We are 
Compassionate:
Offering exceptional perioperative care and pain management to a complex population.

We are 
Creative:
Advancing the frontiers of science, healthcare and technology.

We are 
Committed:
Equipping future global leaders with the latest knowledge and skills.

We are 
Collaborative:
Working across Vanderbilt University Medical Center and beyond to achieve measurably improved outcomes.

DEPARTMENT OF ANESTHESIOLOGY
VANDERBILT UNIVERSITY MEDICAL CENTER
Compassionate | Creative | Committed | Collaborative
Message from the Chair

Thank you for your interest in the Vanderbilt University Medical Center Department of Anesthesiology. Our growth and success stem from the foundation of Vanderbilt University Medical Center’s five-pillar commitment to excellence, which consists of people, service, quality, growth & finance, and innovation. Our department follows the Vanderbilt credo, driving us to achieve excellence in healthcare, research and education; we treat others as we wish to be treated; and we continuously evaluate and improve our performance. As the role of the anesthesiologist evolves into that of a perioperative consultant, our diverse team of experts remains at the forefront of knowledge and technology in patient care, research and education.

Our values - compassion, creativity, commitment and collaboration - emerge as the keystones of our structure and systems, as seen throughout this guide. We are compassionate, based not only on our own assessment but also on what we are being told. Our patients are recovering faster and with greater comfort through implementation of Enhanced Recovery After Surgery (ERAS) protocols, a collaborative effort led by our faculty, our trainees and our surgical colleagues.

We are creative, advancing the frontiers of science, healthcare and technology. Our informatics infrastructure continues to increase patient safety and clinician effectiveness through innovative methods and novel use of both live and archived data.

Our investigators brought in more than $8.0 million in total extramural research funding in 2015-16. This included more than $4.5 million in awarded NIH grants, which placed Vanderbilt Anesthesiology 9th among U.S. academic anesthesiology departments in NIH funding. Within the department, faculty published 241 papers in fiscal year 2016, up from 197 papers in fiscal year 2015, within peer-reviewed literature. Twenty-seven members of the department have been elected into the Association of University Anesthesiologists (AUA).

At the 2015 Annual Meeting of the American Society of Anesthesiologists, department members contributed more than 100 entries, including oral presentations, medically challenging cases, poster presentations, problem-based learning discussions, workshops, panel discussions and refresher courses.

Our dedicated faculty is committed to equipping graduates for a promising future in anesthesia. We offer training using cutting edge technology along with opportunities to improve systems of care. We provide a closely guided mentorship program, balancing subspecialty training, clinical experience and a broad range of academics.

Much of our success can be attributed to the collaboration that occurs across Vanderbilt University Medical Center and beyond. Our clinical teams assisted patients in more than 80,000 encounters last year, spanning the entire spectrum of anesthesia; for every age group, subspecialty and procedure, caring for patients along their journey to wellness. And we are moving beyond Vanderbilt’s traditional walls. The Vanderbilt Health Affiliated Network is the largest of its kind and growing rapidly, and our department is leading telemedicine and remote presence projects to bring our skills and values to more patients.

As you read through the following pages, we invite you to contact us or visit our website at www.vandydreamteam.com to learn more about our programs.
Department Leadership

Executive Committee

Brian J. Gelfand, MD
Associate Vice Chair, Educational Affairs

Matthew McEvoy, MD
Vice Chair, Educational Affairs

Mark Rice, MD
Associate Vice Chair, Clinical Affairs
Chief, Multispecialty Adult Anesthesiology

Andrew Shaw, MB, FRCA, FFICM, FACC
Executive Vice Chair, Anesthesiology

Edward Sherwood, MD, PhD
Vice Chair, Research
Cornelius Vanderbilt Chair in Anesthesiology

Matthew Weinger, MD
Vice Chair, Faculty Affairs

Stephen Doherty, MMHC
Department Administrator

Division Chiefs

David H. Chestnut, MD
Chief, Obstetric Anesthesiology

Suanne Daves, MD
Chief, Pediatric Cardiac Anesthesiology

Eric Delpire, PhD
Chief, Basic Science Research

Kurt Dittrich, MD
Interim Chief, Pain Medicine

Katherine Dobie, MD
Chief, Ambulatory Anesthesiology

Brent Dunworth, CRNA, MBA
Chief CRNA
Associate Director for Anesthesia Advanced Practice Nursing

Mias Pretorius, MBChB, MSCI
Chief, Cardiothoracic Anesthesiology

Pratik Pandharipande, MD, MSCI
Chief, Anesthesiology Critical Care Medicine

Ann Walla, MBBS
Chief, Veterans Affairs Anesthesiology Service
The Vanderbilt Department of Anesthesiology was one of the first independent departments of anesthesiology in the United States, established on December 12, 1945.

After observing that the battlefield-wounded of World War II were more likely to survive if they received immediate, skilled anesthesia care, Vanderbilt physicians advocated that anesthesiology be established as an autonomous department. At that time, few medical schools possessed an academic anesthesiology service of any type.

This tradition of pioneering in our specialty continues today. Our exemplary faculty provide top-quality clinical services for a full spectrum of medical specialties. Vanderbilt Anesthesiology is recognized as an innovator in perioperative management, healthcare information technology, clinical outcomes research, education and international capacity building. We also have high-caliber basic science and clinical research teams pursuing fundamental and translational knowledge to directly improve patient safety and care.
About Nashville

Nashville’s history of country music earned the city its fame as Music City, USA - but this metropolis is about much more than tunes and twang. Visitors and residents enjoy great dining, entertainment and cultural life. Travel to and from Nashville is convenient and inexpensive, since the Nashville International Airport is a Southwest Airlines hub. With a growing population of more than 650,000 people, Nashville has been nicknamed “Nowville” by GQ magazine and called the “It City” by The New York Times. A hub for massive and rapid economic growth, Nashville was ranked the #1 city in the U.S. by Forbes in terms of business sector growth, with employment growth of 47.7% since 2010, as well as the #1 metro housing market in the nation.

About Vanderbilt University Medical Center

Vanderbilt University Medical Center (VUMC) named among the nation’s finest providers of specialty care by U.S. News and World Report and named the No. 1 hospital in Tennessee and the Metro Nashville area.

Vanderbilt University Medical Center named among the “100 great hospitals in America” (Becker’s Hospital Review, 2016).

Vanderbilt University Medical Center named one of healthcare’s “Most Wired” by the American Hospital Association in Hospitals and Health Networks magazine (2016).

Monroe Carell Jr. Children’s Hospital at Vanderbilt named as one of the elite children’s hospitals in the nation, with 10 out of a possible 10 specialties nationally ranked (U.S. News & World Report, 2016).
Clinical Care

We are compassionate, offering exceptional perioperative care and pain management to a complex population.

Serving in one of the largest clinical programs in the nation, the Vanderbilt Department of Anesthesiology's clinicians provide procedural, critical care, pain management and all perioperative anesthesia services for more than 100,000 adult and pediatric patient encounters annually at more than 100 anesthetizing locations. Of these, more than 8,000 patients are seen annually in the Vanderbilt Interventional Pain Clinic, and approximately 23,000 Vanderbilt adult and pediatric patients receive anesthetic care during a radiologic, gastrointestinal or other diagnostic or therapeutic procedure.

The department’s faculty, residents, fellows, certified registered nurse anesthetists (CRNAs) and nurse practitioners provide care in our operating rooms, five adult intensive care units and the pediatric and neonatal intensive care units and perform approximately 4,000 anesthetics per year in the labor and delivery suite.

Our trauma service, which includes the orthopedic trauma program, is among the busiest in the nation and ranked as a Level One trauma facility, with more than 1,700 LifeFlight helicopter transports this year.

The Vanderbilt Preoperative Evaluation Center (VPEC) offers preoperative evaluation before patients undergo procedures at Vanderbilt University Medical Center. In 2015 – for the seventh year in a row – VPEC received a Professional Research Consultants, Inc., patient satisfaction award, the coveted 5-Star Award for Overall Quality of Care. Our One Hundred Oaks VPEC location, which opened in 2009, has received the same award for four years in a row. The center scored in the 90th – 99th percentiles based on 2014 calendar year results, compared with similar centers nationwide.

Perioperative medicine is built on full engagement in patient care, from diagnosis to operative recovery. It includes a full-time teaching service with 24/7 consultative availability and extensive use of system-wide information technology and mobile applications to support clinical decision-making, capture data and measure outcomes, such as the quality of recovery after surgery. Vanderbilt is one of the few medical training centers with a 3D transesophageal echocardiography (TEE) simulator, used to teach the essential skill of cardiac ultrasound.

Highlighted on the following pages are the services provided by the department’s clinical divisions.

“We’ve initiated a surveillance monitoring project allowing clinicians to stabilize their patients early enough so they do not need to be rescued…”

Lisa Weavind, MBCh, FCCM, MMHC, Professor of Anesthesiology and Surgery
Division of Anesthesiology Critical Care Medicine
The Vanderbilt Department of Anesthesiology provides perioperative consult services to Vanderbilt University Hospital, Monroe Carell Jr. Children’s Hospital at Vanderbilt and the Nashville Veterans Administration Hospital, offering preoperative evaluation and preparation, intraoperative care, acute postoperative care and pain management, as well as ICU care, to critically ill patients. By providing care before, during and after surgery, patients are receiving better, more standardized care.

**Intraoperative care**
The department has established a system of seamless communication from the operating room to the postoperative care unit (PACU) through innovative methods developed internally by the Vanderbilt Anesthesiology & Perioperative Informatics Research (VAPIR) Division. An electronic notification informs providers on items such as glucose levels, length of stay, unplanned ICU admission and increased creatinine levels. Providers can check their compliance against clinical pathways and compare their practices against departmental aggregate data. These include on-time starts and turnover time, clinical process data and patient care methods. The system uses Vanderbilt University Medical Center’s archive of perioperative patient data from over 932,000 anesthetics, combined with institutional data sources, to foster more integrated care teams.

**Postoperative care**
Enhanced Recovery After Surgery (ERAS) care pathways, initiated in the 1990’s in Europe, are evidence-based protocols designed to improve pain control and speed patient recovery for adults and children. To date, Vanderbilt has implemented ERAS protocols in six surgical populations, securing itself as a national leader in ERAS. “In the 2015-2016 year, Anesthesiology interacted with approximately 1200 patients, and through the benefits of ERAS, returned a median 433 bed days back to the hospital by reducing length of stay, resulting in more efficient use of hospital resources,” states Dr. Adam King, Clinical Chief of the Anesthesiology Perioperative Consult Service.

Hospital stays are most often extended to address pain control, postoperative ileus and postoperative complications. Because of this, ERAS protocols focus largely on pain management through use of nerve blocks and increased use of non-opioid pain medications, as well as preoperative evaluations to better prepare for surgery.

**Pain management**
Dedicated teams of pain specialists offer consult services to medical and surgical divisions 24 hours a day, 365 days a year. From postoperative guidance and minor procedure anesthesia, to complex chronic pain management and surgical intervention, our consultants offer specialized and tailored plans for pain management for a wide range of conditions. “Our focus is collaborative and multidisciplinary; we work with our nurse, surgery, medicine, oncology, palliative care, rehabilitation and pharmacy colleagues to create systems of care with greater reach across the healthcare system, both inpatient and outpatient,” said Dr. David A. Edwards, Clinical Chief of the Chronic Pain Service.

“The first time I was in the hospital, I couldn’t eat at all. I either felt sick or my leg was hurting too much. With the second surgery, there was not as much pain, and I was more ‘with it’ because I wasn’t on a pain pump.”

*Patient*
The Division of Ambulatory Anesthesiology is led by Dr. Katherine Dobie, MD, and consists of 12 faculty members and 34 nurse anesthetists who practice in five locations, including three free-standing community surgicenters. These locations include Cool Springs Surgery Center, Vanderbilt Bone and Joint Surgery Center, Medical Center East, Vanderbilt Outpatient Surgery and Tennessee Fertility Institute.

