IN the SPOTLIGHT

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Greetings from Anesthesiology and Perioperative Medicine! As I take the helm of this department over the short term as interim chair, I’d like to say that from where I sit, I am quite optimistic about our future. This is because we have great people who are truly committed to patient care, teaching, and research.

This is the time of year when we welcome new residents to our program. Not only do our residents dedicate themselves to medicine, but, over the years, some have gone above and beyond the call of duty, doing mission work in foreign countries, advocating for our specialty among Georgia legislators, and conducting nationally funded research. We are proud of our residents and in the small part that we play to guide them in their professional careers.

I’d like to recognize new officers in the Resident Component of the Georgia Society of Anesthesiologists who will surely make our department proud: Dr. John Blackburn, our chief resident, is president, Dr. Tiffany Richburg is treasurer, and Dr. Suvikram Puri is resident liaison to the government affairs committee.

In basic research, we congratulate Davies Agyekum for successfully defending his doctoral thesis on resveratrol in sickle cell disease, and wish him great success as he begins medical school at Tufts University. We also welcome Carol Dickerson as our lab manager. Not only is she expert in molecular biology and cell culture techniques, but she also managed a laboratory at Pennsylvania State University.

I hope to see you at the American Society of Anesthesiologists meeting in San Francisco, Calif., this October. Faculty and residents will be presenting three abstracts and 23 medically challenging cases. This is quite an impressive accomplishment!

Finally, I’d like to thank Dr. Al Head for his 11 years of friendship and outstanding service to the Department of Anesthesiology and Perioperative Medicine and wish him well in the next chapter of his career.

From the Interim Chairman

About the Cover
The Cape Florida is a lighthouse at the south end of Key Biscayne in Miami-Dade County, Florida. Constructed in 1825, it guided mariners off the Florida Reef, which starts near Key Biscayne and extends four miles from the coast. It was operated by staff, with interruptions, until 1878, when it was replaced by the Fowey Rocks lighthouse. The lighthouse was put back into use in 1978 by the U.S. Coast Guard, but was decommissioned in 1990. Located within the Bill Baggs Cape Florida State Park since 1966, the lighthouse was relit in 1996. It is owned and operated by the Florida Department of Environmental Protection.

The lighthouse symbolizes the anesthesiology profession. The official seal of the American Society of Anesthesiologists includes the motto, “Vigilance,” and a lighthouse, which represents the anesthetist’s dependable knowledge of the art of sleep.
New Faculty

Dr. Tanna (Ferrara) Boyer  
Assistant Professor  
Pediatrics, Obstetrics

Dr. Edwin Johnston  
Associate Professor  
Preoperative Clinic

Dr. Vikas Kumar  
Assistant Professor  
Cardiothoracic/ICU

Dr. Yatish Ranganath  
Assistant Professor  
Pain Medicine, General OR

Dr. Hassan Sellak  
Assistant Professor  
Dr. Wu Lab

Clinical Staff

Kristina Hooson  
Certified Registered Nurse Anesthetist

Palmer Hummel  
CRNA

Allison Jester  
CRNA

Rachel Murchison  
CRNA

Research Staff

Carol Dickerson  
Research Lab Manager

Mythilypriya Rajendran  
Postdoc Fellow, Ikuta Lab

Administrative Staff

Crystal McCray  
Office Assistant

Sharon Thomas  
Office Coordinator

Residents and Fellows

Dr. Matthew Bean  
Kirksville College of Osteopathic Medicine of A.T. Still University

Dr. Jennifer Epstein  
Chicago College of Osteopathic Medicine

Dr. Tyler Evans  
Western University of Health Sciences

Dr. David Fritz  
University of South Florida

Dr. Vandy Gaffney  
Medical University of South Carolina

Dr. Boyi Gao  
Lake Erie College of Osteopathic Medicine

Dr. Robert Lemon  
University of Illinois College of Medicine

Dr. Robert Liipfert  
Mercer University School of Medicine

Dr. Phillip Mills  
Philadelphia College of Osteopathic Medicine (Georgia campus)

Dr. Jawad Salim  
International American University College of Medicine, Saint Lucia

Recognition

Davies Agyekum, a graduate research assistant working in Dr. Steffen Meiler’s lab, presented his doctoral dissertation in July. The Omicron Delta Kappa honor society member recently entered medical school at Tufts University.

