



UNIVERSITY of MARYLAND
SCHOOL OF MEDICINE

DEPARTMENT OF ANESTHESIOLOGY



BUILDING SUCCESS

Annual Report 2013/2014

Safe and Compassionate Care for All

Faculty members in the various Divisions of the University of Maryland School of Medicine Department of Anesthesiology provide high-quality care to a growing volume of patients, ranging from relatively routine procedures to far more complex and technologically sophisticated operations. The faculty is forever mindful that as the case volume escalates, one thing remains paramount: patient safety. Combined with comfort and compassion, safety is at the heart of everything the Department achieves.

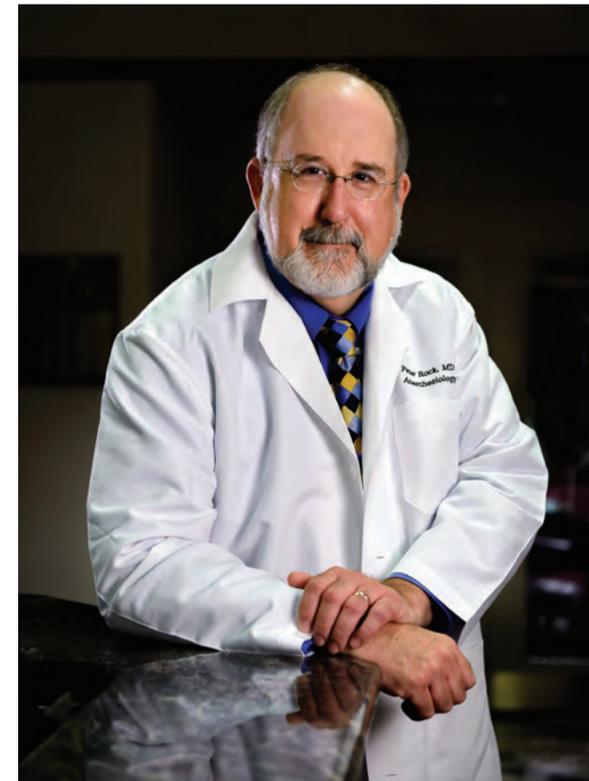
Evidence-based anesthesiology care at the University of Maryland Medical Center is provided by subspecialists with advanced training in their fields. Divisions and Programs include the following:

DIVISION SECTIONS	PAGE
Adult Multispecialty	15
Cardiothoracic	16
Certified Registered Nurse Anesthetists (CRNAs)	18
Critical Care	20
Neurosurgical	22
Obstetric	24
Pain Medicine	26
PREP Center	28
Pediatric	30
Regional	32
Transplantation	34
Trauma	34
University of Maryland Rehabilitation and Orthopaedic Institute (UMROI)	36
Baltimore VA Medical Center	38

TABLE OF CONTENTS	PAGE
Alumni Profiles	2
Unsung Heroes	12
Education	
Tapping Into the Future of Training	4
Learning the Business of Medicine	5
Simulation: Teaching Trainees to Think on Their Feet	6
EXPANSION	
ATLAS: Mapping New Capabilities for Faculty	9
Giving Faculty a Professional Edge	10
VA Anesthesia Expands Quest for Excellence	39
LIFE OUTSIDE THE HOSPITAL	
Back to the Island	17
Running for <i>Their</i> Lives	25
Ready, Waiting, and Eager to Help	35
Different Strokes	37
Seeing Is Believing	37
Serving Community and Country	40
MAKING A DIFFERENCE	
Learning Patient Safety First	7
A New Way to Measure an Old Standard	8
Staying a Step Ahead of the Aging Brain	11
Giving Until it Helps	13
Clinical Researchers Define Care of ICU Delirium	21
Delineating the Roots of Brain Cell Death	23
The Psychology of Pain	27
Stepping Up For Our Smallest Patients	31
AIMing for Clinical Excellence	42
Data from the Field	45
OUR PATIENTS	
The View from the Table	14
A Team to Lean On	19
One Trip, One Love	29
A Room With a View	33
An Inspired Friendship	35
Advancing Information Technology	42
Research	43
Honoring a "Gentle Man"	46
Martin Helrich, M.D.	
Faculty and Staff	48
Publications	52
End of Year Summary	57

Living Quality, Safety and Excellence

THE YEAR IN REVIEW



Peter Rock, M.D., M.B.A., F.C.C.M.

This past year was one of both growth and challenges for the University of Maryland Department of Anesthesiology. Our dedicated faculty rose to these challenges in ways they haven't had to before. Like many hospital departments in this era of healthcare reform, we have been transitioning to a model where we learn to succeed and sustain the commitment to our mission with fewer resources.

While all of our programs remain strong, several have been excelling in ways worth noting, and you can read about them in this report. For example, by strategically reorganizing our internal resources, we created the integrated University of Maryland Regional Anesthesia Service. The Division of Pediatric Anesthesiology nearly doubled to meet the growing needs of the hospital's Children's Heart Program. Transplantation volumes are rising steadily and accompanied by excellent outcomes. We've expanded our ICUs and Pain Management Center, making patient care areas even more friendly and accessible.

Our investigators continue to pursue new avenues of inquiry and generate many notable scientific publications. We have a strong interest in brain function and how it is affected by and recovers after injury. And through our educational efforts, we are not only teaching medical students, residents, fellows, and nurses what

OUR VALUES

To accomplish our mission and achieve our vision, we focus on the five pillars of our specialty:

- **Healing:** Delivering the highest quality perioperative clinical care.
- **Teaching:** Education and training of students, residents, fellows, and other healthcare providers.
- **Discovering:** Development of new knowledge regarding perioperative care.
- **Caring:** Fostering an environment that values professionalism, civility, compassion, collegiality, teamwork, and collaboration.
- **Leading:** Promoting and encouraging leadership activities and skills at all levels of the Department.

they need to know about anesthesiology, but how they can build productive careers and become teachers of the next generation.