The division provides anesthesia for approximately 21,000 procedures annually, including spine, surgical oncology, pain, GI, orthopedic, pediatric, ENT, urologic, neurosurgical, general surgery and higher-acuity plastic surgery.

The trend in surgical healthcare continues toward significant growth for outpatient surgeries; it is now estimated that more than 70 percent of all surgeries are performed in the outpatient setting. The Division of Ambulatory Anesthesiology is committed to addressing this trend with innovation as we explore how to care safely for sicker patients undergoing more complex surgeries in the outpatient environment.

Ambulatory Anesthesiology is unique compared to other academic departments, with its high volume of patient encounters and its partnership with community practices in two joint ventures within the greater Nashville area.

The ambulatory faculty presented seven abstracts at the 2016 meeting of the Society for Ambulatory Anesthesia (SAMBA) and are currently enrolling patients in six randomized controlled clinical trials.

Residents and fellows learn the practice of ambulatory anesthesiology by rotating to four centers, one of which is focused on the practice of ambulatory regional anesthesia.

Two regional anesthesia fellows spend a combined 32 weeks with the Ambulatory Division, where they learn the critical and distinct practice of regional and ambulatory anesthesia as a combination, which is necessary as we continue to innovate and expand the population of ambulatory surgery care to include more complex cases.
The Division of Anesthesiology Critical Care Medicine (ACCM) is led by Pratik Pandharipande, MD, MSCI. The division provides critical care services in the burn ICU, cardiovascular ICU, neurological ICU and surgical ICU at Vanderbilt University Medical Center, and in the surgical ICU at the VA Medical Center in Nashville. Additionally, division members provide perioperative anesthetic care for patients undergoing major surgery, and some participate in the perioperative consult service.

The division includes 24 anesthesiology-intensivists, along with more than 35 acute care nurse practitioners (ACNPs) and physician assistants (PAs), making it one of the largest anesthesiology critical care medicine divisions in the country. Additionally, there are eight neurointensivists, certified by the United Council for Neurologic Subspecialties. An ongoing alliance between the ACCM Division and the School of Nursing supports an ACNP intensivist training program.

The division strives to provide excellent patient care, promote education, and engage in scholarly activity. Faculty and fellows keep abreast of modern technology and the changing spectrum of caring for the critically ill. This includes proficiency in ultrasound, echocardiography and management of patients with ventricular assist devices or who are on ECMO.

The ACCM Fellowship has recently been approved for 10 ACGME-accredited fellowship positions per year and has received accreditation for five years. Fellows have a diverse clinical experience through our subspecialty ICUs and an innovative didactic program.

Division faculty frequently participate in regional, national and international educational activities and have taken on leadership roles in national organizations such as SCCM, ASA, SOCCA and the American Delirium Society; in VUH and VUMC administration, including the directorship of the BICU, NCU, CVICU and CELA; and in the medical school curriculum redesign, via innovative immersion programs.

Active research programs encompass clinical and translational research that focuses on perioperative risk factors and mechanisms of cognitive impairment, kidney injury, sepsis and its monitoring, education and implementation science, health resource utilization, multisensory training, device development and quality improvement projects, including remote bedside monitoring and use of rapid response teams.

Active grants in the division include two R01s, a K23 training grant, an R03 grant and FAER mentored research and education grants, in addition to smaller industry and VICTR grants. Faculty have been involved in more than 20 peer-reviewed manuscripts and textbook chapters in the past academic year.
The Division of Cardiothoracic Anesthesiology is led by Dr. Mias Pretorius and includes 14 faculty members and 11 nurse anesthetists. Each month, three residents rotate through the service. The fellowship program, under the leadership of Drs. Mias Pretorius and Bantayehu Sileshi, currently trains three clinical fellows per year (expanding to five in FY2017).

The division provides perioperative care for approximately 1,400 adult cardiac procedures per year. These include coronary artery bypass graft (on- and off-pump) surgery, valvular surgery, heart and lung transplantation, adult congenital procedures, hybrid procedures, aortic surgery and ventricular assist device (VAD) insertions. The VAD program at Vanderbilt currently places about 80 devices per year for both bridge-to-transplant and destination therapy indications. Our structural heart disease program employs the newest techniques involving transcatheter aortic valve replacement (TAVR), catheter-based repair of mitral regurgitation (Mitraclip) and left atrial appendage occlusion (Watchman).

Members within the division provide anesthetic care to over 700 general thoracic cases annually. In addition, anesthesia services are also provided for interventional pulmonology, cardiology and electrophysiology procedures, which together account for approximately 3,500 cases annually. A subset of the division’s faculty members rotate through the adult cardiovascular intensive care unit, under the medical direction of division faculty member Tony Hernandez, MD.

Intraoperative transesophageal echocardiography (TEE) is an integral part of our clinical practice and is performed on all adult cardiac patients. Our faculty members also provide TEE in the electrophysiology suite to rule out thrombosis of the left atrial appendage, to guide trans-septal puncture and to guide transcatheter valve procedures. All studies are performed and interpreted by a cardiothoracic anesthesiologist, and cases are digitally archived for future study. The division uses 4 Philips EPIQ and 3 CX50 consoles, and these machines were installed in 2015.

Division faculty members conduct research in vascular biology, precision perioperative medicine, acute kidney injury and the perioperative inflammatory response. Extramural grant support comes from the Department of Defense, the National Institutes of Health and industry. Dr. Susan Eagle received a $270,000 grant from Baxter Medical for an investigator initiated trial, “Peripheral intravenous device for detecting intravascular volume overload in dialysis patients.” Dr. Eagle is co-inventor of the IV device and is principal investigator of the trial.

The division has a significant education presence. Dr. Andrew Shaw served as the scientific program chair for the Society of Cardiovascular Anesthesiologists (SCA) 2016 annual meeting. Two simulators are available for training in the division’s echocardiography lab and at Vanderbilt’s Center for Experiential Learning and Assessment.
The Division of Multispecialty Adult Anesthesiology is led by Mark Rice, MD. This is the department’s largest division, providing perioperative anesthetic care for more than 12,000 patients annually in 45 operating rooms and procedure suites for a wide variety of surgical services, including general surgery, orthopedics, urology, plastic surgery, ophthalmology, vascular surgery, otolaryngology, hepatobiliary surgery, liver and renal transplantation and oral/maxillofacial surgery. The division has 48 full- and part-time faculty members, most of whom have significant subspecialty training and expertise. As Vanderbilt is a Level One Trauma Center, MSA faculty and staff provide 24-hour coverage for emergency and trauma surgery for the region.

In July 2014, a Perioperative Consultative Service was created to provide co-management of surgical patients, from decision to operate until after discharge from the hospital. This started with a pilot program involving colorectal surgical patients and quickly grew to include abdominal wall reconstruction, surgical weight loss and hepatobiliary-pancreatic/surgical oncology patients. Plans are underway with other surgical services to extend this coverage to another two services within the next year.

MSA division faculty provide anesthesia residents a variety of both introductory and advanced clinical experiences and make numerous contributions to the department’s educational programs for medical students, residents and fellows. Additionally, MSA faculty members teach and supervise residents from other specialties, as well as student registered nurse anesthetists who rotate in the MSA division. Division faculty members pursue a wide range of academic interests, including regional anesthesia, airway management, information technology, perioperative medicine.

The division’s members are also highly active in research, with numerous investigator-initiated clinical research projects currently in progress. Work is ongoing in informatics, regional anesthesia, airway management, perioperative medicine and drug protocols in an effort to improve perioperative care and throughput.
Neurosurgery and other neurologic services continue to expand at Vanderbilt University Medical Center, and faculty members specializing in neuroanesthesiology are providing increasingly complex anesthesia and sedation services.

The Vanderbilt Department of Neurological Surgery currently has the highest volume of deep brain stimulator implantations in North America. The Vanderbilt Brain Tumor Center provides comprehensive care for patients with brain tumors, and more than 400 major brain tumor operations are performed annually. Because of increasing case volumes, two new neurointerventional neurosurgeons have recently joined Vanderbilt, operating in our state-of-the-art interventional radiology rooms dedicated solely to neurosurgical procedures. The Joint Commission designated Vanderbilt as an Advanced Certification Comprehensive Stroke Center, where the most complex of stroke patients are treated. Annual surgical volume is approximately 4,800 neurologic cases per year.

The Division of Neuroanesthesiology engages in research aimed at improving patient outcomes and cost-effectiveness, as well as expanding the clinical knowledge of certain diseases. Paramount to the success of the division is the collegial working relationship among operating room and intensive care unit team members.

VUMC has seven designated neurosurgical operating rooms, where anesthesia services are provided for operations, including brain tumor, blood vessel malformation, aneurysms, stroke intervention, trauma, complex spinal procedures, functional neurosurgery and chronic pain management. The Division of Neuroanesthesiology also provides specialized anesthesia services for “awake craniotomies,” when patients are intermittently awake to facilitate speech and motor mapping during surgery in order to preserve the most vital areas of the brain. Additionally, anesthesia is provided by the division in neurointerventional radiology suites and at Monroe Carell Jr. Children’s Hospital at Vanderbilt. Like their surgical colleagues, neuroanesthesiologists face many unique challenges, including the length of procedures (which may last more than 16 hours), unusual patient positioning and unexpected intraoperative events, such as seizures or intracranial hemorrhage. Residents on the neuroanesthesia rotation, as well as the faculty leading the training, discover that the ability to make an immediate impact on an operation is both exciting and gratifying.
The Division of Obstetric Anesthesiology is led by David Chestnut, MD. Dr. Chestnut is the editor of Chestnut’s Obstetric Anesthesia: Principles and Practice. Now in its fifth edition, this book is widely considered the premier obstetric anesthesia textbook. Former division director Curtis Baysinger, MD, is co-editor of the second edition of A Practical Approach to Obstetric Anesthesia, another highly regarded textbook, published in 2016.

The division provides dedicated, 24-hour, in-house obstetric anesthesia care for approximately 4,500 deliveries at Vanderbilt University Medical Center (VUMC) annually - over half of which are considered high risk. In addition to offering the full complement of techniques for labor analgesia, the division provides consultation and critical care management services for high-risk obstetric patients, as well as specialized anesthesia care for fetal surgery.

The division collaborates with VUMC maternal-fetal medicine, gynecologic oncology and urology physicians in an innovative approach to the care of patients with placenta accreta/percreta, which is a form of abnormal, invasive placentation that places the mother at high risk for massive blood loss and significant morbidity. With this approach, patients with known placenta accreta/percreta undergo a modified cesarean delivery through a fundal uterine incision, and the placenta is left in situ, with plans to perform hysterectomy six weeks postpartum. This multidisciplinary approach seems to result in decreased maternal blood loss and morbidity, and it is a focus of ongoing investigation.

The division also provides anesthesia services for approximately 2,500 gynecologic surgical procedures in a suite of three operating rooms adjacent to the labor and delivery unit. Division faculty and staff collaborate with the department’s Perioperative Service to provide anesthesia care using multi-modal, enhanced-recovery-after-surgery (ERAS) protocols.

The division sponsors an ACGME-accredited obstetric anesthesia fellowship, and the fellowship complement was increased from one to two fellows per year, beginning in July, 2016. The division is also taking a leadership role in the use of in situ simulation training for obstetric emergencies.

Recent clinical research projects include a landmark assessment of analgesic efficacy and patient satisfaction with administration of nitrous oxide for labor analgesia. Women who chose nitrous oxide for labor analgesia and subsequently underwent vaginal delivery reported high levels of satisfaction with nitrous oxide, despite variable labor analgesic effectiveness. Future research will probe the reasons for these paradoxical findings. Other planned clinical research projects include an assessment of a novel multi-modal regimen for providing postcesarean analgesia in patients with a history of opioid abuse.
Clinicians at VUMC’s Interventional Pain Center utilize a multidisciplinary approach to pain care, offering thorough evaluations, consultations and referrals in order to employ the most advantageous treatment modalities.