Dr. Mary Arthur, Associate Professor, was promoted from Assistant Residency Director to Associate Residency Director.

Dr. Anuj Aryal (ANES 2010, PAIN 2011) is now an interventional pain physician and anesthesiologist at Comprehensive Pain and Neurology Center (Franklin, Tenn.).

Dr. Ivan Florentino-Pineda, Associate Professor, was nominated for the GRU “Caught in the Act of Great Teaching” award for his grand rounds presentation on emergence delirium.

Dr. James Mayfield, Associate Professor, was invited to review abstracts for the 2013 Research in Medical Education (RIME) conference.

Jeffrey Mills received the Z.W. Gramling Award, which is given to a medical student with the highest evaluation score during the anesthesiology clerkship, at the Medical College of Georgia Honors Day on May 6.

Angela Skinner, Office Specialist, recently celebrated 15 years of service in the anesthesiology department. Over the years, Angie has guided scores of new hires, including faculty, staff (clinical, administrative, and research), and locum tenens, from the initial interview to badging and credentialing.

In Memoriam

Dr. Thomas F. Hardman, a medical school (1982) and anesthesiology residency (1986) graduate of the Medical College of Georgia, passed away on June 28, 2013, in Orlando, Fla. The Gainesville, Ga., native was anesthesiology director at Doctors Hospital (Augusta, Ga.), from 1986 to 2006. He also owned Westside Anesthesia and Augusta Pain Management Center before becoming director of anesthesia at Citrus Medical Center (Orlando, Fla.) in 2007. Dr. Hardman held nine Guinness World Records in weightlifting.
Dr. Head to Advocate for Health Care Reform

In July 2013, Dr. C. Alvin Head resigned from GRU to pursue his interest in health care reform at a national level.

“We are now an academic department and our successes over the past 11 years have been recognized for improving our academic ranking. Our research has grown significantly, exemplified by our research team now ranking higher in NIH funding than 50 percent of all academic anesthesia departments. Our residency program has grown with excellent residents, as have our pain medicine and critical care fellowships. The work required to create and maintain these programs is impressive and I have faith that our residency and fellowship programs will continue to do well in the future. I also wish to acknowledge an outstanding and dedicated team in the anesthesia department which has been responsible for much of our success,” he said.

He acknowledged the outstanding work of the certified registered nurse anesthetists and anesthesia assistants and gave special thanks to Chief CRNA Karen Sheppard. He also thanked Jennifer Anderson, director of respiratory therapy, for her assistance with respiratory care services.

“In my role as director of the Perioperative Service Line for the Health System, I also thank the surgical chairs and service line directors who helped me to figure out how to develop a new service line. It was new to all of us, with few examples upon which to model this concept.

“In particular I want to thank Ms. ‘Missy’ Angeline Pratt, the retiring assistant vice president of perioperative services. She has been a true friend and professional colleague and I respect her for her valuable contributions on behalf of our patients,” he said.

Dr. Head obtained degrees in respiratory therapy (1977) and biological sciences (1983) from Georgia State University (Atlanta, Ga.). He then completed medical school (1989) and his anesthesia residency (1993) at Emory University (Atlanta, Ga.). He joined Harvard University Medical School (Boston, Mass.) as an instructor and was promoted to assistant professor before joining GRU as professor and chair in 2002.

Dr. Manuel Castresana, Professor, will serve as Interim Chair until a replacement is chosen.

Drs. Bellam, Dubin and Betts to Retire

Dr. Ram Bellam, Assistant Professor, retired in June. He began his career with a medicine private practice in Gunter, India, in 1966. He later completed a general surgery residency, and, in 1977, anesthesiology residency at Kings County Medical Center (Brooklyn, N.Y.). He ran a pain medicine private practice in Forest Park, Ga., before joining GRU in 1999.

Dr. Stevin Dubin, Associate Professor, retired in February. He joined GRU as an assistant professor in 1986. He has been a senior associate examiner for the American Board of Anesthesiology oral boards since 1994 and in 2010, became the first anesthesiologist to be named Consultant of the Year by the otolaryngology department. Dr. Dubin is now the chief of anesthesiology at the Charlie Norwood Veterans Affairs Medical Center (Augusta, Ga.), where he has been a staff anesthesiologist for over 25 years.