The entire country is witnessing significant changes in the way healthcare costs are reimbursed — changes we need to consider as we provide the best care in the most efficient way possible. As healthcare costs rise and Maryland negotiates with the federal government to address the reimbursement of costs, all hospitals in the state are in cost-cutting mode. Throughout this transition, however, we will remain dedicated to delivering exceptional patient care, conducting innovative research, and excelling in educational programs that will define the future of anesthesia care.

Peter Rock, M.D., M.B.A., F.C.C.M.

*Martin Helrich Professor and Chair, Department of Anesthesiology, University of Maryland School of Medicine
Professor of Anesthesiology, Medicine and Surgery,
Anesthesiologist-in-Chief, University of Maryland Medical Center*

BUILDING SUCCESS: OUR ALUMNI



Michael Hieb, M.D.

*Attending Anesthesiologist
Enloe Medical Center Northstate Anesthesiology Partners
Chico, CA*

Michael Hieb and his wife both matched to residencies at hospitals in Baltimore. After completing medical school at Loma Linda University in California, he was fully intent on starting a residency in emergency medicine. What he did not intend was a change of heart: he found himself drawn to the challenge and pace of anesthesiology. "I'm an instant-gratification kind of guy," says Dr. Hieb. "In anesthesiology, you do something and you see the results immediately." At the University of Maryland, where he was a resident from 1999 to 2001 (after completing his internship at Johns Hopkins), he enjoyed learning about the multiple disorders and diseases encountered in the field of anesthesiology. In 2007, he and his wife moved to her hometown of Chico, California, about an hour and a half north of Sacramento and three hours from San Francisco, where he established a group anesthesiology practice. Dr. Hieb's wide breadth of knowledge amassed at the University of Maryland prepared him to manage any anesthesia case that comes his way at Enloe Medical Center — the largest hospital in the area, featuring a Level II Trauma Center and other specialized services. "It is very similar to a university tertiary care hospital. We deliver anesthesia for routine cases as well as for more complex procedures like heart surgery and neurosurgery," he notes. "I am happy to be able to provide my services to patients closer to their homes, so they don't have to drive to Sacramento or San Francisco for their care."



Trung Q. Vu, M.D.

*Assistant Clinical Professor
Associate Director, Residency Program
Director, Anesthesiology Critical Care Medicine Fellowship
Co-Medical Director, Surgical ICU
Department of Anesthesiology and Perioperative Care,
School of Medicine
University of California, Irvine, CA*

When Trung Vu started his anesthesiology residency at the University of Maryland in 2005, he was attracted to the training he would also receive in critical care medicine — especially the exposure to complex cases in the University of Maryland Shock Trauma Center. "I knew it would be very hard and the workload very demanding, but I also knew that would better prepare me to be an attending," says Dr. Vu. "The attendings made a great impression on us. I still keep in touch with several of them." The workload was indeed challenging, with a higher number of clinical cases than many anesthesiology residency programs. After his residency, he completed a critical care fellowship at Johns Hopkins University School of Medicine. He then embarked on his career at the University of California, Irvine (his medical school alma mater), where he created an anesthesiology critical care medicine fellowship accredited by the ACGME. He also helps lead the residency program and has made structural changes to enhance it, is in charge of the Grand Rounds Didactic and Visiting Professorship Series, and is the Clinical Director for the department's ICU rotations. In addition to his educational leadership, he is conducting clinical research on goal-directed therapy to optimize the treatment of burn patients before and after surgery, with special attention to monitoring of fluid status. Says Dr. Vu, "My education at the University of Maryland was excellent. I came out completely prepared to do what I am doing now."



Jason Lai, M.D.

*Attending Anesthesiologist
Danbury Hospital, Danbury, CT*

Jason Lai enjoys seeing his patients go from anxious and uncomfortable preoperatively to relaxed and comfortable postoperatively. "I like being able to quickly put my patients and their families at ease and gain their confidence when I first meet them before surgery," he notes. "Patients are so thankful to their anesthesia care providers for effectively managing their pain and enhancing their comfort, from the moment they come in for surgery until they leave to go home." At Danbury Hospital, he performs a wide variety of anesthetic procedures, ranging from general anesthesia for adults and children to regional and neuraxial anesthesia for orthopedic and pregnant patients, as well as acute pain management. He was a resident in the department from 2007 to 2010, coming from SUNY Stony Brook School of Medicine and North Shore University Hospital, where he completed his internship. He credits the University of Maryland Department of Anesthesiology for providing the full spectrum of anesthesia education, with exposure to a comprehensive range of cases. Dr. Lai was especially impressed by the education he received at UMMC in trauma anesthesia, thanks to the institution's renowned R Adams Cowley Shock Trauma Center, as well as specialized training in regional anesthesia by Department faculty based at the University of Maryland Rehabilitation and Orthopaedic Institute (formerly Kernan Hospital). "At Danbury Hospital, one strength I have over many of my colleagues is the ability to perform ultrasound-guided nerve blocks," he adds, highlighting his training in this technique. "I am grateful to the educators at the University of Maryland Department of Anesthesiology for challenging me during my residency and preparing me for the cases I am now seeing in practice every day."



Chelsia L. Varner, M.D.

*Assistant Professor of Anesthesiology,
Department of Anesthesiology
Director, Anesthesiology Residency Program
Keck School of Medicine, University of Southern California
Los Angeles, CA*

An anesthesiology residency is hard enough. A residency when someone has a child is harder. But residency as a single parent can be the biggest challenge of all. When Chelsia Varner started her anesthesiology residency at the University of Maryland in 2004, her son was eleven years old. While she didn't get any special treatment compared with the other residents, she did appreciate the support she received. "I didn't get a pass on my responsibilities, but at the same time, Dr. Mary Njoku let me know her door was always open. She would always ask, 'What can we do to support you?'" recalls Dr. Varner. Her interest in anesthesiology began as a medical student at the University of Maryland. "The faculty were sincerely interested in enlightening me about anesthesiology and critical care medicine and sharing their passion with me," she adds. "They set the bar high and expected nothing less from me." After completing her residency in 2008, she moved to California to be near family, assuming her position at The Keck School of Medicine. She soon appreciated the level of responsibility required of her and the work ethic she learned at the University of Maryland — something she now shares with current anesthesia residents whom she mentors as Director of the Residency Program. "I tell them that now's the time to work hard, step up to the plate, and be activists for their own education," concludes Dr. Varner. "That's what I learned at the University of Maryland, and that's what makes you a good doctor."