The Interventional Pain Center sees patients with all types of pain, including back, neck, abdominal, pelvic, nerve and joint pain, as well as chronic headache. During the first clinic visit, a patient’s medical history is thoroughly reviewed, and his or her condition is evaluated by Vanderbilt pain specialists to develop a team-based treatment plan. This team includes specialists from anesthesiology, psychology, psychiatry, neurology, neurosurgery, orthopedics or rehabilitation. Interventional Pain Center physicians also work closely with a patient’s primary care providers to close the loop effectively and foster shared responsibility for patient health.

Monroe Carell Jr. Children’s Hospital at Vanderbilt is the site of a unique pediatric pain clinic, where Vanderbilt providers work with patients, their families and their physicians to provide the best pain management for the pediatric patient’s specific needs. The neonatal intensive care unit at the Children’s Hospital also has its own specialized pain management program, and there is a regional anesthesia program to treat young patients as well.

The Comprehensive Pain Service (CPS) at VUMC also continues to grow, as patients benefit in increasing numbers from epidural catheters, peripheral nerve blocks and peripheral nerve catheters for pain management for complex shoulder and arm surgery, lower extremity surgeries and repeated burn debridements.

Division member Dr. Tracy Jackson presented “The Hardest Pill to Swallow” on chronic pain and opioid addiction at TEDx Nashville.
The Division of Pediatric Anesthesiology is led by Suanne Daves, MD. The division provides perioperative care for more than 13,000 patients annually at the Monroe Carell Jr. Children’s Hospital at Vanderbilt, making it the region’s major pediatric referral center.

The Pediatric Pain Service provides an increasing number of inpatient consultations and works closely with the many surgical services at the Children’s Hospital to provide a full spectrum of perioperative pain management strategies.

Education and training of medical students, anesthesia residents, nurses and associated healthcare personnel is a major faculty commitment. Amanda Lorinc, MD, Assistant Professor of Anesthesiology, directs Pediatric Liver Transplant Anesthesia, a program launched in 2015. Areas of academic interest for the division’s faculty include safe transfusion practices, multidisciplinary approaches to decreasing surgical-site infections, situational awareness during handovers in care, difficult airway management, pediatric pain management, regional anesthesia, extracorporeal membrane oxygenation (ECMO) and perioperative care of cardiovascular patients.

The division is an active member of Wake Up Safe, a quality improvement initiative of the Society for Pediatric Anesthesia. Wake Up Safe is a Patient Safety Organization (PSO), as defined by The Patient Safety and Quality Improvement Act of 2005, and its participants are leading children's hospitals throughout the country. Through voluntary reporting from its member institutions, Wake Up Safe has developed the first-ever national registry of adverse perioperative events in pediatric patients. Its goal is to help define quality in pediatric anesthesia and develop quality improvement systems in an effort to help improve anesthetic care for children of all ages.

The division is also an active partner with the quality improvement office of the Children’s Hospital and participates in Solutions for Patient Safety, a network of more than 100 children’s hospitals in 39 states and Canada that partners with Child Health Patient Safety Organization (PSO), our nation’s only PSO dedicated to the safety of hospitalized pediatric patients.
Division of Pediatric Cardiac Anesthesiology

The Division of Pediatric Cardiac Anesthesiology, led by Suanne Daves, MD, was formed in 2007 to support the Monroe Carell Jr. Children’s Hospital at Vanderbilt. Children with heart defects represent a complex group of patients who often require intensive surgical repairs to thrive or even survive into adulthood. The Pediatric Heart Institute at the Children’s Hospital is a high-volume regional referral center and is ranked 19th in US News and World Report’s list of top hospitals in the care of pediatric patients with congenital heart disease.

Two new areas of focus for the division’s quality improvement efforts are decreasing the incidence of early surgical re-intervention in the cardiac surgical patient and identifying effective strategies in the prevention of catheter-related venous thrombosis in the pediatric cardiac population.

Training pediatric anesthesiology fellows in the care of the critically ill child undergoing cardiac surgery or catheterization is a core mission of the division. Fellows spend two months on the cardiac service, and many elect to spend part of their training in the cardiac critical care unit.

Dr. James Phythyon Endowed Lectureship in Pediatric Anesthesiology

Since 2006, the Dr. James Phythyon Endowed Lectureship in Pediatric Anesthesiology has brought renowned experts in the field to Vanderbilt’s campus as visiting professors. The lectureship was established by the family of Dr. James Phythyon, a founding member of the Pediatric Anesthesiology Division. Dr. Phythyon’s widow, Mrs. Marlin Sanders, and the couple’s daughters, Mary Neal Meador, Elizabeth Donner and Sarah Miller, are strong supporters of the department. Each year, they attend the lecture and other events in honor of Dr. Phythyon. In 2016, Patrick Guffey, MD, presented a well-received Grand Rounds lecture entitled “The National Anesthesia Incident Reporting System.”
The Vanderbilt Department of Anesthesiology embraces collaborative practice in its approach to patient care, involving anesthesiologists and residents, certified registered nurse anesthetists (CRNAs), student registered nurse anesthetists (SRNAs) and anesthesia technicians. Serving as Chief CRNA and Associate Director for Anesthesia Advanced Practice Nursing, Brent Dunworth, MSN, MBA, APN, CRNA, leads the CRNA Division. The more than 150 CRNAs in the division provide anesthesia for all types of surgical procedures, including cardiac, pediatrics, vascular, trauma, neurosurgery, plastics, radiologic and special procedures. CRNAs administer general, regional and monitored anesthesia care for scheduled and emergency surgical, obstetric and diagnostic procedures.

Key responsibilities of CRNAs include preoperative patient evaluation, management of the patient through completion of the operative procedure, safe transport of the patient to the recovery area and assurance of the appropriate postoperative care. Additionally, CRNAs provide instruction and education for student nurse anesthetists (SRNAs). They also support the residency education mission by providing service coverage to allow residents to attend educational activities and participate in elective rotations. Our CRNAs are full partners in department clinical practice initiatives and frequently contribute to the development of quality improvement and efficiency initiatives. Thus, the CRNAs are essential to many core endeavors. In terms of personnel, the CRNA division is the largest within the Department of Anesthesiology.

Vanderbilt is the primary clinical affiliate of the Middle Tennessee School of Anesthesia (MTSA) in Madison, Tennessee, which is the second largest nurse anesthesia program in the country. Vanderbilt is also a clinical affiliate for the Union University Nurse Anesthesia program in Jackson, Tennessee. Student nurse anesthetists assist in approximately 7,000 anesthetics per year while on Vanderbilt rotations.

The CRNA division mirrors the operating room organization of Vanderbilt University Medical Center (VUMC). CRNAs who serve in a lead or service specialist position facilitate communication with all members of the patient care team. In addition to SRNA training, the CRNA division has
developed strong continuing education unit-eligible educational programs designed specifically for CRNAs. Vanderbilt CRNAs are always positioned on the cutting-edge of new developments in anesthesiology.

VUMC is staffed by 38 anesthesia technicians who contribute to safe, efficient anesthesia care by providing highly skilled assistance to anesthesiologists and nurse anesthetists at both on- and off-campus clinical locations.
Education

We are committed, equipping future global leaders with the latest knowledge and skills.

The Office of Educational Affairs supports and oversees undergraduate medical education, graduate medical education for residents and fellows, and continuing education for faculty and advanced practice nurses. The extensive education and training programs offered by the Department of Anesthesiology prepare medical students, residents, fellows, nurses and faculty for productive careers as clinicians, academicians and scientists. We offer ACGME-accredited fellowships in Adult Cardiothoracic Anesthesiology, Anesthesiology Critical Care Medicine, Pain Medicine, Pediatric Anesthesiology, Obstetric Anesthesiology and Clinical Informatics. We also offer fellowships in Regional Anesthesiology and Global Anesthesiology.

Residents and fellows benefit from in-depth training in all subspecialty disciplines of clinical anesthesiology, critical care and pain medicine. A full calendar of continuing medical education opportunities for faculty, residents, fellows, nurse anesthetists and nurse practitioners is in place, including:

- Grand Rounds, which features leading experts from around the world;
- Mortality, Morbidity & Improvement (MM&I) Conferences, which focus on recent cases, with the goal of improving patient care;
- ABA BASIC and ADVANCED EXAM Prep Series, which are designed to prepare CA1s, CA2s and CA3s, respectively, for their high-stakes exams as part of the sequence of board certification;
- Mock Oral Board Exams, which are given twice a year to CA1, CA2 and CA3 residents in order to prepare them for the oral board portion of the ABA APPLIED exam;
- Simulation Training Program, which includes Milestone-based assessment in order to give residents training in rare, high-stakes events, as well as to prepare them for the OSCE portion of the APPLIED Exam;
- BH Robbins Scholar Program, which offers one-on-one mentorship and collaboration for aspiring physician-scientists preparing for careers as academic anesthesiologists;
- Faculty Development Seminars, which provide targeted training for professional development;
- Combined Integrative Health and Pain Medicine Quarterly Rounds, which focus on issues related to the management and treatment of pain.

We offer a wide-range of learning opportunities that parallels our excellent clinical training and development. As a result, the average score of Vanderbilt anesthesiology residents on in-training exams is in the 75th–80th percentile when compared to the nation.

“We view everyone as lifelong learners.”

Matthew McEvoy, MD, Vice Chair for Educational Affairs and Associate Professor of Anesthesiology
Residents
The department’s fully accredited residency program is highly sought after by the nation’s top medical students. Proof of this is in the numbers: in the 2016 National Residency Match, the department received more than 950 applications for 18 positions.

Vanderbilt Anesthesiology’s four-year residency program currently enrolls 18 resident physicians per year. Our physician educators are nationally and internationally recognized as leaders in their fields, and the department successfully supports residents interested in academic anesthesiology so they can develop careers focused on advancing knowledge in the specialty. The department typically has 25-30 residents who present original research and overviews of challenging cases at national meetings every year, a clear indication that the department’s educational programs are creating physician-scholars who are prepared for medical practice, peer-education and scientific investigation.

The department’s educational program for residents and fellows consists of a combination of comprehensive didactic conferences, mentored clinical training by subspecialists in every domain of anesthesiology, simulation training and self-study. Simulation training features prominently in the cognitive, procedural and teamwork aspects of anesthesia education, and the Center for Experiential Learning and Assessment is a nationally renowned, on-campus resource for this training. The Accreditation Council for Graduate Medical Education (ACGME) core competencies form a framework for the training program, and a major curricular revision is underway that is targeting the new ACGME Milestones system, as well as the recent changes to the ABA Certification process.

The goal of ongoing curriculum development and revision in the Milestones era is to continue to achieve or exceed this level of academic achievement. Director of Educational Research and Curriculum Development Leslie Fowler, MEd, is overseeing the department’s curriculum improvements. Among other projects, Leslie is working with the School of Medicine’s VStar team to develop a “flipped classroom” model of learning for anesthesiology education. VStar is the school’s IT platform for learning management, launched in 2014. The flipped classroom is a learning environment in which course content is accessed by learners outside of the classroom, and classroom time is used for interactive projects and discussion. Once the flipped classroom is complete, anesthesiology residents at every level of training will have access to rotation-specific curriculum and learning modules 24 hours a day. Our faculty are also developing the same concept for nurse anesthetist training in East Africa.

Fellows
Building from the department’s strength in subspecialties, eight clinical fellowships, as well as a research
fellowship, are offered to individuals seeking advanced, focused training.