Dr. Eugene Betts, Professor and Executive Vice Chairman, retired in June. He completed his anesthesia residency at North Carolina Baptist Hospital (Winston-Salem, N.C.) and pediatric anesthesiology fellowship at the Children’s Hospital of Philadelphia (Philadelphia, Pa.). His medical training was briefly interrupted when he served in Vietnam in the Army Medical Corps. After returning to the States, he worked at Fort Gordon then spent the next 24 years at CHOP, where he was an associate professor. He joined GRU in 1998. He is a fellow of the American College of Anesthesiologists and charter member of the Society for Pediatric Anesthesia. In addition to numerous honors as a soldier and anesthesiologist, Dr. Betts is also a certified pilot and SCUBA diver.

GRU Represented in the Georgia Society of Anesthesiologists

As president of the Resident Component of the Georgia Society of Anesthesiologists, Dr. John Blackburn invited American Society of Anesthesiologists President John Zerwas to speak with the residents during the GSA summer meeting. Dr. Blackburn is also an ASA resident delegate. Dr. Suvikram Puri is the resident liaison to the government affairs committee and ASA resident delegate and Dr. Tiffany Richburg is treasurer of the Resident Component. Drs. Mark Banks, Ami Karkar and Sean Crane also attended the meeting.

Dr. Alvin Head and anesthesia residents John Blackburn and Billy Thomas attended an ASA Legislative Conference in Washington, D.C., in April. They met with Georgia congressmen and senators to help increase awareness about current and future issues in the specialty of anesthesia.
He chose a career in medicine because he wanted to make a difference. His father, a mining engineer and pastor, has been known to roll up his sleeves for community projects and deliver groceries to families in need. Like his father, Dr. John Blackburn also leads by example. The consensus seems to be, whether in the operating room, classroom, or boardroom, he can be counted on to get the job done, and done right.

Dr. Blackburn is a chief resident who cares about his fellow residents and the quality of training they receive, says Interim Chair Manuel Castresana. “He is a good leader who ‘walks the walk.’ He’s hardworking but at the same time easy to get along with,” agrees Associate Residency Director Mary Arthur.

There’s something else he takes to heart: advancing the causes of his profession. While a medical student at the University of Kentucky, he led several lobbying efforts aimed largely at medical malpractice reform and scope of practice concerns. Earlier this year, he was in Washington, D.C., as part of an American Society of Anesthesiologists Legislative Conference. He and Drs. Al Head and Billy Thomas met with Georgia congressmen and senators to discuss issues related to the specialty. Today he is president of the Resident Component of the Georgia Society of Anesthesiologists and resident delegate to the ASA. Dr. Blackburn, who received both the Robert S. Crumrine and Resident Educator of the Year awards in 2012, plans to focus his practice on pain medicine.

‘Airway on the Island’ Workshop Debuts at Kiawah

Back in 2005, the anesthesiology department began holding difficult airway workshops that were small but well attended. After taking a break for a few years, the anesthesiology and otolaryngology departments decided to co-sponsor “Airway on the Island” which was held Aug. 1-4 on Kiawah Island, S.C.

Led by Co-directors Mary Arthur and Paul Weinberger, the workshop attracted 43 health care professionals from as far away as Illinois and Minnesota. ACLS/BLS certification was also available. In one of the more popular skills stations, attendees practiced percutaneous cricothyrotomy using pig trachea.

In addition to Drs. Arthur and Weinberger, GRU faculty included Drs. Angel Cancel and Manuel Castresana and Ms. Pam Rosema from anesthesiology; Dr. Colville Ferdinand from surgery; and Dr. Greg Postma from otolaryngology. Guest faculty included Drs. Stevin Dubin, Charlie Norwood Veterans Affairs Medical Center (Augusta, Ga.); Lynette Mark, Johns Hopkins University (Baltimore, Md.); and Ashli O’Rourke, Medical University of South Carolina (Charleston, S.C.).

The workshop’s Commercial Supporter was Cadence Pharmaceuticals, and its In-Kind Supporters were Cook Medical, Medtronic, Merit Medical Systems, Olympus, Pulmodyne, and Verathion. ArthroCare, Boston Scientific, Cadence Pharmaceuticals, Cook Medicine, Covidien, Draeger, Hospira Worldwide, Merit Medical, Olympus, Pulmodyne, and Teleflex Medical were exhibitors.

