedule, approving vacation requests, and other administrative duties, and trade off every few months. “That is our leadership plan: divide the tasks, but help out the other chief when needed,” Dr. Banks said.

“That is our leadership plan: divide the tasks, but help out the other chief when needed.”

DR. MARK BANKS

Dr. Mark Banks played NCAA Division I football at the University of Louisiana at Monroe
Building a More Robust Residency Program

The Accreditation Council for Graduate Medical Education (ACGME) has approved an expansion of our residency program over the next four years. This means that we will grow to 12 residents per class.

Interim Residency Program Director Mary Arthur has also changed residency standards in response to the ACGME guidelines, introduced web-based practice ITE exams, and overhauled didactic learning opportunities. Dr. Arthur, who became the assistant residency program director in 2009 and associate director in 2013, is also a Georgia Society of Anesthesiologists Delegate to the American Society of Anesthesiologists.

“We are adding a rotation at the Charlie Norwood Veterans Affairs Medical Center in July 2014 and are working on a 1-month away rotation in Athens. An education fund is also in the works to help our residents in their scholarly pursuits. We are looking for innovative ways to improve the residency program in every way possible,” said Dr. Arthur. She noted that we fully matched all our open slots during Match Day in March.

“Our residents have been very productive in clinical research, and have been involved in 6 peer-reviewed publications, 13 abstracts, and 26 case reports since January 2013. They are wonderful ambassadors for our program at the institutional, state, and national level,” said Dr. Manuel Castresana, Interim Chairman. He acknowledged some of our residents’ recent accomplishments:

Dr. Sehar Alvi, CA-2, was a Resident Delegate to the ASA.

Dr. Mark Banks, CA-2, was a Resident Delegate to the ASA and is a member of the GRU Graduate Medical Education Committee.

Dr. Jack Neil, CA-3, who had a few research questions that he wanted to explore, approached attendings to be his mentors and submitted those projects for institutional review board approval. He also developed our intranet (internal website) essentially from scratch. It now has an anesthesia-specific paging system as well as surgeons’ anesthesia preference cards which our clinical faculty and staff can access whether they are in their offices or the operating room.

Dr. Suvikram Puri, CA-2, was elected ASA Resident Alternate Delegate to the American Medical Association and will be the Resident Delegate the following year. He is not only the first resident from MCG to be a Delegate to the AMA, but also the first from our program to hold any position on the ASA Resident Component Governing Council. Dr. Puri has also been chosen for the ASA Resident Advocacy Task Force. He was involved in the effort to obtain 100% resident participation in the ASAPAC.

Dr. Tiffany Richburg is treasurer of the Resident Component of the GSA and is a member of the GRU Graduate Medical Education Committee.

Dr. John Blackburn, chief resident, was nominated for Resident of the Year for his involvement in professional societies and the leadership he has brought to our program. As president of the Resident Component of the Georgia Society of Anesthesiologists, he increased resident participation in the state society and helped lead an effort to obtain 100% resident participation in the ASAPAC at our program for the first time in our history. When he attended the ASA Legislative Conference last year, he joined other GSA leaders to discuss issues related to anesthesiology with Georgia congressmen. He plans to attend the conference again this year and has recruited two other residents to join him.

Dr. Ami Karkar, CA-2, is a member of the GRU Graduate Medical Education Committee.

Dr. John Blackburn, chief resident, was nominated for Resident of the Year for his involvement in professional societies and the leadership he has brought to our program. As president of the Resident Component of the Georgia Society of Anesthesiologists, he increased resident participation in the state society and helped lead an effort to obtain 100% resident participation in the ASAPAC at our program for the first time in our history. When he attended the ASA Legislative Conference last year, he joined other GSA leaders to discuss issues related to anesthesiology with Georgia congressmen. He plans to attend the conference again this year and has recruited two other residents to join him.

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Restoring a balance between the most powerful dilator and the most potent constrictor of blood vessels in the body could help patients with sickle cell disease avoid kidney and lung damage as well as pain, researchers say. They believe drugs already on the market for pulmonary hypertension can turn down the inflammation and blood vessel constriction that results from the imbalance of nitric oxide and endothelin.

Dr. Steffen Meiler, who leads our research enterprise, is a co-principal investigator of an $8.8 million National Heart, Lung and Blood Institute-funded study with Drs. Abdullah Kutlar, Director of the Sickle Cell Center, and David Pollock, Chief of the MCG Section of Experimental Medicine. Drs. Diana Gutsaeva and Songwei Wu are among the co-investigators.

“This was a fiercely competitive application with 35 centers applying and only eight getting funded,” said Dr. Meiler of the study titled, “The Role of Endothelin-1 in Sickle Cell Disease.”

The researchers say the problem is that the pro-relaxation, anti-inflammation molecule nitric oxide has a tough time surviving in sickle cell disease while its nemesis, the protein endothelin, appears to thrive. As fragile red blood cells break apart in these patients, they release hemoglobin into the blood which soaks up nitric oxide.