BUILDING SUCCESS: EDUCATION



Resident, Jesse Kiefer, M.D.

Tapping Into the Future of Training

One of the rites of passage for medical residents is the ubiquitous and weighty medical textbook — that is, unless you're a PGY-2 (Post-Graduate Year 2) anesthesiology resident in the Department of Anesthesiology at the University of Maryland. Starting in 2013, these residents were each issued an Apple iPad, complete with interactive versions of their medical textbooks, plus a home screen with important links to the Department's learning and educational resources and the campus library. "In making this decision, the Education Committee looked closely at cost, utility, and the best reasons to use this device as a learning tool," says Mary J. Njoku, M.D. "With medical textbooks now optimized for the iPad platform, using this tablet enhances the experience of reading and note-taking, not to mention easy access to other information."

Residents, whose iPads arrived complete with personalized covers, couldn't be more delighted. "Having an iPad instead of those massive textbooks makes studying much easier and more convenient," says Jesse Kiefer, M.D., class of 2016. "And when I'm on campus Wi-Fi, I can access schedules, case assignments, and contact information securely."

Arushi Kak, M.D., also class of 2016, agrees. "I use mine every day to keep pace with my study needs. It's definitely where the future of resident training is heading."

Hands-On Learning

The educational programs of the University of Maryland School of Medicine Department of Anesthesiology have trained many of the leaders in anesthesiology today. The Department offers residency and fellowship programs in general and specialty anesthesiology. Instruction is also provided for medical students, residents, and fellows from other disciplines seeking airway management skills; student nurse anesthetists who rotate through the operating rooms; and paramedics. Students and anesthesiology trainees receive a comprehensive education. They are exposed to a broad range of cases, which greatly enhances their educational experience and prepares them for an enriching career. They also have the opportunity to make presentations at professional meetings.

In addition, Mary J. Njoku, M.D., Residency Program Director, and David L. Schreiber, M.D., were invited to present one of only ten oral presentations at the Accreditation Council for Graduate Medical Education (ACGME) Annual Educational Conference in 2013. Their abstract was entitled "19 Years of Clinical Competence Committee Assessments: Meeting the Challenge of the Next Accreditation System."

Residents

The residency program is fully accredited and is part of the Next Accreditation System (NAS) introduced by the ACGME. Residency training consists of supervised daily instruction in the care of patients requiring surgery, obstetric care, pain medicine, critical care services, preoperative evaluation, and postoperative care. Experience is provided in all anesthesia subspecialties — regional anesthesia, trauma, neuroanesthesia, cardiothoracic, pediatrics, obstetrics, vascular surgery, and transplantation — including complex subspecialty techniques. The curriculum complies with the training requirements of the ACGME. In 2013, 12 residents graduated from the program.

The program includes three clinical anesthesia years featuring training in basic, subspecialty, and advanced anesthesiology. Four-year positions include an integrated internship (PGY-1). About half of the resident slots are filled via the integrated program. Residents have the option of a six-month research track devoted to laboratory or clinical investigation. Senior residents may use elective time to gain additional advanced experience in the care of seriously ill patients and complex procedures.

In 2013, the department launched a Mock Oral Exam program, which allows residents of all levels to participate in a practice oral exam that is identical in structure and format to the American Board of Anesthesiology Part 2 oral examination. Every anesthesiology resident must complete this assessment to achieve board certification in the field.

Residents also have a prominent and active presence at national meetings. The Department of Anesthesiology provides time and funds for residents to participate in meetings of the American Society of Anesthesiologists (ASA), Society for Pediatric Anesthesia (SPA), The New York State Society of Anesthesiologists (NYSSA), the International Anesthesia Research Society (IARS), the Society of Critical Care Anesthesiologists (SOCCA), and the Society of Cardiovascular Anesthesiologists (SCA). The program has received support from the Foundation for Anesthesiology Education and Research (FAER) Resident Scholar Program, as well as the Maryland Society of Anesthesiologists to support residents' participation at the Annual ASA Legislative Conference and as Resident Delegates to the ASA annual meeting.

For more information about the residency program, visit us online at <http://medschool.umaryland.edu/anesthesiology/residency.asp>.

Fellows

Subspecialty fellowship training (12 months) is offered beyond the three clinical anesthesia years. There are ACGME-accredited fellowship programs in cardiothoracic anesthesiology, critical care medicine, obstetric anesthesiology, and pain medicine available to candidates. The Department welcomed its first obstetric anesthesiology fellow in 2013 and will continue in the 2014 academic year with a new fellow. Other fellowships are offered in trauma anesthesiology and regional anesthesiology. To learn more about these fellowships, visit their respective sections of this report.

In 2013, eight fellows graduated. Overall, our fellowships have been very successful in placing graduates in competitive employment opportunities. Our alumni have also been a great resource in helping residents find employment and are eager to take a call or to welcome a trainee visiting their region. For more information about fellowship training, visit http://medschool.umaryland.edu/anesthesiology/fellowship_training.asp.

Medical Students

More than 160 medical students each year receive introductory and advanced instruction related to anesthesiology. The Department of Anesthesiology takes an active role in training fourth-year medical students at the University of Maryland School of Medicine through a four-week anesthesiology elective in the Department of Anesthesiology, including general and subspecialty services (ANES 541), a four-week pain management elective (ANES 542), and a four-week subinternship in Surgical Critical Care Anesthesiology (ANES 548). Four-week and eight-week externships for students between the first and second years of medical school are also available in many anesthesia subspecialties. Third-year medical students rotate in the

department for a multispecialty experience during the surgical subspecialties rotation which is part of the surgery clerkship. This rotation was expanded in 2013 from one to two weeks.

The Department was selected as a host institution for the FAER 2013 Medical Student Anesthesia Research Fellowship program. First- and second-year medical students who have expressed an early interest in anesthesiology compete for this highly desirable position.