The following clinical fellowships are offered at Vanderbilt:
- Adult Cardiothoracic Anesthesiology* – 3 fellows
- Clinical Informatics* – 1-2 fellows
- Anesthesiology Critical Care Medicine* – 10 fellows
- Global Anesthesiology** – 1-2 fellows (first fellowship awarded in 2016)
- Obstetric Anesthesiology* – 2 fellows
- Pain Medicine* – 3 fellows
- Pediatric Anesthesiology* – 4 fellows
- Regional Anesthesiology** – 2 fellows

*ACGME Accredited
**ACGME Accreditation not offered

Advanced Practice Nurses
The Department of Anesthesiology has a unique partnership with the Vanderbilt University School of Nursing to offer an Acute Care Nurse Practitioner (ACNP) Intensivist track as part of the ACNP master’s degree program. The program combines the didactic training of the School of Nursing’s ACNP Program with supplemental specialty lectures in critical care medicine. Students perform their clinical rotations in seven of the Vanderbilt and VA ICUs. Students also receive additional exposure to ICU medicine through twice-monthly simulation sessions and weekly clinical case conferences, taught jointly by members of both faculties. Additional partnership programs between the Anesthesiology Department and the School of Nursing are being planned. Vanderbilt University Medical Center is one of the largest employers of nurse practitioners in the country, and the Division of Anesthesiology Critical Care Medicine has 35 Acute Care Nurse Practitioners who work in intensive care settings.

Nurse Anesthetists
The continuing education of more than 100 Certified Registered Nurse Anesthetists in the department is supported with recurring programs, including Grand Rounds and Mortality, Morbidity & Improvement (MM&M) Conferences. In addition, Vanderbilt is a primary clinical affiliate of the Middle Tennessee School of Anesthesia (MTSA) in Madison, Tennessee, and of the Union University Nurse Anesthesia program in Jackson, Tennessee. Student nurse anesthetists participate in approximately 7,000 anesthetics per year while on Vanderbilt rotations, and their on-campus training is coordinated by the Department of Anesthesiology.

The Center for Experiential Learning and Assessment (CELA)
CELA offers medical learners at all levels a simulation education on computerized, life-like mannequins. Participants get hands-on training in anesthesiology airway management, critical care, perioperative management and transesophageal echocardiogram procedures.

CELA was endorsed by the American Society of Anesthesiologists (ASA) as one of approximately 40 centers in the nation officially approved to deliver certified educational programs. Anesthesiologists can receive continuing medical education (CME) simulation training at CELA that qualifies for American Board of Anesthesiology Maintenance of Certification in Anesthesiology (MOCA*) credit. To achieve the ASA endorsement, the CELA program met strict criteria, including having strong leadership and the necessary equipment, facilities and personnel to provide consistent, effective training.

Arna Banerjee, MBBS, Assistant Dean for Simulation in Medical Education and Administration and Associate Professor of Anesthesiology, Surgery and Medical Education
Educational Research

The department is a national leader in rigorous educational research. Dr. Scott Watkins (APSF), Dr. Chris Cropsey (FAER) and Dr. Mary DiMiceli-Zsigmond (GE Foundation) all have grant-funded educational research investigating the use of decision support tools to improve team-based care delivery in high-stakes perioperative events in pediatric, general adult and obstetric populations, respectively. Dr. Bantayehu Silesi (GE Foundation) focuses on the implementation of a novel perioperative data collection tool in low- and middle-income countries and the development of anesthesia curricula for nonphysician anesthesia providers.

Building Safe Anesthesia Capacity Around the World

Vanderbilt’s Department of Anesthesiology is committed to improving perioperative and anesthetic care in medically underserved regions of the world.

Vanderbilt International Anesthesia (VIA) is developing interactive curricula and training providers who will practice around the world.

ImPACT Africa (Improving Perioperative & Anesthesia Care and Training in Africa) is a sustainable training program that aims to improve perioperative outcomes related to surgical interventions through the ongoing training of skilled anesthesia providers. This program has a particular focus on improving maternal, infant and trauma-related morbidity and mortality in the perioperative period.

As part of the ImPACT program, the department received over $4 million in grant funding from the GE Foundation’s Developing Health Globally program to support research in curriculum development and capacity-building in Kenya and other low-resource regions of the world. Dr. Mark Newton and Dr. Matt McEvoy serve as co-principal investigators.

Dr. Newton directs the Vanderbilt International Anesthesia program and divides his time between being a pediatric anesthesiologist at Vanderbilt and serving as chief anesthesiologist for Kijabe Hospital in rural Kenya. Under his guidance, Vanderbilt anesthesiologists, residents, fellows and nurse anesthetists in the training program travel to Kenya for training and educate medical staff in anesthesia and pain management services.

In 2016, Dr. Newton received the Nicholas M. Greene, MD, Award for Outstanding Humanitarian Contribution, given by the ASA’s Committee on Global Humanitarian Outreach.

Vanderbilt Anesthesia Global Health and Development

The mission of Anesthesia Global Health and Development is the support of all global endeavors within the Department of Anesthesiology, including sustained service activities, research and education. As such, the Global Anesthesia Fellowship, the Vanderbilt International Journal Club, the Global Surgery website (VIGH), and research and service provided in Guatemala, Ethiopia and Mozambique are organized and nurtured as part of this endeavor.

Dr. Kelly McQueen, Professor of Anesthesiology and Surgery, is Director of Vanderbilt Anesthesia Global Health and Development and the Vanderbilt Global Anesthesia Fellowship, and is a globally recognized expert in the field. Dr. McQueen is currently leading research efforts as principal investigator for several grants: one in Ethiopia and two in Mozambique. She is also exploring additional research opportunities in South Africa.

For more information on all of these programs, please see the Global Health tab on the Department of Anesthesiology website.
The vision of the Research Division is to improve upon the department’s currently successful program by fostering excellence, collaboration and the development of young investigators in anesthesiology.

In federal fiscal year 2014, the Vanderbilt University School of Medicine (VUSM) ranked 10th among U.S. medical schools for National Institutes of Health (NIH) funding, and VUSM funding from all sources has more than doubled since 2001.

Anesthesia investigators brought in more than $8 million in total extramural research funding. This included more than $4.5 million in awarded NIH grants, which placed Vanderbilt Anesthesiology 9th among U.S. academic anesthesiology departments in NIH funding.

Within the department, faculty published 241 papers in fiscal year 2016, up from 197 papers in fiscal year 2015, within peer-reviewed literature.

Anesthesia clinical research centers include Vanderbilt Anesthesiology Clinical Research Advisory Committee (VACRAC) and Vanderbilt Anesthesiology & Perioperative Informatics Research (VAPIR).

VACRAC reviews research protocols with a panel of experienced investigators. This process has improved the design and execution of clinical research projects, resulting in more rapid and effective study origination and completion.

VAPIR Director Dr. Jonathan Wanderer has strengthened internal communication and plays a vital role in providing near real time feedback to clinicians to help them improve perioperative care.

The Vanderbilt Department of Anesthesiology has a strong, multifaceted approach to research, which can be viewed on the following pages.

“We focus on precision medicine throughout the entire perioperative process.”

Andrew Shaw, MB, FRCA, FFICM, FCCM
Executive Vice Chair and Professor of Anesthesiology
The research of the Basic Science Research Division is diverse and ranges from ion channel physiology and pharmacology to immunology to pain. Multiple projects by investigators are sponsored by the National Institutes of Health. Brief descriptions of work within the Research Division and its core investigators follow.

Dr. Frederic T. (Josh) Billings, IV, Assistant Professor of Anesthesiology and Medicine, is focusing on mechanisms of surgery-induced organ injury, specifically the impact of perioperative oxidative damage to kidney, brain and heart, and developing new therapy for perioperative organ injury in humans.

Dr. Stephen Bruehl, Professor of Anesthesiology, has identified pain-related alterations in interacting cardiovascular-pain modulatory systems that contribute to enhanced pain responsiveness.

Dr. Kevin Currie, Associate Professor of Anesthesiology and Pharmacology, is currently investigating G protein-coupled receptors (including opioid and prostanoid receptors) and the serotonin transporter (an important target for antidepressants) control catecholamine secretion and the sympathoadrenal stress response.

Dr. Eric Delpire, Professor of Anesthesiology, Molecular Physiology and Biophysics and Chief of the Basic Science Research Division, utilizes genetically-modified mouse models and a variety of molecular techniques to investigate how neuronal Cl- transporters modulate inhibitory synaptic transmission and how renal Na+ transporters and associated proteins regulate salt reabsorption and blood pressure. The laboratory utilizes high throughput screening and protein modeling to identify novel compounds/drugs that target these transporters and regulators.

Dr. Jerod Denton, Associate Professor of Anesthesiology and Pharmacology, is doing early-stage drug discovery for a family of potassium channels involved in renal, endocrine, cardiac and brain function. The goal is to develop sharp pharmacological tools for exploring the integrative physiology and, ultimately, druggability of these channels.

Drs. Brad and Carrie Grueter, Assistant Professors, are researching the neurobiology of addiction and reward-related behaviors.

Dr. Matthias Riess, Professor of Anesthesiology and Pharmacology, is investigating the mechanisms of cardio- and neuroprotection following cardiac arrest, myocardial infarction and stroke in various translationally relevant cell, isolated organ and animal models.

Dr. Andrew Shaw, Executive Vice Chair and Professor of Anesthesiology, is researching common mechanistic factors leading to organ failure after cardiothoracic surgery.

Dr. Edward Sherwood, Cornelius Vanderbilt Chair in Anesthesiology and Vice Chair for Research, Dr. Julia Bohannon, Research Assistant Professor and Dr. Antonio Hernandez, Associate Professor of Clinical Anesthesiology, are studying several aspects of sepsis and burn injury and the application of immunotherapy in critically ill patients.
The Vanderbilt Anesthesiology & Perioperative Informatics Research (VAPIR) Division and Perioperative Informatics work beyond the walls of the operating room, advancing patient care through innovations in patient safety and quality. By integrating active research, state of the art technologies and clinical applications, VAPIR and Perioperative Informatics are advancing the frontiers of science and healthcare. Both have achieved measurable outcomes of success in patient care, infrastructure and educational programs. Faculty members engage with students through mentorship and training programs, equipping the next generation of professionals.

**VAPIR**, led by Dr. Jonathan Wanderer, director, and Dr. Jesse Ehrenfeld, associate director, is responsible for managing the Perioperative Data Warehouse (PDW), which contains full data from more than 880,000 procedures. The division collaborates internally and externally to strengthen its mission to improve patient care here and abroad. Students, residents and fellows can participate in seminars, journal clubs and a structured summer research training program. Experts in biomedical informatics and clinical research share their research at monthly seminars as visiting scholars. Among its many achievements, VAPIR has:

- Created the informatics backbone that supports the Vanderbilt Perioperative Consult Service.
- Developed a suite of real-time data visualization tools to enable clinicians to view quality and performance metrics effortlessly via automated email systems and online tracking dashboards.
- Enabled substantial reductions in surgical site infections and in institutional supply costs through cross-disciplinary collaborations.

**Perioperative Informatics**, led by Dr. Brian Rothman, designs, develops and implements enhancements to Vanderbilt’s Perioperative Information Management System (VPIMS). Using health information technology solutions, the area supports best practice care and workflows to improve patient safety, care quality, efficiency and communication through accurate and reliable real-time data acquisition and delivery.

Under Rothman’s leadership, Perioperative Informatics has implemented web-based solutions for situational awareness (SAGA), postoperative anesthesia note documentation (PAV), intraoperative decision support and the case board (eORBoard). Perioperative nursing now uses electronic checklists to support perioperative Enhanced Recovery After Surgery (ERAS) protocols that are reducing lengths of stay. Perioperative Informatics’ new Post Anesthesia Care Unit oriented case board was created in collaboration with bed management to deliver transparent, real time, patient status data for efficient enterprise-wide patient flow.