Visit our Facebook page (Anesthesiology at MCG at GRU) for more pictures of Airway on the Island. The next workshop is scheduled for Aug. 7-10, 2014.
Graduation Banquet

The following awards were presented during our graduation and awards banquet in June at the North Augusta Municipal Center:

- **Dr. James Heyman**, Assistant Professor, Margaret B. DeVore Residents' Choice Award (second year in a row).
- **Dr. Sanjay Dwarakanath**, Assistant Professor, Jack B. Williams Award of Excellence in Anesthesia Education.
- **Dr. Shelly Norris**, Robert D. Dripps Memorial Award, honoring a senior resident’s educational achievements.
- **Dr. Mark Banks**, Resident Educator Award for mentoring medical students involved in the anesthesia clerkship.
- **Dr. Sean Crane**, Robert S. Crumrine Award for exemplifying the characteristics of an anesthesiologist as a first-year resident.
- **Dr. Billy Thomas**, Best Journal Club Presentation.

Our graduating residents and their new positions are:

- **Dr. Stephen Anderson**, Chief Resident, Regional Pain Fellow
  Andrews Institute for Sports Medicine
  Pensacola, Fla.

- **Dr. Ellen Abellana**
  Anesthesia Association of
  Clay County, Orange Park, Fla.

- **Dr. Michael Allen**, Indiana University Physicians Group, Indianapolis, Indiana

- **Dr. James Bradley**, Pediatric Anesthesia Fellow
  Cincinnati Children's Hospital
  Cincinnati, Ohio

- **Dr. Danielle Doyle**, Chronic Pain Fellow
  University of Maryland
  Baltimore, Md.

- **Dr. Shelly Norris**, Obstetric Anesthesia Fellow
  Emory University
  Atlanta, Ga.

- **Dr. Chinonye Orizu**, Chronic Pain Fellow
  University of Mississippi
  Jackson, Miss.

- **Dr. Peter Richards**, Carolina Anesthesia, PC, Wesmark Ambulatory Surgical Center
  Sumter, S.C.

- **Dr. David von Clef**, Keesler Air Force Base
  Biloxi, Miss.

Our graduating fellows and their new positions

- **Dr. Kartic Rajput**, Pain Medicine Fellow
  St. Francis Medical Center
  Grand Island, Neb.

- **Dr. Vikas Kumar**, Anesthesiology Critical Care Fellow
  Assistant Professor, Anesthesiology,
  Georgia Regents University
The review paper discussed recent advances in understanding how expression of the cGMP-dependent protein kinase type I (PKG-I) is regulated in vascular smooth muscle cells (VSMCs). It also highlighted the physiological and pathological significance of down-regulation of VSMCs by PKG-I.

The importance of the nitric oxide (NO) signaling pathway in normal vascular physiology is well documented. NO, which is generated by different nitric oxide synthases, activates an enzyme, soluble guanylyl cyclase (sGC), to produce variable amounts of cyclic guanosine monophosphate (cGMP). PKG-I is one of the downstream effectors of cGMP. Studies of PKG-I-deficient mice demonstrated the physiological importance of PKG-I in the vascular system. In these mice, the loss of PKG-I not only abolished relaxation of VSMCs in response to NO/cGMP, but severely altered vascular, kidney, cardiac, and intestinal function.

Two PKG genes coding for the kinases PKG-I and PKG-II have been identified in mammalian cells. It has become evident that PKG-I is involved in many functions including calcium homeostasis, platelet activation and adhesion, smooth muscle relaxation, cardiac function, and gene expression. It is also involved in inflammation, diabetes, cancer, and cardiac hypertrophy.

NO induces generation of cGMP which in turn activates PKG-I. This means that the ability of the vasculature to produce NO is essential for vascular integrity. A disturbance of this NO/cGMP/PKG-I pathway plays an important role in many cardiovascular diseases. In the last two decades, in vitro and in vivo models of vascular injury have shown that chronic exposure to NO, cGMP, cytokines, and growth factors decrease PKG-I expression.

The mechanisms for these changes in PKG-I expression are still poorly understood, and are likely mediated by a number of processes (e.g., changes in gene transcription, mRNA stability, protein synthesis, and protein degradation). Research is starting to define mechanisms responsible for changes in PKG-I expression and have identified regulatory elements which may be involved in post-translational control of PKG-I protein levels.

Although the molecular mechanisms contributing to PKG-I gene expression are emerging, its transcriptional and post-transcriptional regulation are still unclear. However, a look at the correlation between changes in PKG-I activity along with the PKG-I mRNA concentration, as well as protein expression, in normal and pathological situations, will advance our understanding of PKG-I function in the cardiovascular system.