In March 2013, 11 University of Maryland medical students who completed anesthesiology rotations in the Department matched into anesthesiology residencies. For more information about opportunities available to medical students, visit http://medschool.umaryland.edu/anesthesiology/med_students.asp.

Learning the Business of Medicine

The Light at the End: Life After Residency

For the Department of Anesthesiology's 45 young residents, their rigorous training schedule takes up most of their working hours, and then some. While learning valuable clinical skills is crucial to their training, equally vital to their professional success is learning about the business of operating a medical practice. So on August 10, 2013, they were released from their clinical duties for a unique, one-day event designed to further their education in a different light.

The Annual Resident Retreat offers anesthesiology residents the opportunity to gain greater insight into the business planning and skills needed to succeed in their profession.

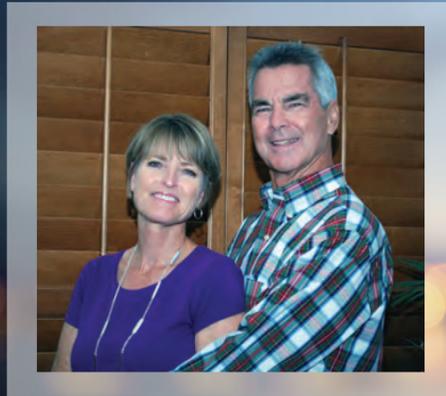
Using the theme "The Light at the End: Life After Residency," the daylong event provided a series of informative talks, panels, and Q and A sessions focusing



Giuliana Geng-Ramos, M.D.

on such important topics as contract negotiations, financial planning, job searches, and fellowship selection.

"Our residents have a lot of questions about the business process," notes Giuliana Geng-Ramos, M.D., one of the Department's 2013-2014 Chief Residents. "These are not the kinds of questions you can just ask an attending physician while on rounds."



Robert Burns and his wife Mary



Simulation: Teaching Trainees to Think on Their Feet

Wendy Bernstein, M.D., M.B.A., Associate Professor of Anesthesiology and Director of the Simulation Program in the Department, nearly missed her connecting flight from Atlanta to San Francisco en route to the International Meeting of Simulation in Healthcare last January. Fortunately, about five other travelers were in the same boat, so Southwest Airlines held the plane. That decision may very well have saved the life of Robert Burns.

That, plus Dr. Bernstein's medical knowledge, quick thinking, and calm demeanor. An insulin-dependent diabetic, Robert learned his blood sugar was very low just before boarding the plane. When his wife noticed he was not feeling well, she summoned a flight attendant shortly after take-off. The flight attendant asked the passengers for medical help. Dr. Bernstein, who was sitting in the row behind Mr. Burns, and a pediatric anesthesiologist who was going to the same conference as Dr. Bernstein, came forward. They laid down Robert across the row of seats with his feet perched on the airplane window.

Dr. Bernstein asked the crew to bring medical supplies. She connected an IV bag of fluid with glucose to Robert, hanging the bag from a luggage tag in the overhead bin. Testing his blood sugar, she noticed it started to rise. His racing heart slowed and he began to feel better. The flight crew suggested landing the plane in Texas, but both Dr. Bernstein and Robert persuaded them to continue the trip to San Francisco.

"Dr. Bernstein's efforts not only immensely aided me, but her calm, kind, and confident personality served to relieve the stress and apprehensions of my wife, the flight crew, and the other passengers," says Robert. "She was an ambassador of compassionate, capable medical care."

While any doctor would come forward to help an ailing patient, Dr. Bernstein's skills were bolstered by her own experience using simulation to teach anesthesiology residents how to react in emergent situations. "Medical in-flight emergencies can be awkward, but you have to be able to think
Continued on page 55

Simulation Faculty

Wendy Bernstein, M.D., M.B.A.
Director of Anesthesiology Simulation

Lise Asaro, M.D.
Shobana Bharadwaj, M.B.B.S.
Cynthia Bucci, M.D.
Gregory Cheloff, M.D.
Bianca Conti, M.D.
Thomas Grissom, M.D., F.C.C.M., M.S.I.S.
Caron Hong, M.D., M.Sc.
Douglas Martz, M.D.
Madhavi Naik, M.B.B.S.
Robert Noorani, M.D.
David Schreiber, M.D.
Matthew Tulis, M.D.

Learning Patient Safety First

In the continuing drive for patient safety at our nation's hospitals, increased attention is being placed on the role of medical residents. Today's young physicians in training work on the front lines of patient assessment on hospital rounds or in clinics. However, they may lack the experience or practical skills necessary to assure and even raise the level of patient safety and the quality of patient care at their institutions. With this issue in mind, the Accreditation Council for Graduate Medical Education (ACGME) has required that all accredited residency programs introduce training related to patient safety and quality improvement (PSQI) within their curricula.

The Department's Chair and the Education Committee viewed this mandate as an opportunity to design a program that would not only meet, but exceed ACGME expectations. The result is the Academic Anesthesiology Program, introduced in 2013 — a two-week academic rotation for the Department's PGY-1 (Post-Graduate Year 1) residents.

Recognizing that a resident's daily schedule is a fast-paced experience of rounds, patient interactions, procedures, and reports, the new program has a surprising feature, according to Mary J. Njoku, M.D., Vice Chair of Education and Director of the Anesthesiology Residency Program. "To give our new residents a thorough grounding in PSQI, we felt that they needed an immersive experience free from other commitments," she says. "That's why we designed this elective so that participating residents would not engage in any clinical work during the two weeks of the program. It's solely for the purpose of learning."

The program includes several components, beginning with a formal introduction to the course by Dr. Njoku. Residents must then schedule independent study time to complete a 16-part online learning module provided by the Institute of Healthcare Improvement (IHI), an independent, not-for-profit organization that works with healthcare providers to ensure the adoption of best practices and effective innovations. Upon completing the module, residents receive a certification in Quality and Safety from the IHI. CA-1 and PGY-2 residents also completed a portion of the IHI curriculum as part of their orientation in July.