Other collaborations include Integrated Presence and Bedside Monitoring, which are bringing perioperative, real-time monitoring and decision support to the ICUs and to surgical patients on general care floors.
The VACRAC (Vanderbilt Anesthesiology Clinical Research Advisory Committee), in partnership with the Perioperative Clinical Research Institute, supports new investigators in developing clinical research projects that will lead to publication and, if possible, extramural funding. The committee oversees the development and conduct of industry-sponsored and investigator-initiated research by developing and managing essential research services and programs.

The committee:
- Mentors potential investigators throughout the research development process.
- Creates opportunities for ongoing learning about research methods, proposal writing, IRB applications, data management and analysis and presentation/publication skills.
- Reviews new research proposals and regularly audits ongoing investigations for effectiveness and compliance with regulatory and safety guidelines.

VACRAC members are Edward Sherwood, MD, PhD (chair); Pratik Pandharipande, MD, MSCI (co-chair); Matt Shotwell, PhD (co-chair); Josh Billings, MD, MSCI; Brian Donahue, MD, PhD; Matthew McEvoy, MD; Damon Michaels, MMHC, CCRP; Andrew Shaw, MB, FRCA, FFICM, FFCM; Yandong Jiang, MD, PhD; Mark Rice, MD; and Matthew Weinger, MD.

The Perioperative Clinical Research Institute (PCRI) is led by Edward Sherwood, MD, PhD, and Damon Michaels, MMHC, CCRP. The division provides a full range of support services, including regulatory management, data management, contracts management, biostatistics, biomedical informatics and financial oversight. The group also trains new investigators so they achieve their own funded research that leads to major publications. The end goal is stronger clinical research, with an eye toward publication in leading journals and changing practice.

Clinical research within the department includes both industry-sponsored, grant funded and investigator-initiated clinical projects that focus on the advancement of medical practice in the fields of perioperative care, chronic pain and medical devices. Most of the department’s investigators are practicing physicians who use their clinical expertise to develop research protocols that seek to answer clinically significant questions.

The PCRI oversees more than 155 active clinical trials, with many more studies in development. The team consists of highly trained and broadly experienced research professionals, including six research nurses, two research assistants, one senior clinical trials associate and one administrative assistant.
VUMC’s Center for Research and Innovation in Systems Safety (CRISS) is an institution-wide resource that conducts basic and applied research in healthcare informatics, patient safety, and clinical quality and designs and evaluates informatics user interfaces, care processes and medical technology. Directed by Matthew B. Weinger, MD, CRISS is an integral part of Vanderbilt’s Institute for Medicine and Public Health (IMPH), led by Robert Dittus, MD, MPH, and consists of anesthesiologists, PhD researchers, nursing and design staff, and faculty collaborators across Health Sciences and in the School of Engineering.

CRISS is highly interdisciplinary and collaborative, with projects spanning numerous clinical domains (from the Medical Home to the operating room) and disciplines (medicine, nursing and pharmacy). Using a range of human factors, usability and systems engineering and design, cognitive psychology, biomedical informatics and implementation science techniques, the Center studies performance during patient care and in realistic simulations to better understand how and why care deviates from optimal, then proposes interventions to improve the safety and quality of care.

CRISS investigators are particularly interested in designing and evaluating medical technologies (i.e., devices and information systems) with an emphasis on the effects of the introduction of new technologies on clinical care, and the use of electronically generated clinical data to identify evolving events and support decision-making. CRISS explores the nature of expertise, clinician-clinician communication, situational awareness, the workload and stress of individual clinicians and of teams, individual and group performance-shaping factors, human-technology interactions and novel methods of information presentation to generate practical benefits in terms of improved clinical care processes and outcomes.

The Center’s involvement with VUMC operational initiatives in quality improvement ranges from participating in the review and analysis of serious clinical events and conducting formal usability testing of VUMC software applications under development and of medical devices being considered for purchase to re-engineering blood transfusion processes, improving clinician handovers and enhancing compliance with perioperative time-outs and checklists.
**Key Clinical Research Studies**

**Bret Alvis, MD:** Novel Use of Pulse Oximetry with an Oral Airway
Pilot study for the prediction of donor liver adipose content Magnetic Resonance Imaging

**Curtis Baysinger, MD:** The effects of Sildenafil, a shorter acting PDE5 inhibitor, on the human fetoplacental microcirculation in women with preeclampsia: A study using the in vitro, dual perfused, single isolated cotyledon, human placental model

A "less-rapid" sequence anesthetic induction/intubation sequence? Does Apneic Oxygenation by means of an oxygenating laryngoscope blade prolong the "duration of apnea without desaturation" in paralyzed non-obese and morbidly obese patients?

A study using the in vitro dual perfused, human placental model to compare: I.) Changes in fetoplacental perfusion pressure induced by altered fetal flow rates in single isolated cotyledons harvested from healthy versus preeclamptic mothers. II.) Slope of the increase in FAP induced by hypoxemia in single isolated cotyledons harvested from healthy versus preeclamptic mothers

**Claudia Benkwitz, MD, PhD:** A double-blind, randomized, placebo-controlled study in children (<7 mos) comparing the effects of antithrombin III (ATIII) or placebo on the coagulation system in infants with known low ATIII levels undergoing open congenital cardiac surgery

**Frederic T. Billings, MD:** The Effect of Maintaining Physiologic Oxygenation on Oxidative Stress During Cardiac Surgery

**James L. Blair, DO:** Peri-anesthetic Imaging of Cognitive Decline (PAICOD) – A Prospective Pilot Study

**Clifford Bowens, MD:** Comparison of Perineural Catheter Depth for the Continuous Popliteal Nerve Block Using Ultrasound Guidance and Dermabond

**David Byrne, MD:** Matched retrospective cohort study evaluating preoperative versus postoperative nerve block catheters effect on patient outcomes in the orthopedic trauma population

**Elizabeth Card, MSN, APRN, FNP-BC:** A Randomized controlled trial of 2% chlorhexidine gluconate skin preparation cloths for the prevention of post op surgical site infections in spine patients

**Katherine Dobie, MD:** Perioperative Management of Patients with Implantable Cardioverter Defibrillators in Ambulatory Settings

**Quality and Medical Management in the Outpatient Surgical Home**

**Susan Eagle, MD:** Non-invasive device to compare peripheral venous pressure with standard invasive monitoring during resuscitation of hemorhagic shock

**Jesse M. Ehrenfeld, MD, MPH:** Using Natural Language Processing to Identify LGBTI Patients in the VUMC EMR and determine how LGBTI status affects diagnosis, treatment, and health outcomes

**The perioperative management of von Willebrand Disease**

**Is 30 Day Mortality Used as a Measure for Surgical Outcome?**

**Usability of Novel Patient Data Visualizations Using Department of Defense and Civilian Medical Treatment Facility Data**

**Defining the Impact of Patients with High Utilization of Healthcare Services**

**Utility of the Surgical Apgar Score on Postoperative Outcomes in Pediatrics**

**Leslie Fowler, MEd:** Survey of Anesthesia Program Structure and Support

**AAPAE community and conference needs assessment**

**Intraoperative Transfusion data & Computer Tomography exam orders**

**Stephen Harvey, MD:** Gaunfacine for PONV after Sinus Surgery

**Patrick Henson, DO:** Use of a Structured Handoff Tool to Improve Preoperative Communication

**Antonio Hernandez, MD:** Comparison of Endotracheal Intubation Over the Antiree via the I-gel and Laryngeal Mask Airway Supreme

**Douglas Hester, MD:** King Vision Video Laryngoscope vs. Glidescope Video Laryngoscope: A Comparative Study in Ambulatory Surgery Patients

**Michael Higgins, MD, MPh:** Nasopharyngeal versus Nasal Cannula Oxygen Supplementation in Oral Surgery Patients

**Elizabeth Hughes, MD:** ACGME Case Log Survey

**Heather Jackson, MSN, APRN-BC:** A Randomized Controlled Trial of Auricular Acupuncture to Facilitate Outpatient Opioid Weaning

**Yandong Jiang, MD, PhD:** Determining the correlation between pre-operative serum bicarbonate and the risk of post-operative respiratory insufficiency

**Comparison of mask ventilation techniques in patients requiring general anesthesia**

**Steve Klintworth, BSN, RN, CCPR:** A Randomized Controlled Trial of 2% Chlorhexidine Gluconate Skin Preparation Cloths for the Prevention of Post-Operative Surgical Site Infections in Colorectal Patients

**Avinash Kumar, MD:** Stroke-related Early Tracheostomy vs. Prolonged Orotracheal Intubation in Neurocritical care Trial 2

A Novel method of evaluating critical care fellows and key factors for success in a multifaceted fellowship using Data Envelopment Analysis

**Susan Krauser Lupear, CRNA:** Peer Support Following Critical Patient Incidents

**Letha Mathews, MBBS:** Radiographically Measured Neck Motion During Intubation with MILS by Two Different Video Laryngoscopes

**Matthew McEvoy, MD:** Enhanced Recovery After Surgery in Colorectal Surgery: A Large-Scale Quality Improvement Project

Enhanced Recovery After Surgery in Surgical Weight Loss: A Pilot Project to Track Patient Recovery after Discharge

**Defining Perioperative Morbidity and Mortality in Western Kenya: A Quality Improvement Project**

**Micro CE Pilot Study**

**Educational Methods in Graduate Medical Education Survey**

**Stuart McGrane, MB, ChB:** “Anesthesiology Olympics” as a Method for Assessing Resident Knowledge and Skills

**Kelly McQueen, MD, MPH:** Determining the Perioperative Mortality Rate in Low-income Countries

**Impacting the Global Trauma Crisis: Pilot Study in Mozambique**

**The Global Burden of Pain Evaluation Proposal**

**Puneet Mishra, MD:** GREAT Knee Pain Reduction Trial, Genicular Radiofrequency AblationEfficacy in Achieving Total Knee Pain Reduction Trial

**Than Nguyen, MD:** Pediatric Craniofacial Surgery Perioperative Registry (PCSPR)

**Jason O’Neal, MD:** The role of medication use in delirium after cardiac surgery

**On-pump versus off-pump coronary artery bypass grafting and the incidence of delirium**

**Michael Pilla, MD:** Intraoperative Cardiac Arrest During Adult Liver Transplantation: A Multi-Center Study

**Uma Shastri, MD:** The Effect of Pectoralis Block on Analgesia after Simple Mastectomy

**Andrew Shaw, MB, FRCA, FFICM, FCCM:** A Double-Blind, Randomized, Placebo-Controlled Study of Levosimendan in Patients with Left Ventricular Systolic Dysfunction Undergoing Cardiac Surgery Requiring Cardiopulmonary Bypass

**Edward Sherwood, MD, PhD:** A multicenter, randomized, double-blinded, placebo-controlled study of CYT107 to restore absolute lymphocyte counts in sepsis patients

**The Impact of Quantitative Neuromuscular Monitoring in the PACU on Residual Blockade and Postoperative Recovery**
A Study Evaluating Gene Expression Response to TLR4 Agonists

Bantayehu Sileshi, MD: Does a novel digital cognitive aid improve thoroughness and diagnostic accuracy of CT anesthesia fellow evaluation of recorded TEE exams?

Christopher Sobey, MD: Randomized controlled trial evaluating postoperative analgesia and muscle strength between single versus continuous adductor canal block for ambulatory ACL reconstruction

Anticoagulation Quality Improvement Project

Paul St. Jacques, MD: Effect of using videolaryngoscope for tracheal intubation on incidence of emergency surgical airways: A retrospective multi-center observational study

The Epidemiology and Impact of Medication Errors in the Perioperative Setting

Impact of waiting and provider behavior on surgical outpatients’ perception of care

Jonathan P. Wanderer, MD, MPhil: Evaluation of ACS NSQIP Surgical Risk Calculator Implementation in Preoperative Informed Consent Conversations

PACU Overnight: Impact on Length of Stay

Evaluation of Electronic Screening Tools for Preoperative Assessment

Perioperative Outcomes Awareness Project

The Electronic Medical Record Habits of Highly Effective Anesthesia Residents

Decision support for intraoperative low blood pressure

Real-time decision support for postoperative nausea and vomiting (PONV) prophylaxis

Scott Watkins, MD: Improving Team Performance in Simulated Pediatric Emergencies through Incorporation of Non-Technical Skills into an Electronic Decision Support Tool

Elizabeth Demarcus, Sr. Financial Analyst, earned the Master of Management in Healthcare degree from the Owen Graduate School of Management at Vanderbilt University in December 2015.