“Hemoglobin acts like a sink for nitric oxide,” Dr. Meiler said.

To make matters worse, sickle cell disease increases the level of free radicals, which also tie up nitric oxide. One question they want answered is whether sickle cell disease further compounds the problem by reducing nitric oxide production, possibly because of endothelin dysfunction. “You could have a minimum of three mechanisms that affect the overall availability of nitric oxide,” he said.

Whether or not endothelin is a cause, the problems are clear: kidney disease, acute chest syndrome and unrelenting pain — in addition to episodic pain crises — are hallmarks of the genetic disease affecting 1 in 500 blacks in the United States.

While patients with sickle cell disease are living longer, Dr. Kutlar and his colleagues expect that without new strategies, the incidence of these related chronic problems also will increase. Current therapy includes hydroxyurea, the only Food and Drug Administration-approved drug for sickle cell disease, which increases the level of fetal hemoglobin, which cannot sickle. Patients also get nonsteroidal anti-inflammatory agents and narcotics for pain. The researchers think endothelin antagonists could be a strong addition.

“There is not enough proof of concept data out there to convince physicians to prescribe it for their patients as an off-label use,” Dr. Pollock said. So they’ll be looking at ambrisentan, which selectively blocks the endothelin A receptor, and bosentan, which blocks both A and B receptors in sickle cell disease. “We want to decrease the predominance of endothelin over nitric oxide and see what happens,” Pollock said.

The five-year study will start in animal models of sickle cell and progress to clinical trials of these drugs, Dr. Kutlar said. The many questions the researchers hope to answer include whether there is any benefit to blocking only the A receptor versus both. They’ll measure key health indicators, such as how much protein is spilling into the urine and whether pressure inside the lung’s arteries is reduced.

“There is not enough proof of concept data out there to convince physicians to prescribe it for their patients as an off-label use.”

—Dr. STEFFEN MEILER

Kidney, Lung Damage and Pain in Sickle Cell Disease

Condensed and adapted from the story written by Toni Baker

“"This was a fiercely competitive application with 35 centers applying and only eight getting funded.""
This retrospective study compared 64 patients who received or did not receive intravenous acetaminophen intraoperatively (IVA and No IVA groups) during thoracic surgery over a 5-month period. Procedures involving cardiopulmonary bypass or epidural anesthesia were excluded and analgesics were chosen based on the needs of each case. The study found that 85% of the IVA group was extubated in the operating room compared to 53% of the No IVA group. The IVA group received IVA at the end of the case to facilitate extubation and lessen the respiratory depressant effects of IV narcotics. Table 1 compares extubated patients in the IVA and No IVA groups. The results suggest that patients receiving IV acetaminophen intraoperatively may be more likely to extubated in the operating room compared to those not receiving IV acetaminophen.

The investigators evaluated the pulmonary valve of 23 consecutive patients undergoing intraoperative transesophageal echocardiography (TEE) using a modified xPlane imaging examination protocol they developed. The examination was as follows: After obtaining an optimized view of the pulmonic valve (PV) in the midesophageal right ventricular inflow-outflow tract view, xPlane imaging was activated and the cursor positioned so the vertical tilt runs through the PV. The newer matrix array TEE probe coupled with xPlane imaging enabled acquisition of two live high-resolution acoustic windows at the orthogonal plane, allowing simultaneous 2-dimensional visualization of the PV in short- and long-axis views. In 70% of the cases, all three leaflets were successfully visualized in the cross-sectional view of the PV and it was possible to evaluate the flow across the valve using color Doppler and to calculate valve area using the planimetry method. In 17% of the cases, two leaflets could be visualized; planimetry could not be used to calculate valve area, however, color Doppler assessment was still possible. In the remaining 13%, visualization of leaflets was poor.

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While the use of infusion pumps in the operating room allows a greater level of control and precision in drug delivery, it also introduces risk. The complexity of programming the pumps and their noncustomized “drug libraries” can lead to error and compromise safety. After clinical incidents involving medications at our institution, a multidisciplinary team of anesthesiologists, intensivists, critical care nurses, and pharmacists implemented a number of interventions to limit errors (Table 2). A limited anesthesia drug library that prompts for maximum allowable dosages and standardizes drug concentrations and units across the institution allows the anesthesiologist to quickly program the device and improves patient safety. Formal pump programming training with periodic evaluation of competency will further reduce medication errors.