In addition, residents participate with faculty and other residents in a simulation session at the Maryland Advanced Simulation, Training, Research and Innovation (MASTRI) Center, the 3,600-square-foot simulation training center at the University of Maryland Medical Center. "These first-year residents are involved in inpatient medicine experiences outside of the operating room," says Dr. Njoku. "This experience provides an opportunity for them to view patient safety practices in anesthesiology and in medicine from a 'real-life' perspective."



Mary J. Njoku, M.D.

Another key component of this special curriculum is a formal didactic schedule — a series of lectures and question-and-answer sessions that center on PSQI theory and practice. For residents, these lectures have a special meaning as they address a familiar setting: the Medical Center and its ongoing PSQI efforts. Authorities on quality and safety from across the hospital and the School of Medicine speak to the residents about issues related to managing patient safety and the quality of care. Past speakers have included a residency-level expert, a fellow in quality and safety, a Senior Director of Quality, Safety and Clinical Effectiveness at UMMC, and a faculty member whose research specialty is evidence-based medicine.

Dr. Njoku says that the guest speakers enjoy these talks as much as the residents. "Our presenters love the experience, because they get to share what's important to them in patient care," she points out. "But it's also their administrative and professional responsibility to educate the youngest members of our institution. Our trainees can share questions and concerns regarding safety and quality with the senior decision makers who have responsibility for those areas, which is a huge benefit."

Dr. Njoku reports that the feedback from residents has been overwhelmingly positive. "They feel that this learning experience and its structured perspective will form an important part of their interaction with their patients," she says. "With this foundation, they can employ what they've learned in contributing to PSQI measures that support the institution and their patients."

PGY-1 resident and program participant Laura DeVita, M.D., readily agrees. "It was a really great rotation, as it opened my eyes to the whole realm of patient safety and quality," she notes. "It's not a subject that medical schools tend to address, so it was interesting to see how little changes can affect patient safety in such a big way."



Thomas Grissom, M.D., F.C.C.M., M.S.I.S.

A New Way to Measure an Old Standard

Learning the intricacies of airway management for the administration of general anesthesia is a rite of passage for anesthesiology residents. It is also a skill that must be mastered by non-anesthesiology trainees, such as emergency medicine residents and pulmonary and critical care fellows. Thomas E. Grissom, M.D., F.C.C.M., M.S.I.S., Associate Professor of Anesthesiology, led a recent study showing that an anesthesiology-based program for airway training of non-anesthesiologists resulted in improvement of self-reported first-attempt success rates over the course of training (*Anesthesiology*. 2014;120:185-195).

It was the first time research had been done to study the effectiveness of an anesthesiology-based training program for non-anesthesiologists in airway management — a vital part of patient care that is a challenging skill to master. The rate of success of the first intubation attempt was examined among non-anesthesiology trainees going through a four-week airway management training program at the University of Maryland Medical Center's R Adam Cowley Shock Trauma Center between July 2010 and September 2012. Trainees averaged 50 to 100 intubations during the rotation, with the rate of first-attempt success increasing with the number of procedures completed and the length of time in the rotation.

Trainees used an online system developed by the Department to input data at the end of each day, indicating how many procedures they performed and how many attempts it took for each procedure to be successful. In addition, they were able to view a cumulative summation of their procedural success during the course of the rotation. Moving forward, Dr. Grissom notes that it would be helpful for the trainees to enter these data on a handheld device (like a smart phone app) each time they did a procedure, rather than waiting until the end of the day. The trainee could then hand the device to the attending overseeing the procedure to provide immediate feedback and evaluate the trainee's performance.

Such objective data help support new requirements by the ACGME, which assesses graduate medical programs across the country, to track objective milestones and to promote trainees only if they meet a set of objective criteria, rather than after a certain period of time. "The trainees like seeing how well they are doing as they go through the rotation," says Dr. Grissom. "As trainers, we can look at the data and determine objectively if trainees have met the required milestones. If not, we can talk about what we need to do to improve their performance so they can complete the rotation with the competence they need."

Mapping New ATLAS Capabilities for Faculty

"I never thought it could be this amazing," says Kim Flayhart. She's referring to ATLAS (Anesthesiology Total Logistical and Academic System (ATLAS)), the new proprietary, web-based application developed by the Department of Anesthesiology. A 17-year veteran of the Department and the Associate Administrator of University of Maryland Anesthesiology Associates (UMAAPA), Ms. Flayhart knows what she's talking about. Over the last two years, she's overseen the complex development of ATLAS, working closely with the development team and Department Chair Peter Rock, M.D., M.B.A., F.C.C.M., who devised, designed, and championed the concept of ATLAS.

What's ATLAS all about? Simply put, its purpose is to serve Department faculty and staff as an instantly available, "always-on" source of information on faculty, staff, and residents in a searchable and flexible format. The solution's principal functions include:

- Compiling relevant faculty data from internal and external sources, including employment history
- Managing demographics and contact information
- Compiling faculty members' academic accomplishments, honors, awards, employment history, and publications
- Facilitating the generation of a formal curriculum vitae (CV) in a variety of recommended formats
- Formatting mailing labels of current and past faculty and related staff
- Managing renewals for upcoming or expired licensures and training
- Providing a completely secure environment for all data by controlling user access based on pre-defined roles
- Improving the onboarding of new faculty workflow materials and other defined processes such as equipment management
- Serving as a single point of entry to obtain critical information

ATLAS originally had its start not as a single Department project, but two — one a proposed database for managing clinical contacts and for disaster planning, and the other an online CV builder created by a third party. Ms. Flayhart, whose oversight at UMAAPA includes the development and direction of special projects like ATLAS along with professional fee billing operations, corporate compliance, and other administrative functions, recalls the challenges in play at that time. "There was no standardized system for managing and tracking physician contacts and other information, which created a great deal of redundancy, error, and wasted time," she remembers. "It was Dr. Rock who looked at the two solutions we were reviewing and came up with the idea to

create our own product — a unique single 'brain trust' of current information." According to Ms. Flayhart, there are other existing systems on the market that provide CV generation or database management, but none seamlessly combine both as ATLAS does.