In addition, clarifying the mechanism of PKG-I expression could lead to new therapies for cardiovascular diseases. Indeed, accumulating evidence using in vivo animal models demonstrates this and provides pharmacological tools to test the therapeutic potential of the cGMP/PKG-I pathway in systemic and pulmonary hypertension, cardiac failure, cardiac reperfusion injury, atherogenesis, endothelial dysfunction, and many other diseases.

**Regulation of PKG-I expression**

**From the Bench: Deregulation of PKG-I Can Lead to Cardiovascular Disease**

Dr. Hassan Sellak, Assistant Professor, recently published a paper in Cardiovascular Research. Here is his synopsis of the paper:

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**Clinical Concepts: Bloodless Medicine in Cardiac Surgery**

When GRU’s Bloodless Medicine and Surgery Program hosted a seminar about performing medical and surgical treatments without blood transfusions last October, more than 180 community members attended. Cardiothoracic anesthesiologist Dr. Mary Arthur was one of the speakers. What follows is based on her presentation.

Patients are seeking alternatives to blood transfusions for religious, medical, or personal reasons. Those with religious concerns tend to object to primary components (packed red blood cells, platelets, fresh frozen plasma) and accept secondary components (factor concentrates, cryoprecipitate, albumin).

Physicians are also beginning to prefer bloodless surgery. Evidence suggests an association between blood transfusions during cardiac surgery and poorer outcomes. Therefore, reducing intraoperative bleeding and volume of transfused blood have become important quality measures. Almost 15 million units of packed red blood cells are used in surgical procedures in this country every year, and cardiac procedures use as much as 10-15% of the nation’s blood supply. This fraction is increasing, largely because cardiac surgical procedures, especially those involving cardiopulmonary bypass (CPB), are becoming more complex.

We now know that most patients undergoing cardiac procedures using CPB do not need transfusions because they have sufficient wound clotting after heparin reversal. In most cases, transfusions might not improve the clinical outcomes of stable nonbleeding patients. Transfusions are only deemed appropriate for the subset of patients who are at least 65 years old, have comorbidities, and have a hemoglobin less than 8 g/dL.

In addition to commonly reported transfusion-related risks such as infections, respiratory failure, and thromboembolic complications, transfusions may also alter immune function; this could affect long-term survival. That and the costs and challenges of maintaining an adequate blood supply have renewed interest in reducing blood use in the operating room.

Before surgery, the patient sees a member of the blood conservation team and decides which factor concentrates can be used during the planned procedure. Each month, on average, we have about 25 inpatient and outpatient cases utilizing bloodless medicine techniques across all specialty areas.

An important blood conservation technique is acute normovolemic hemodilution. The patient’s blood is collected and stored in anticoagulant CPDA solution and the patient’s blood volume is restored with volume expanders such as albumin, hetastarch and crystalloids. The tubing remains connected at all times, maintaining a closed circuit as required by Jehovah’s Witnesses. After the major bleeding is over, the patient’s own blood, which has all the major clotting factors as well as platelets, is returned to the patient.

If possible, drugs that inhibit platelet activity are discontinued prior to surgery. Tests can determine platelet responsiveness and identify which patients can proceed to surgery without a waiting period. Patients who are anemic or likely to require transfusions after surgery can be given drugs that augment red blood cell volume (e.g., erythropoietin plus iron) several days before cardiac surgery. Prothrombin complex concentrates which contain vitamin K-dependent coagulation factors (and not fresh frozen plasma) are now the agents of choice to rapidly reverse oral anticoagulants.

Intraoperatively, drugs such as epsilon-aminocaproic acid and tranexamic acid reduce total blood loss and are also used for blood conservation. Small clinical studies suggest that prophylactic fibrinogen concentrates (~2 g) may reduce bleeding after coronary artery bypass graft (CABG) surgery, and larger doses (6-8 g) may treat excessive bleeding after major vascular procedures. Factor XIII concentrate helps to form a stable fibrin clot. Factor IX and VIII concentrates control perioperative bleeding in hemophiliacs and also serve as prophylaxis in high-risk patients who cannot accept primary transfusion components for religious reasons. Recombinant activated Factor VII can be used to manage intractable nonsurgical bleeding that does not respond to routine hemostatic therapy.