Damon Michaels, Director of PCRI, earned the Master of Management in Healthcare degree from the Owen Graduate School of Management at Vanderbilt University in December 2015.

Callie Hanks, Program Coordinator for CRSS, co-authored an article entitled “Know Yourself, Know the System: Developing a Successful Career and Being Promoted as an Academic Anesthesiologist,” published in International Anesthesiology Clinics, 2016.

Patricia Hendricks, Research Nurse Specialist III, was recognized for 30 years of service to VUMC during the October 2015 service recognition activities.

Kristi Hasty, Department Education Specialist, earned a Bachelor’s degree in Health Care Administration from Columbia Southern University in January 2016.

Steve Klintworth, Research Nurse IV, earned a Bachelor of Science in Nursing degree from the University of Southern Indiana. The degree was awarded in January 2016.

Martha Tanner, Editorial Assistant III, completed the Vanderbilt Program in Research Administration Development (VPRAD) in October 2015.

Teresa Turnbo, Sr. Clinical Trials Specialist, completed the Vanderbilt Program in Research Administration Development (VPRAD) in December 2015.

Hongjuan Blazer, Sr. Business Intelligence Analyst, passed the Tableau Desktop 9 certification exam in March 2016.

Stephen Doherty, Department Administrator, passed the examinations to earn the Certified Medical Practice Executive (CMPE) credential from the American College of Medical Practice Executives in January 2016.

Dawn Martin, Administrative Assistant III, received the VUMC Credo Award, recognizing individuals who consistently demonstrate exceptional credo behavior, at the August 2016 Clinical Enterprise Leadership Assembly.
The department hosts special lectureships throughout the year and presents distinct recognitions to department members who have provided exemplary service both to their patients and to their colleagues.

Many of these are a direct result of philanthropic support from our alumni, as well as from current department members and other program supporters. Funding is provided by private donors, whose gifts materially improve the academic life of the Vanderbilt Department of Anesthesiology.

The Benjamin Howard Robbins Scholar Program began in 2007 to support the professional development of young clinician-scientists within the department. Building critical research skills under the mentorship of an established scientist helps prepare young investigators to eventually establish a vigorous, independently funded research program. The program is named in honor of the department's first chairman, himself a renowned physician-scientist. The BH Robbins Scholar Program is multidisciplinary, encouraging and supporting mentorships and collaborations that extend far beyond the traditional boundaries of anesthesia.

“This program provides a unique mentored research experience for young scholars that culminates in a two-year multidisciplinary fellowship, with at least one year devoted to research,” said Department Chair Warren Sandberg, MD, PhD.

“Our Robbins scholars benefit from one-on-one mentorship, a wealth of research and educational resources, protected research time and a stipend during their residency and fellowship.”

The BH Robbins Scholar Program is co-directed by Frederic T. (Josh) Billings, IV, MD, MSCI, and Jerod Denton, PhD. The areas of research for our current scholars are described briefly here.

Joseph Schlesinger, MD, (Scholar 2011-2016), is currently examining multisensory perceptual training, specifically improving unisensory pulse oximetry pitch perception and attentional load processing. He builds on this research by looking at the psychoacoustic features of auditory alarms and the development of a salient multisensory alarm for the healthcare setting. Dr. Schlesinger is mentored by Mark Wallace, PhD, Director of the Vanderbilt Brain Institute, and Matthew Weinger, MD. Schlesinger has presented his work at the American Society of Anesthesiologists, the Society for Neuroscience, the Society of Critical Care Anesthesiologists and the American Medical Association. He is now internationally recognized for his work, presenting during the summer of 2016 at the International Association for Music & Medicine in Beijing, China. He collaborates beyond Vanderbilt, notably with McGill University and the Centre for Interdisciplinary Research in Music Media and Technology. His original research articles have been published in Anesthesiology and Anesthesia & Analgesia.

Heidi Smith, MD, MSCI, (Scholar 2011-2016), is the principal investigator of groundbreaking research on pediatric delirium. The initiative monitors children hospitalized in Pediatric Critical Care Units (PCCUs) for delirium. Dr. Smith is mentored by Pratik Pandharipande, MD, MSCI.

Adam Kingeter, MD, (Scholar 2013-2019), is in his third year as a BH Robbins Scholar and is joining the Department of Anesthesiology as an assistant professor. His research activities center on evidence-based, value-driven health care. Current projects include the ICU Provider Awareness of the Charge Environment (ICU-PRICE) study, which examines the impact of charge transparency on the ordering patterns of ICU care providers, as well as several studies investigating methods to decrease hospital charges to patients while maximizing the quality of their care. He is mentored by Melinda Buntin, PhD, the Dean of the Department of Health Policy at Vanderbilt University.
Vanderbilt, and his mentorship committee members include Pratik Pandharipande, MD, MSCI, Andrew Shaw, MB, FRCA, FFICM, FCCM, and C. Lee Parmley, MD, JD, MMHC.

Marcos Lopez, MD, MS, (Scholar 2014-2019), is investigating the impact of intraoperative oxidative stress on postoperative endothelial function in patients randomized to hyperoxia or normoxia during cardiac surgery. He was recently awarded a Foundation for Anesthesia Education and Research Mentored Research Training Grant to support this research. Dr. Lopez is mentored by Josh Billings, MD, MSCI, Pratik Pandharipande MD, MSCI, and David Harrison, MD.

Michael Chi, MD, (Scholar 2015-2020), is currently studying the application of reactive oxygen species (ROS)-responsive microspheres for targeted anti-inflammatory therapy of chronic neuropathic pain. Dr. Chi is mentored by Jerod Denton, PhD, Craig Duvall, PhD, Ronald Wiley, MD, PhD, David Edwards, MD, PhD, and Edward Sherwood, MD, PhD.

Scott Hubers, MD, (Scholar 2015-2017), is currently studying the cardiovascular consequences of dipeptidyl peptidase IV (DPP4) inhibition using intra-arterial infusions of peptides in the setting of angiotensin-converting enzyme (ACE) inhibition. Dr. Hubers is mentored by Nancy Brown, MD, Mias Pretorius, MBChB, MSCI, and JoAnn Lindenfeld, MD.

Jason O’Neal, MD, (Scholar 2015-2016), is currently investigating preoperative risk factors for delirium following cardiac surgery and several biomarkers implicated in the neuroinflammatory pathway of delirium. He is mentored by Andrew Shaw, MB, FRCA, FFICM, FCCM.

Loren Smith, MD, PhD, (Scholar 2016-2017), has identified an association between preoperative high density lipoprotein (HDL) levels and a decreased risk of acute kidney injury (AKI) after cardiac surgery. She is currently characterizing cardiac surgery patients’ HDL with respect to size distribution and anti-inflammatory, anti-oxidant and cholesterol efflux activities to elucidate a possible AKI-protective mechanism for HDL. Dr. Smith is mentored by Josh Billings, MD, MSCI, and MacRae Linton, MD.

Puneet Mishra, MD, (Scholar 2016-2019), is currently the principal investigator for a randomized control trial examining the efficacy of preoperative genicular nerve radiofrequency ablation in reducing pain and improving functional outcomes in patients undergoing total knee arthroplasty. Over the course of this year, Dr. Mishra plans to conduct a second randomized control trial investigating the effectiveness of preoperative transforaminal epidural injections with clonidine as well as dexamethasone in reducing back and radiculopathic pain in patients undergoing a single level lumbar discectomy. Dr. Mishra is mentored by Stephen Bruehl, PhD, and Andrew Shaw, MB, FRCA, FFICM, FCCM.

Dianne Lou, MD, PhD, (Scholar 2016-2020), is interested in the pathophysiology of sepsis/systemic inflammatory response syndrome and genomics for guiding precision medicine. She joined the BH Robbins Scholar Program in July 2016.

Special Lectureships & Awards

Dr. James Phythyon Endowed Lectureship in Pediatric Anesthesiology
The lectureship was established by the family of Dr. James Phythyon, a founding member of the Pediatric Anesthesiology Division. Dr. Phythyon’s widow, Mrs. Marlin Sanders, and the couple’s daughters, Mary Neal Meador, Elizabeth Donner and Sarah Miller, are strong supporters of the department.

The Sandidge Pediatric Pain Management Endowed Fund
Retired Vanderbilt anesthesiologist Paula C. Sandidge, MD, created The Sandidge Pediatric Pain Management Endowed Fund at Monroe Carell Jr. Children’s Hospital at Vanderbilt in 2010 to recognize and encourage progress in pain management for children.

The Dila Vuksanaj Memorial Fund for Resident Education
Pediatric anesthesiologist Dila Vuksanaj, MD, practiced at Children’s Hospital for 13 years, dedicating herself to her patients and to the hundreds of trainees who looked to her as a role model, mentor and friend. Following her death in 2009, her family, including her husband, Jacques Heibig, MD, founded the Dila Vuksanaj Memorial Fund for Resident Education.

Dr. Bradley E. Smith Endowed Lectureship on Medical Professionalism
Former chairman Bradley E. Smith, MD, defined what it means to be a true professional, and in 2009 a lectureship on medical professionalism was established in his name by then Department Chairman Michael Higgins, MD. The goal of the lectureship is to reflect on the characteristics, responsibilities and rewards of professionalism as applied to the practice of anesthesiology.

Dr. Charles Beattie Endowed Lectureship
Established by Dr. Warren Sandberg, the lectureship is intended to bring innovators in anesthesiology from unique backgrounds and compelling world views to Vanderbilt as visiting professors.

“We’ve developed tools to assess for delirium on a daily basis.”
Heidi Smith, MD, MSCI, Assistant Professor of Anesthesiology Division of Pediatric Cardiac Anesthesiology


bilateral myringotomy and tympanostomy vs fentanyl in pediatric patients undergoing
prove Outcome during Burn Wound Infection.
IL-15 Superagonist Expands mCD8+ T, NK and
Romanian Journal of Anesthesia and Intensive
supplementation in multi-trauma patients.
Parker R, Sep [Epub]
points: Combined marginal models versus
Brookhart MA, Miller
Mortality during the Resuscitation of Adults
Shaw JM, Robinson DS, Winters DK, Lohr JN, Dittus RS: Isolated sacral injuries: Postoperative


Chi MH, Rice MJ: Propofol: To shake or not to shake. Romanian Journal of Anesthesia and Critical Care 2016; 27:1-4


Ely EW, Pandharipande PP: The Evolving Approach to Brain Dysfunction in Critically Ill Patients. JAMA 2016; 315:1455-6

Harvey S: Dealing with Deception: A Perspective on Malingering. Anesthesia News 2016; May


Kellum JA, Shaw AD: Assessing Toxicity of Intravenous Crystalloids in Critically Ill Patients. JAMA 2015; 314:1695-7


McQueen K: Realities of Anesthesia Care in Resource-limited Settings. Anesthesiology 2016; 124:521-2


Sandberg WS: Searching for Meaningful Topics of Improvement in Anesthesiology. Anesthesiology 2016; 124:251-3

Sandberg WS, Talbot TR: Injection Rhymes with Infection? Anesthesiology 2016; 124:752-4

Schetz M, Shaw AD, Vincent JL: Is the literature inconclusive about the harm of HES? We are not sure. Intensive Care Med 2016 Mar [Epub]