ATLAS went live in a "soft launch" in April 2014, and will continue to grow as additional workflow capabilities are added over time. Even now, says Ms. Flayhart, ATLAS offers essential benefits to the Department's faculty. "Managing and updating a CV are critical for a physician's career, so it's a great tool for professional enhancement," she notes. "Also, it lets anyone in the Department instantly reach anyone else. ATLAS opens the door for faculty members with similar interests to connect and collaborate."

The administrative advantages of ATLAS may not be obvious to users at first, she adds, but its results are sure to be. "ATLAS will take the support of our academic practice to a new level," she says.



Brad T. Smith, MBA, MPH, Senior Administrator

Managing the Big Picture

For Brad Smith, Senior Administrator of the Department of Anesthesiology, it's the big picture that matters.

"I like my team to know how their piece fits in with our greater vision and mission," he says. "It helps people better realize how their own work makes a real difference."

Mr. Smith, who spent much of his career in academic medicine before joining the Department in 2013, brings a clear sense of focus to his current role. "We have hard-working faculty who are very busy with clinical and research duties," he notes. "I look for opportunities to ease their administrative burden, so they can better focus on their core responsibilities. By improving the efficiency of Department processes, our faculty members don't have to work as hard and are happier with the results."

Giving Faculty a Professional Edge

For junior faculty and veteran professors alike, professional development is key to their achievement in a field that is in a state of constant change. But like anyone else with a demanding work schedule, physicians often find that they're far too busy with their day-to-day jobs to consider how to improve their skills, expertise, and professional qualifications. Where can they find the time? In the Department of Anesthesiology, professional development opportunities are woven into the Department's structure itself. Overseen by Andrew Malinow, M.D., Professor and Vice Chair, Faculty Affairs, these development initiatives provide a vital context for learning and reflection by our faculty in their active lives.



Andrew Malinow, M.D., Professor and Vice Chair, Faculty Affairs

Mentoring Committee

"When you're appointed as a junior faculty member, you receive loads of paperwork, which includes a brief outline of the promotion process," notes Dr. Malinow. "But it's not often clear how to orient yourself, manage your academic career, and find mentors." Since 2011, the Department's Mentoring Committee has provided that guidance, and more. Part of the Departmental Appointment, Promotion and Tenure Committee, the Mentoring Committee provides a structured process to help junior faculty (primarily on the assistant professor level) map out their academic careers and promotion goals, and then help them achieve these goals.

The Committee's mentoring process follows a schedule of meetings between mentees and mentors every three to six months. Mentors issue progress reports to the Appointment, Promotion and Tenure Committee twice yearly, so committee members can gauge the progress of junior faculty members and their eventual readiness for promotion. "There's less free time in modern academic medicine to dedicate to scholarly pursuits, so junior faculty have to become smarter and more efficient with their time in order to seek promotion," says Dr. Malinow. "Our Mentoring Committee helps them make that happen."

Teaching Scholars Workshop

Having effective teachers on staff is critical for a teaching hospital. However, in their traditional medical school and residency experiences, future faculty-clinicians seldom receive sufficient instruction on how to teach. To give junior faculty members the preparation and support they need to be superior instructors, the Department of Anesthesiology hosts a one-day Teaching Scholars Workshop every six months. Formal lectures are followed by small group discussions that pair experienced teachers with

junior faculty. Topics addressed include lecturing to large groups, teaching small groups, and creating a teaching portfolio.

"The Teaching Scholars Workshop allows junior and senior faculty members to interact in didactic and small group settings, and provides opportunities for future mentorship," says Nancy Ryan Lowitt, M.D., Associate Dean, Faculty Affairs and Professional Development. "I look forward to seeing how the Dean's Office can continue to support faculty development and educational leadership and scholarship."

"This workshop serves as pure enrichment for our junior faculty," adds Dr. Malinow. "Through these interactions, they can learn firsthand how to become competent, successful teachers."

Departmental Faculty Retreat

The Department's biannual daylong Faculty Retreat is a well-received informative symposium. Topics addressed at the retreat range from traditional interests — such as research, advancement, promotion, and tenure — to non-traditional topics like physician wellness and health, as well as financial topics such as retirement, disability, and creating a financial plan. The November 2014 retreat included sessions that emulate the Clinical Assessment of Skills and Competencies Simulation Sessions that residents attend, enabling all faculty to have a better understanding of those activities. The retreat will also focus on stress management and resiliency, interacting with the Institutional Review Board for clinical research, and information pertaining to research.

Dr. Malinow notes that the retreat provides an additional value: that of the Department coming together as a community. "During the week, everyone in the Department looks the same — blue scrubs, white coat, and a stethoscope around the neck," he says. "The retreat helps to underscore the fact that our department is a group of unique individuals."



David J. Loane, Ph.D.

Staying a Step Ahead of the Aging Brain

Much has been learned about what happens in the brain in athletes after a concussion. But less is known about the molecular effects of traumatic brain injury (TBI) in people age 65 and older, who have a greater risk of falls and other accidents. Compared with younger patients, older individuals with TBI are more likely to be hospitalized for a lengthy period of time, take longer to recover their brain function, and have a higher risk of dying from the injury.

"There's a poor understanding of what happens at the molecular level inside the aging brain after traumatic brain injury," explained David J. Loane, Ph.D., Assistant Professor of Anesthesiology. He and his team are studying the primary immune cells responsible for inflammation in the brain after TBI, called microglia, and how aging affects them. Dr. Loane and his colleagues have created experimental models of brain injury in animals and found that older animals don't do as well as their younger counterparts, with poorer brain function and more neurologic deficits observed in laboratory testing.

Microglia can have a "yin-yang" of negative and positive effects after injury. Negative effects include the production of molecules that destroy neurons and cause neurodegeneration. Positive effects promote recovery, but are less well understood.

As the brain ages, the positive effects are significantly diminished, and the balance shifts toward the negative neurodegenerative changes. "We're trying to obtain a better understanding of the biochemical and molecular changes that occur in these cells as a function of age and injury," says Dr. Loane. "Once we understand that, we can develop therapies to target these mechanisms."