In addition, antithrombin (AT) III concentrates immediately before CPB reduce plasma transfusions in patients with AT-mediated heparin resistance. It can also prevent perioperative thrombotic complications. Factor concentrates reduce bloodborne disease transmission as well as fluid overload compared to fresh frozen plasma. The continuous autotransfusion system allows chest tube drainage to be autotransfused to the patient after surgery. Minimized CPB circuits, vacuum-assisted venous drainage, and retrograde autologous priming are also useful techniques.
Peer-Reviewed Publications


Invited Lectures


Castresana M, Invited Speaker. ARDS: what have we learned? Pulmonology/Critical Care Grand Rounds, GRU, 2013


Meiler S, Invited Speaker. Protein mediated delivery of nucleases. NIH Nanomedicine Development Centers, NIH Campus, Bethesda, MD, Apr 2013

Meiler S, Invited Speaker. Thalidomide and its analogs for hemoglobinopathies. Division of Hematology, University of Campinas, Sao Paulo, Brazil, Jul 2013


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. Steffen Meiler, Co-Principal Investigator. Nanomedicine Center for Nucleoprotein Machines. NIH/Nanomedicine Roadmap, 2005-15.


Ferrara T, Cohen D, Maxwell L. Is a pre-op hemoglobin value necessary in all children under 6 months of age? Society for Pediatric Anesthesiology, Las Vegas, NV, Mar 2013


Sellah W, Wu S, Lincoln TM. Role of C-terminal domain of E-cadherin in activating β-catenin/TCF pathway in cancer cells under hypoxic conditions. Experimental Biology, Boston, MA, Apr 2013

Sellak H, Yap FC, Alexeyev MF, Chen H, Lincoln TM, Wu S, α1G(CaV3.1) T-type calcium channel controls NOS3 activation in pulmonary microvascular endothelial cells. Experimental Biology, Boston, MA, Apr 2013

Ashford ER, Kumar V, Dwarakanath S, Castresana M. Therapeutic hypothermia after witnessed cardiac arrest requiring advanced CPR and urgent CABG surgery.


Banks MA, Arthur M, Kamath V, Schafer B. Successful emergency surgical and anesthetic management of a right ventricular perforation from laser lead extraction.


Dalela S, Dwarakanath S, Agarwal S. Anesthetic management of a large obstructive cardiac hemangioma of the right ventricle.

Donald RR, Kumar V. Anesthetic management of a parturient with Seckel Syndrome for cesarean section.

Ferrara T, Singh D, Litmanet R. Focus on a known difficult paravertebral block with low dose ketamine for postop pain management following Whipple procedure in an opioid tolerant patient with spinal cord stimulator. American Society of Regional Anesthesia, Boston, MA, May 2013

Karkar A, Agarwal S, Hoffman AW, Beatty JD, Castresana M. Postoperative management of severe fixed pulmonary hypertension and cardiac dysfunction after complex multi-valvular cardiac surgery.

Richburg TM, Odo N, Arthur M. Anesthetic management of medically complex ambulatory patient with hereditary hemorrhagic telangiectasia.

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Richburg TM, Odo N, Arthur M. Anesthetic management of medically complex ambulatory patient with hereditary hemorrhagic telangiectasia.

Alvi S, Agarwal S, Donald R, Mayfield J. Challenges encountered in the anesthetic management of a patient with Cornelia de Lange Syndrome.

Ashford ER, Kumar V, Dwarakanath S, Castresana M. emergent coronary revascularization in a Jehovah’s Witness with necrotizing fasciitis requiring re-exploration for massive surgical bleeding.

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Fundamental Critical Care Support Workshop
Sept. 21 Augusta, Ga.

The online component, which includes 16 didactic modules, must be completed before attending the skills stations component on Sept. 21. Course faculty include Drs. Manuel Castresana (course director), Ranita Donald, Tao Hong, Vikas Kumar, and Ms. Pam Rosema (course coordinator) from anesthesiology; Drs. Adel Abuzeid, Colville Ferdinand, Michael Hawkins, Steve Holstein, Vijay Patel, and Lester Young from surgery; and Ms. Ramona Herrington from respiratory therapy. Registration is required and CE/CME are available.

Society of Critical Care Anesthesiologists
Oct. 11-12 Washington, DC

American Society of Anesthesiologists
Oct. 12-16 San Francisco, Calif.

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