Letters


Kla KM, Couris DB, Rice MJ: Limitations of the Pupillary Reflex: Do the Eyes Have It? Anesthesiology 2015; 123:1480-1

Kynes JM, Watkins SC: A ‘Wake up’ call for our specialty-time to examine the impact of production pressure on patient safety. Paediatr Anaesth 2016; 26:697-8

Lam H, Nguyen TT, Austin TM: Routine epidurography for epidural placement in anesthetized pediatric patients. Paediatr Anaesth 2016; 26:326-7


McQueen KA: The Case for Oxygen in Global Surgical Care. World J Surg 2016; 40:1786


Tabing AK, Ehrenfeld JM, Wanderer JP: In reply: Sevoflurone or desflurane: Which one is more expensive? Limiting the accessibility of cost-prohibitive drugs: The story is incomplete. Can J Anaesth 2016; 63:361


Newsletter Articles

Brock JE: How SCOR Data Helps Tennessee Ambulatory Surgery Center Prove It’s Worth. SAMBA Link 2016; Apr:12-12

McQueen K, Stabile M: Global Patient Safety. ASA Monitor 2016; May


Shah PR, Hernandez, A: Critical Care Ultra-
Department recognized for military support

Dr. Balser, Dr. Ehrenfeld, Dr. Sandberg and Carl Lambert, Committee Chair, Tennessee ESGR

Dr. Warren S. Sandberg, Department Chair, was presented with the honorable Committee for the Employer Support of the Guard and Reserve (ESGR) Patriotic Employer Award. Dr. Jeffrey Balser, President & CEO, Vanderbilt University Medical Center, and Dean, Vanderbilt University School of Medicine, received the ESGR Pro Patria Award. Dr. Jesse Ehrenfeld recommended Dr. Balser and Dr. Sandberg for the outstanding support given to him while performing his military duties as a US Navy Reserve Officer.

The Committee for the Employer Support of the Guard and Reserve is a Department of Defense organization working to foster support and cooperation between employers and their employees who serve our country in the National Guard or Reserve. ESGR provides a means for these military members to recognize the support and encouragement given to them by their immediate supervisors or higher level supervisors through an awards program.

Additionally, businesses and organizations are encouraged to see the value in hiring Guardsmen and Reservists and supporting them while they perform their military duties, both in training and in carrying out their military mission when called upon.

The Vanderbilt Department of Anesthesiology is proud to have the opportunity to support our military men and women and is thankful for their service to our country.
Recognizing faculty achievements

New Clinical/Leadership Roles

Brian Allen, MD, named the Director of the Regional Anesthesia and Acute Pain Medicine Fellowship

Rob Deegan, MB, ChB, BAO, PhD, FFARCSI, named Professor of Clinical Anesthesiology

David Edwards, MD, PhD, named Clinical Service Chief of Inpatient Chronic Pain Service.

Raj Gupta, MD, named Associate Professor of Anesthesiology

Travis Hamilton, DO, named Section Head of Regional Anesthesiology Services and Acute Pain Services

Jenna Helmer-Sobey, MD, named Associate Fellowship Program Director

Antonio Hernandez, MD, named CVICU Medical Director

Doug Hester, MD, named Associate Professor of Anesthesiology

Jill Kilkelly, MD, named Associate Professor of Clinical Anesthesiology

Adam King, MD, named Clinical Chief of the Anesthesia Perioperative Consult Service

Buffy Lupear, CRNA, named Senior Quality and Patient Advisor

Stuart McGrane, MB, ChB, named Associate Fellowship Program Director

Kelly McQueen, MD, MPH, named Professor of Anesthesiology and Surgery

Carrie Menser, MD, named Medical Director for the Monroe Carell Jr Children’s Hospital at Vanderbilt (MCJCH) Post-Anesthesia Care Unit (PACU)

Mark Newton, MD, named Professor of Anesthesiology

Mias Pretorius, MBChB, MSCI, Associate Professor of Anesthesiology and Medicine, named Division Chief of Cardiothoracic Anesthesiology

Mark Rice, MD, named Associate Vice Chair for Clinical Affairs

Paul St. Jacques, MD, named Professor of Anesthesiology and Biomedical Informatics

Andrew Shaw, MB, FRCA, FFICM, FCCM, named Executive Vice Chair

Ban Sileshi, MD, named Associate Fellowship Program Director for the Cardiothoracic Anesthesiology fellowship

Jason Slagle, PhD, named Research Associate Professor of Anesthesiology

Chris Sobey, MD, named the Director of the Pain Fellowship program

Lisa Weavind, MBBCh, FCCM, MMHC, named Associate Division Chief of Anesthesiology Critical Care Medicine and Professor of Anesthesiology and Surgery

Achievements

Leadership

Matthew McEvoy, MD, is now a member of the Vanderbilt Academy for Excellence in Teaching and joins members Warren Sandberg, MD, PhD, Scott Watkins, MD, Amy Robertson, MD, Jesse Ehrenfeld, MD, MPH, Michael Richardson, MD, Jane Easdown, MD, and Michael Pilla, MD.

Mark Rice, MD, named to the ABA MOCA Minute Committee as editor.

Warren Sandberg, MD, PhD, served as a member of the Scientific Affairs Reference Committee at the 2015 ASA House of Delegates meeting, which took place during the 2015 Annual ASA Meeting in San Diego, California.

Also:
• Named President-Elect of Tennessee Society of Anesthesiologists for 2016.
• Co-editor of the third edition of David Longnecker’s Anesthesiology, along with Mark Newman, Sean Mackey and Warren Zapol. Publisher is McGraw-Hill, and publication is planned for May 2017.

Andrew Shaw, MB, FRCA, FFICM, FCCM, has been invited to serve as co-editor of the sixth edition of Frederick Hensley’s A Practical Approach to Cardiac Anesthesia, along with Dr. Glenn Gravlee and Dr. Karsten Bartels from UC Denver. Publisher: Wolters Kluwer.

Also:
• Elected for membership into the FAER (Foundation for Anesthesia Education and Research) Academy of Research Mentors in Anesthesiology and joins academy members Warren Sandberg, MD, PhD, Edward Sherwood, MD, PhD, and Pratik Pandharipande, MD, MSCI, within our department.
• Named as recipient of the 2015 Vicenza international critical care nephrology.

Edward Sherwood, MD, PhD, has been selected to join the AUA (Association of University Anesthesiologists) Scientific Advisory Board for 2016. The SAB is responsible for planning the scientific program of the AUA Annual Meeting.

Also:
• Invited to serve on the Promotions & Tenure Committee.
Achievements (continued)

Clinical Faculty
Arna Banerjee, MBBS, received the R. Michael Rodriguez Award for Excellence in Teaching at this year’s Faculty Award Ceremony.
Also:
• Named to the ASA’s Ad-Hoc Screen-Based Simulation Committee.

Curtis Baysinger, MD, is co-editor of the second edition of A Practical Approach to Obstetric Anesthesia, which was published in February 2016. Publisher: Wolters Kluwer.
Also:
• TSA District 2 Director

Josh Billings, MD, MSC, has been appointed to the scientific program committee for the Society of Cardiovascular Anesthesiologists’ annual meeting.

David Chestnut, MD, is the 2016 ASA Rovenstine Lecturer and the editor of the fifth edition of Chestnut’s Obstetric Anesthesia: Principles and Practice, which was published in April 2014. Publisher: Elsevier.

Approval for funding by FAER (Foundation for Anesthesia Education and Research) was received by Christopher Cropsey, MD, for his grant entitled “Effects of an Electronic Decision Support Tool on Team Performance During In-situ Simulation of Perioperative Cardiac Arrest.”

Susan Eagle, MD, received a $270,000 grant from Baxter Medical for an investigator initiated trial “Peripheral intravenous device for detecting intravascular volume overload in dialysis patients.” Dr. Eagle is co-inventor of the IV device and is principal investigator of the trial.
Also:
• Co-founded startup company, VolumetriX, which has been recommended for Phase I STTR funding by the National Science Foundation for the project: “Wireless point-of-care sensor for continuous fluid status monitoring of patients with congestive heart failure.” VolumetriX seeks to fulfill critical unmet needs in medicine by developing novel non-invasive devices and algorithms for intravascular volume status determination.
• Startup company, InvisionHeart LLC, received FDA clearance for its mobile wireless 12-lead ECG system. InvisionHeart has received awards from Google Entrepreneurs, the NEXT award for best healthcare startup in Nashville and the 2015 Southeastern Medical Device Association (SEMDA) for best emerging company. InvisionHeart was also one of 10 startups nationwide chosen to participate in the inaugural event that provides the opportunity to learn from experts and gain exposure to Silicon Valley investors.

Jesse Ehrenfeld, MD, MPH, has been named to the advisory committee of the Substitutable Medical Applications & Reusable Technology (SMART) Platforms project, AMA announced. The SMART project, created at Boston Children’s Hospital and Harvard Medical School, aims to provide doctors better EHR systems by developing “a flexible information infrastructure that allows for free, open development of plug and play applications (apps) to increase interoperability among health care technologies,” according to a news release. Also:
• Editor-in-Chief, Journal of Medical Systems.
• Invited to serve as chair of the Administrative Affairs Reference Committee at the 2015 House of Delegates meeting during the 2015 Annual ASA Meeting.
• The Rewards, Recognition, and Retention Committee as a physician representative. This committee is being formed to reconfigure/replace the Elevate Steering Committee, which mainly met to adjudicate the Credo and Five Pillar Leader awards that were given out quarterly.
• Invited to serve on the ASA Committee on Anesthesia Care Team for the 2016 Governance year (October 2015-October 2016).
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Rajnish Gupta, MD, has been asked to be part of the conference leadership for ASRA (American Society of Regional Anesthesia and Pain Medicine). Duties will include:
2016 - Co-Workshop Chair for the 2016 ASRA Spring Meeting
2017 - Refresher Course Chair for the 2017 ASRA Spring Meeting
2018 - Workshop Chair for the 2018 ASRA World Congress on Regional Anesthesia and Pain Medicine

2019 - Chair of 2019 ASRA Spring Meeting

Rajnish Gupta, MD, and Matthew McEvoy, MD, published the iOS and Android versions of a new app developed in collaboration with ASRA, called ASRA Coags Pain. This app is based on the 2015 Guidelines published by ASRA on the use of anticoagulant medications for interventional pain procedures (as opposed to the acute pain regional anesthesia block the previous app was directed towards).

Doug Hester, MD, was one of four “poets who heal” who read from their works April 19 at the Williamson County Public Library. “Alternative Medicine: Poets Who Heal” was presented as part of the Vanderbilt University Lectures in the Library series.
Also:
• Appointed to the editorial board of “Mind-to-Mind,” the poetry section of the journal Anesthesiology.

Tracy Jackson, MD, presented “The Hardest Pill to Swallow” on chronic pain and opioid addiction at TEDx Nashville.

Shannon Kilkelly, DO, has been appointed to the Tennessee Board of Osteopathic Medical Examiners.

Avinash Kumar, MD, has been elected to the Neurosciences Section Council.
Also:
• Confirmed on the Program Accreditation, Physician Certification & Fellowship Training (PACT) Committee for a four year term.

continued on page 44
Achievements (continued)

Clinical Faculty (continued)

Jason Lane, MD, was elected to the board of directors at the Association of Anesthesia Clinical Directors’ annual meeting. Also:
• Appointed chair of the Society of Non-Operating Room Interventionalists and Anesthesiologists (SONORIA) Collaboration committee. This committee is charged with the task of acting as a liaison to other societies and specialties (Radiology, Cardiology, Gastroenterology).

Kelly McQueen, MD, MPH, was the recipient of an alumni award from The University of Vermont College of Medicine - the 2016 Service to Medicine & Community Award. Also:
• ASA Alternate Delegate for TSA.