His team is now evaluating drugs to shut down neurotoxicity and promote brain recovery. One such drug inhibits an enzyme that promotes neuroinflammation. Laboratory studies have shown that the drug reduces neurodegeneration and improves neurological outcomes in animal models. The researchers have also found that exercise after TBI (for rodents, running on a wheel) has a similar effect on this toxic enzyme and neuroprotective effects. "Our goal is to try to reduce the negative effects and increase the positive ones," Dr. Loane concludes.

His research also has implications for understanding and managing the neurodegeneration that occurs in Alzheimer's disease, which is projected to increase. "There's a potential explosion of neurodegeneration that will occur as the population ages," he notes. "It's going to be a massive issue."

UNSUNG HEROES: OUR PEOPLE MAKE US GREAT

Every department has them — those experienced workplace veterans who toil tirelessly behind the scenes to help the day flow smoothly and effectively. They don't ask for credit or call attention to themselves; their sole motivation is to do the best job possible and support their colleagues. In the Department of Anesthesiology, we are fortunate to be able to highlight several of these “unsung heroes” who deserve our recognition and thanks.



Denise Brown

Program Management Specialist I, Research Division

When her manager, Gary Fiskum, Ph.D., Vice Chair of the Research Division, is asked to describe Denise Brown, he gets right to the point. “Denise is a highly dedicated and efficient administrator who treats everyone with respect and kindness,” he states without hesitation.

For nearly 40 years, Denise has worked for various divisions, departments, and programs in the University of Maryland system, primarily within the hospital and the School of Medicine. She was hired by Dr. Fiskum in 2009 to manage the Research Division's front office — and more. “It's a big job,” she admits. “I'm the sole support staff person for four professors along with about a dozen lab researchers. I take care of all their travel arrangements, expense reports, grant tracking, and other paperwork, while keeping everyone on schedule and managing the daily office workflow. I'm really the traffic cop!”

Now in her fifth year in the Department, Denise says that it is the nature of her work relationship that makes all the difference to her. “When you're working for someone, you're just following directions,” she says. “I like working with people who are willing to listen to your ideas. I'm happy to say that's the relationship I have with the Anesthesiology Research group. They make coming to work worthwhile.”

Judy Sizemore

Billing Supervisor, University of Maryland Anesthesiology Associates, P.A.

Over the past 20 years, Judy Sizemore has built a reputation in the Department as the go-to professional for one of the most complex tasks: coding clinical time and types of procedures for entry into the billing system. “Working with a clinician's notes, you need to recognize what surgeries they did and understand the referenced anatomy to a degree that you can put it into specific codes — both anatomic and procedural,” she says. “There also are a number of rules and regulations to consider, especially if concurrent surgeries were taking place and sharing certain steps. In addition, we need to understand the overall surgical process, and convert that to a surgical code that is then converted into an anesthesia code for accurate billing.” With her experienced eye for detail, Judy has also served as a tester of new software systems, such as the AIMS MetaVision solution.

“Judy is always willing to participate in process improvement initiatives,” says Kim Flayhart, Associate Administrator. “She pitches in and never turns away from helping a coworker or the Department. I am very grateful for her teamwork, dedication, loyalty, positive outlook, and continued focus on our goals.”

Most recently, Judy was promoted to the position of Billing Supervisor, and now oversees a staff of eight. “I really enjoy what I do here — especially working with our staff,” she concludes. “It's a real family atmosphere.”



Taryn Webb

Residency and Fellowship Program Coordinator

After four years in the Department of Anesthesiology and in her current role as the Department's Residency and Fellowship Program Coordinator, Taryn Webb has come up with a one-word summary for her job: “Mom.” And with good reason: On a daily basis, she works closely with more than 50 residents and fellows in the Department of Anesthesiology. Whatever certifications, training, or testing that residents and fellows need, Taryn is there to point them in the right direction. “I handle so many things during their training, from bringing them onboard their first day to filling out applications and helping them prepare for their first placement,” she explains.

When she first joined the Residency Program as an administrative assistant, Taryn quickly found herself getting more involved. “I started helping out with some of the educational programming for the residents, such as conferences,” she recalls. “I also began to get to know the residents and fellows better.”

“Taryn is a wonderful person and an incredible worker,” says Mary J. Njoku, M.D., Residency Program Director and Vice Chair for Education. “The job is so important because it is a direct link connecting the trainees, the fellows, and the faculty, as well as being a reflection on the Department and our work ethic. In every way, she's a complete professional — smart and high-energy, with technical savvy.”

Giving Until It Helps

As in past years, faculty and staff of the Department of Anesthesiology gave generously in 2013, raising thousands of dollars for organizations in our community and abroad. Our “giving season” kicked off in October, when the Department participated in the FPI United Way of Central Maryland Campaign, the Maryland Charity Campaign, and a Holiday Giving Program — all in support of local charities. The United Way Campaign solicited donations through a number of in-Department events, including the sale of gift baskets, a mobile bake sale, participation in Administrative Team “Jeans” Day, and more. When Typhoon Haiyan struck the Philippines in November 2013, members of the Department raised money for the relief effort there, while directing additional donations through online sources.



During the holiday season, the Department of Anesthesiology stepped up its giving efforts even more by donating gifts and monetary contributions to two local Baltimore City nonprofit organizations. Family Connections, operating in West Baltimore, helps families meet children's basic needs and prevent neglect, while the Maryland Center for Veterans Education and Training (MCVET) provides veterans in need with comprehensive services to help them rejoin the community as productive citizens.

The Department was able to fulfill the wish list of our adopted family of nine through Family Connections. “The donations provided by the Department of Anesthesiology exceeded any expectations the family had for holiday assistance,” notes Maureen Tabor, Clinical Instructor at Family Connections. “We were truly touched by the outpouring of generosity.”

The Department also personally delivered 50 backpacks filled with gifts for homeless veterans residing at the MCVET emergency shelter and provided their recreation room with new pool cues, ping pong paddles and balls, movies, and popcorn. “During the holiday season, many of the homeless veterans we serve have no families to visit, which can be a pretty traumatic time,” says Jeffery Kendrick, MCVET's Executive Director. “When they received the gifts from the Department of Anesthesiology, many of them said they couldn't believe anybody would think of them at that time of year.”