Transmyocardial laser revascularization (TMR) is an approved surgical procedure for diffuse, end-stage coronary artery disease either as a stand-alone procedure in patients with medically refractory angina who are not candidates for further conventional revascularization procedures or in conjunction with coronary artery bypass graft (CABG) in patients who would be incompletely revascularized by CABG alone. During the procedure, 1-mm laser channels are created in the myocardium which presumably induce neo-vascularization, particularly at the junction of the channels and the myocardium over the following 3-6 months. The procedure uses both 2- and 3-dimensional TEE to guide the TMR.
In the intensive care unit, it is a challenge to wean obese patients from mechanical ventilation and extubate them. Although such weaning parameters as vital capacity, negative inspiratory force, and rapid shallow breathing index during spontaneous breathing trials (SBT) assist in deciding when to extubate, extubation failures persist. Integrated pulmonary index (IPI), an index of respiratory status derived from capnography and pulse oximetry data, has been shown to correlate with respiratory function in a variety of settings, and an IPI of 8 or higher has been associated with successful weaning. In this prospective, observational trial of 24 obese mechanically ventilated patients in the surgical intensive care unit, all patients received standard of care. The hospital protocol to evaluate weaning was used for all patients and clinicians were blinded to the IPI values which were continuously recorded during each SBT. At the end of each SBT, the outcome (pass/fail) was determined by the critical care team independent of IPI. Recorded data were averaged over the first 30 minutes of SBT and analyzed to determine how well IPI predicted weaning evaluation outcome. The researchers found that the median IPI was higher in successful than in failing SBT among the obese patients being evaluated for weaning.

Laser leads are generally removed because of an infection, a lead malfunction, or to upgrade a lead. Investigators retrospectively reviewed laser lead extractions performed at our institution from 2006 to 2011. They found that of 90 patients, 10 had a reported complication, most of which were a hematoma not requiring intervention. Successful extractions, defined as successfully removing all leads that had been planned to be removed, occurred in 83 of 90 procedures. Successful and unsuccessful extractions differed by the number of lead removals attempted (1.5 ± 0.7 v. 2.1 ± 0.7, p=0.04) and duration of implant (5.7 ± 4.1 years v. 13.3 ± 5.2 years, p=0.01). Age, body mass index, and preoperative ejection fraction were not significantly different between successful and unsuccessful procedures. The study lends support to the safety of laser lead extraction.

A computer-assisted health screening questionnaire was developed to help practitioners to determine whether a patient should have a preoperative clinic visit or a phone interview. Surgical suites would then set appointments through a central computer system after ensuring all regulatory guidelines were met. A more detailed questionnaire would triage patients who would be seen in the preoperative clinic to obtain clearance from a nurse, resident, or attending anesthesiologist, depending on ASA status and surgical complexity. For those seen by a nurse, a third built-in checklist based on systems would also trigger an anesthesia clearance. This setup calls for tests to be ordered to confirm suspected pathologies, rather than because “that’s the way we’ve always done it.” Standardizing and centralizing the preoperative evaluation increases efficiencies and helps to minimize redundancy, avoids surgical delays and cancellations, and improves reimbursement coding.
Publications, Presentations and Research

Peer-Reviewed Publications


Currently Funded Research

Dr. Manuel Castresana, Principal Investigator. Steroids in Cardiac Surgery (SIRS) Trial. Population Health Research Institute.

Dr. Diana Gutsaeva, Principal Investigator. The effect of iNKT cell depletion on lung, kidney, liver and spleen histopathology, NKT Therapeutics, 2013-14

Dr. Tohru Ikuta, Principal Investigator. New hydroxyurea-based combination therapy for sickle cell disease. Southeastern Exploratory Sickle Cell Center of Excellence. NIH/National Center on Minority Health and Health Disparities, 2009-14

Dr. Steffen Meiler, Co-Principal Investigator. The role of endothelin-1 in sickle cell disease. NIH/National Heart, Lung, and Blood Institute, 2014-19

Dr. Steffen Meiler, Co-Principal Investigator. Nanomedicine Center for nucleoprotein machines. NIH/National Eye Institute, 2005-15

Dr. Steffen Meiler, Co-Investigator. Southeastern Exploratory Center for Excellence. NIH/National Center on Minority Health and Health Disparities, 2009-14

Dr. Songwei Wu, Project Leader. Lung endothelial cell phenotypes, Project 3. NIH/National Heart, Lung, and Blood Institute, 2012-17

Presentations


Arthur M, Thomas WR, Blackburn JW, Odo N, Castresana M. Drawing a plan for surgery: an algorithm for the perioperative period. ASA Practice Management, Dallas, TX, Jan 2014


Kumar V, Taft A, Whiddon S, Herrington R, Castresana M. Integrated pulmonary index for successful weaning during spontaneous breathing trials in obese patients after cardiopulmonary bypass surgery. Society of Critical Care Medicine, San Francisco, CA, Jan 2014

Medically Challenging Cases

Ranganath Y, Heyman J, Alvi S, Ashford E. Interscalene brachial plexus block in a patient with severe Parkinson's disease and bilateral deep brain stimulators. American Society of Regional Anesthesia and Pain Medicine, Chicago, IL, April 2014


Invited Lectures


Hong T. Hypertrophic cardiomyopathy. National Cardiothoracic Anesthesia and Perioperative Treatment Conference, Second Xiangya Hospital of Central South University, Changsha, Hunan, China, April-May 2014.


Resident/Fellow Complex Case Abstracts


Class Picture, 1992

Mark Your Calendars for Upcoming Meetings

Georgia Society of Anesthesiologists  July 18-20  Greensboro, Ga.


www.gru.edu/mcg/anes