Approval for funding by VICTR, pending IRB approval, was received by Jason O’Neal, MD, for his project entitled “Neuroinflammation and postoperative delirium in cardiac surgery.” The project was also approved for an Innovation Grant through the University of Vermont College of Medicine - the 2016 Service to Medicine & Community Award. Also:
• ASA Alternate Delegate for TSA.

Pratik Pandharipande, MD, MSCI, has been selected as a member of the FAER (Foundation for Anesthesia Education and Research) Academy of Research Mentors in Anesthesiology and joins academy members Warren Sandberg, MD, PhD, Edward Sherwood, MD, PhD, and Andrew Shaw, MB, FRCA, FFICM, FCCM, within our department. Also:
• Received a 2016 Presidential Citation from the Society of Critical Care Medicine.
• Received an invitation from Dr. Balser to participate in the School of Medicine Academic Leadership Program, administered by the Office of Faculty Affairs.

Brian Rothman, MD, selected to serve as Chair of ASA’s Committee on Electronic Media and Information Technology (October 2015) and President-Elect for the Society for Technology in Anesthesia. Also:
• Invited to serve on the American Society of Anesthesiologists 2016 Ad Hoc Committee on Data Governance.
• Invited to participate in an ASA workgroup that will formulate a plan to help prepare members for the implementation of MACRA (the “Medicare Access and CHIP Reauthorization Act”), including the Merit-based Incentive Payment System (MIPS). This workgroup is tasked with determining appropriate criteria for EHR meaningful use for anesthesia care to propose them to the Centers for Medicare & Medicaid Services (CMS) for inclusion in MIPS.
• Chair of (HIMSS) Healthcare Information and Management Systems Society’s Connected Health Committee.
• Serving on the ad hoc committee on Payment Reform. The Steering Committee will collect and assemble information from ASA members and task oriented workgroups to develop and answer specific questions about anesthesiology’s current state and necessary future direction relevant to the four components of MIPS and the development of APMs (alternative payment models).

Jonathan Wanderer, MD, MPhil, has been selected to serve as an examiner for the American Board of Anesthesiology’s (ABA) Part 2 Examination. Also:
• Invited to serve on the Anesthesia Quality Institute Data Use Committee. Committee responsible for:
  - Advising on the appropriate handling of research data requests on an ongoing basis (i.e., making a recommendation to the AOI Board on how research requests should be handled)
  - Participating with the DUC in review of incoming data use requests
  - Mentoring investigators in using NACOR (National Anesthesia Clinical Outcomes Registry) data
• Invited by the American Board of Anesthesiology, Inc. (ABA) and American Society of Anesthesiologists (ASA) to serve on the newly created ABA/ASA Perioperative GME Workgroup to examine and review potential changes to the anesthesiology residency continuum of education to meet the present and future needs of our patients and health care systems.
• Associate editor for the Cover Editor and Illustrations section of Anesthesia & Analgesia.
• Co-PI on a National Science Foundation grant recently awarded to Biomedical Informatics. The project is entitled “TWC: Small: Analysis and Tools for Auditing Insider Accesses.”
• Co-investigator on Dr. Thomas Lasko’s R01 grant that was recently approved: “Identification, Extraction and Display of Clinical Data Patterns with Application to Anesthesia Workflows.”

Lisa Weavind, MBChB, FCCM, MMHC, has been elected to VU School of Medicine Faculty Senate. Also:
• Led two remote bedside monitoring programs - Integrated Presence and Bedside Monitoring. Both offer real-time clinical information, early recognition and preemptive intervention to mitigate complications and improve patient outcomes.

CRNAs

Middle Tennessee School of Anesthesia (MTSA) awarded Brad Koss, MS, CRNA, the Ikey DeVasher Distinguished Alumni Service Award and John Shields, DNP, CRNA, the Clinical Excellence Award.

Education

Residency class of 2020 Match:
• 7 of the 18 have dual degrees
• 57 Peer-reviewed abstract presentations
• 45 peer-reviewed manuscript publications

Leslie Fowler, MED, named to the AAPAE Council (Association of Anesthesiology Program Administrators & Educators). Also:
• Application selected for the VUSM Faculty Fellowship to Advance Medical Education. This fellowship will provide two selected faculty members (or teams) with $25,000 per year for two years to develop and implement new programs, take existing programs to the next level or scale up programs that have already been piloted successfully.
• Invited to participate as an alternate portfolio coach in the academic year 2015-16 by Vanderbilt’s Office of Health Sciences Education.

Elisabeth Hughes, MD, and Leslie Fowler, MED, received the Stephen Abrahamson’s Outstanding Innovation Award for their abstract “A Novel Approach to Randomization of ACGME Milestones into Daily Anesthesia Resident Evaluations” at the Innovations in Medical Education Conference held in February.

Michael Pilla, MD, appointed Vice Chair for the Problem-Based Learning Discussions ASA Committee for the 2017 governance year. Also:
• Invited to join the VUSM Clinical Practice Appointments and Promotions Committee.

Amy Robertson, MD, appointed as Chair Designee of the Medical Student Education Committee for the Society of Education in Anesthesia. Also:
• Proposal “Using Interactive Video to Teach Clinical Procedures” will be funded by the Vanderbilt Institute of Digital Learning.
**Loren Smith, MD, PhD**, received AUA’s Margaret Wood Resident Research Award and SOCCA’s Young Investigator Award for her abstract “A Novel Association Between High Density Lipoprotein Levels and the Risk of Acute Kidney Injury After Cardiac Surgery.”

**Scott Watkins, MD**, was elected Vice Chair for the anesthesia section of the Society for Simulation in Health Care.

**Research Faculty**

A grant award from the Patient Centered Outcomes Research Institute (PCORI) was received by **Shilo Anders, PhD**, for her grant proposal entitled “Dissemination Activities for Patient-Centered Non-Routine Events.”

**Julia Bohannon, PhD**, has been endorsed by the VUMC Faculty Research Scholars program and offered a place in the program.

**Stephen Bruelhi, PhD**, served on a panel led by Michael Anastasi, Executive Editor of the *The Tennessean*, discussing “The Culture of Pain Treatment/Pain Medication” at the inaugural Tennessee Pain, Opioids, Problems and Solutions Forum.

**Kevin Currie, PhD**, is serving a 5-year term on the editorial board of the *Journal of Biological Chemistry* (JBC).

**Eric Delpere, PhD**, was invited to serve as a member of the Kidney Molecular Biology and Genitourinary Organ Development Study Section, Center for Scientific Review, for the term beginning July 1, 2015 and ending June 30, 2019. Members are selected on the basis of their demonstrated competence and achievement in their scientific discipline. Study sections review grant applications submitted to the NIH, make recommendations on these applications to the appropriate NIH national advisory council or board and survey the status of research in their fields of science.

**Also:**

- Grant entitled “Molecular and Functional characterization of the first known human mutation of the SLC12A2 gene” will be funded by the NIH.

**Jerod Denton, PhD**, was invited to join the Editorial Advisory Board for the *American Journal of Physiology – Cell Physiology.*

**Also:**

- Awarded with a contract from Japanese pharmaceutical company, Ono Pharmaceuticals. Goal is to develop pretherapeutic (and potentially therapeutic) compounds for a family of potassium channels implicated in diabetes, pain and other diseases.

**Dan France, MD, MPH**, has been awarded a 4-year grant from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD) for “The Impact of Non Routine Events on Neonatal Safety in the Perioperative Environment.” Drs. Matt Weinger, Jason Slagle and Amanda Lorinc will work with Dr. France on this project, which is a collaboration of the Department of Anesthesiology, the Department of Pediatric Surgery and the Mildred Stahlman Division of Neonatology. The project will build on research methods to measure Non Routine Events and care transition quality developed by Drs. Matthew Weinger, Jason Slagle and Amanda Lorinc.

A one-year grant award of $45,000 from The Vanderbilt Diabetes Research and Training Center was received by **Carrie Grueter, PhD**, for her Pilot & Feasibility grant proposal entitled “DGAT1 as a central regulator of diet-induced obesity.”

**Naeem Patil, MBBS, PhD**, was selected to the ASPET (American Society for Pharmacology and Experimental Therapeutics) 2015 Washington Fellows Program. Dr. Patil participated in advocating for increased support of the National Institutes of Health and other science agencies.

**Vikram Tiwari, PhD**, elected as “President Elect” of the Health Applications Society (HAS) within the Institute for Operations Research and the Management Sciences (INFORMS) for 2016. The position will automatically move up to “President” for 2017. HAS has 900 members worldwide. INFORMS has over 8,000 members worldwide. Dr. Tiwari will be running the HAS cluster in the next annual INFORMS conference, which will be held in Nashville November 13-16, 2016.

**Pediatrics**

**Stephen Hays, MD**, was appointed to the Part 2 Test Writing Committee of the American Board of Anesthesiologists.

**Amanda Lorinc, MD**, was elected as a Young Turk in the Society for Pediatric Anesthesia (SPA).

**Camilla Lyon, MD**, spent the month of November in Kenya in both Kijabe (Central Kenya) and Kisumu (Western Kenya) under imPACT Africa with Mark Newton, MD, and Matthew McEvoy, MD. The program is expanding from Kijabe to Kisumu with a nurse anesthesia school and simulation lab. During the month, Dr. Lyon provided junior and senior Kenyan nurse anesthesia students clinical training and discussed school logistics with local leaders.

**Mark Newton, MD**, was appointed to the World Federation of Societies of Anaesthetists (WFSA) for a one-year term as a member of the ASA Committee on Representation.

Also:

- Selected to receive the Nicholas M. Greene, MD, Award for Outstanding Humanitarian Contribution by the ASA’s Committee on Global Humanitarian Outreach.

**Heidi Smith, MD, MSCI**, was invited to serve in the role of co-chair of the new Early Career Physician Council.

Also:

- Elected to associate membership in the Association of University Anesthesiologists (AUa).

**Elected to associate membership in the Physician Council.**
Leadership in the Profession

Vanderbilt Department of Anesthesiology Members of the Association of University Anesthesiologists (AUA)

Jeffrey Balser, MD, PhD
Arna Banerjee, MBBS
Curtis Baysinger, MD
Frederic T. (Josh) Billings, MD
Stephen Bruehl, PhD
David Chestnut, MD
Brian Donahue, MD, PhD
John Downing, MB, ChB
Susan Eagle, MD
Jesse Ehrenfeld, MD, MPH
Michael Higgins, MD, MPH
Christopher Hughes, MD
Yandong Jiang, MD, PhD
Avinash Kumar, MD
Matthew McEvoy, MD
Kelly McQueen, MD, MPH
Pratik Pandharipande, MD, MSCI
Mark Rice, MD
Matthias Riess, MD, PhD
Warren Sandberg, MD, PhD
Andrew Shaw, MB, FRCA, FFICM, FCCM
Edward Sherwood, MD, PhD
Heidi Smith, MD, MSCI, FAAP
Paul St. Jacques, MD
Lisa Weavind, MBBCh, FCCM, MMHC
Matthew Weinger, MD

Vanderbilt Department of Anesthesiology
American Board of Anesthesiology (ABA) Part II Examiners

David Chestnut, MD
Stephen Hays, MD
Antonio Hernandez, MD
Shannon Kilkelly, DO
Edward Sherwood, MD, PhD
Jonathan Wanderer, MD
Matthew Weinger, MD

Vanderbilt Department of Anesthesiology Members of the Foundation for Anesthesia Education and Research (FAER) Academy of Research Mentors

Pratik Pandharipande, MD, MSCI
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Andrew Shaw, MB, FRCA, FFICM, FCCM
Edward Sherwood, MD, PhD

Vanderbilt Department of Anesthesiology Members of the Foundation for Anesthesia Education and Research (FAER) Academy of Education Mentors

Matthew McEvoy, MD
DEPARTMENT OF ANESTHESIOLOGY
VANDERBILT UNIVERSITY MEDICAL CENTER

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