Beatrice Afrangui, M.D.

The View from the Table

Beatrice Afrangui glanced up at the ceiling of the operating room as the OR staff helped her lay on the table. It's a typical part of surgery, but for her, it provided a new point of view. "I had been in that same OR dozens of times, but this was literally a different perspective," she recalls.

That's because up to that point in time, Beatrice Afrangui, M.D., had only been in the operating room as a surgical intern. In 1992, however, she found herself in the role of the patient after learning she had breast cancer, at only 30 years of age. She received chemotherapy and radiation therapy as well. Seventeen years later, she had a repeat experience when she was diagnosed with a second primary breast cancer, as well as a thyroid cancer that was detected during a PET scan.

Those experiences not only gave Dr. Afrangui a new perspective in a literal way, but figuratively as well, as she put herself in the shoes of her patients. What she learned has changed the way she now practices anesthesiology at the University of Maryland Medical Center, where she is Medical Director of the Patient Readiness and Evaluation Program (PREP) Center. And it has

also changed the way she teaches doctors in training about communicating with their patients.

"When you're on the sharp end of the knife, it's a different view than anything we've seen or learned about as doctors," says Dr. Afrangui, who came to UMMC as an anesthesiology resident in July 1992 and has been here ever since. She teaches doctors in training to be compassionate when speaking with patients and to watch what they say when the patient is anesthetized. "It's not rocket science — it's common sense," she notes. "Patients need someone advocating for them in the OR, and that person is often the anesthesiologist."

When speaking with patients scheduled for surgery, Dr. Afrangui sometimes shares her experience with cancer with those who are embarking on similar journeys, offering them understanding and hope. Speaking with patients dealing with a difficult diagnosis can be very perspective-setting for everyone in the PREP Center. "We all say that a day in the PREP Center will make you count your blessings when you get home," Dr. Afrangui concludes. "I do feel very blessed."

BUILDING SUCCESS: DIVISION UPDATES

Adult Multispecialty Anesthesiology Division Faculty

Douglas G. Martz, M.D.

Vice Chair, Clinical Affairs
Chief, Adult Multispecialty Anesthesiology Division
Associate Professor

Beatrice M. Afrangui, M.D.

Deondra Asike, M.D.

Shobana Bharadwaj, M.B.B.S.

Paul E. Bigeleisen, M.D.

Malinda T. Boyd, M.D.

Kathleen M. Davis, M.D.

Stephanie Esposito, M.D., M.S.

Molly Fitzpatrick, M.D.

Ileana Gheorghiu, M.D.

Kriti Goel, M.D.

Ashanpreet Grewal, M.D.

Caron M. Hong, M.D., M.Sc.

Chinwe A. Ihenatu, M.B., Ch.B.

Jeremy Kaplowitz, M.D.

Arthur V. Millholland, M.D., Ph.D.

Sheryl Nagle, M.D.

Mary J. Njoku, M.D.

Robert J. Noorani, M.D.

John Pallan, M.D.

Peter Rock, M.D., M.B.A., F.C.C.M.

Philip E.F. Roman, M.D., M.P.H.

Sanyogeeta Sawant, M.B.B.S.

David L. Schreiberman, M.D.

Maurice R. Sheppard, M.D.

Daniela Smith, M.D.

Matthew Tullis, M.D.

Gauri Turner, M.B.B.S.

Shafonya M. Turner, M.D.

Obi R. Udekwu, M.B.B.S.

A Lifetime of Service

Jasjit Atwal, M.B.B.S., is anything but retiring, especially when it comes to her own retirement. While currently serving on the Department's Volunteer Faculty as a Clinical Assistant Professor, Dr. Atwal has, if anything, expanded her role as a medical academician since her formal retirement two years ago. In 2013, she spent seven months as a volunteer faculty member at the Akal School of Public Health, located in the state of Himachal Pradesh in northern India. The school, which is part of the Eternal University-Baru Sahib, is one of the first of its kind in that country.

While there, Dr. Atwal taught an intensive course in public health to eager students. "I am not a public health specialist, but I enjoyed teaching the subject from a medical perspective," she laughs. "I was learning as my students were learning!" At the same time, she served as a consultant to the university to select faculty members



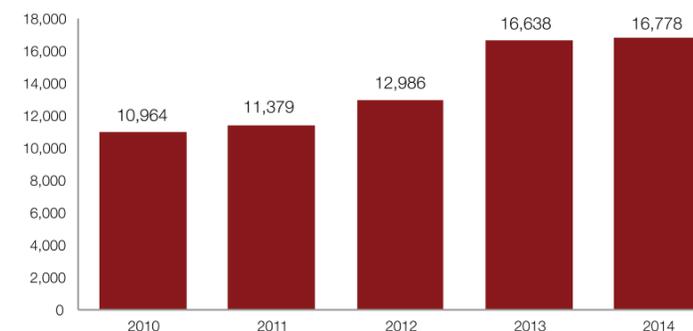
for the launch of a new international baccalaureate high school program. While currently back in the United States, Dr. Atwal intends to return to India in late 2014 for another round of teaching at the school. "Volunteering is my way of giving back," she says. "Besides, I get antsy if I'm not working!"

Adult Multispecialty Anesthesiology

As the largest Division in the Department, members of the Adult Multispecialty Division care for patients in 27 surgical suites and four endoscopy suites at the University of Maryland Medical Center using general anesthesia and perioperative regional anesthetic approaches. They also provide anesthetic care in nonsurgical areas, including gastrointestinal endoscopy, cardiac electrophysiology, body angiography, neuroangiography, and MRI/CT scanning areas. All patient data are recorded through the Department's Anesthesia Information Management System (AIMS), which enables clinicians to document patient information dynamically during a procedure.

"We provide anesthetic care to a medically complex patient population," explains Douglas G. Martz, M.D., Chief of the Adult Multispecialty Anesthesiology Division. "Our team members participate in a number of complex surgical procedures. This makes it imperative for us to stay up-to-date on the latest advances in our field, both in terms of our skills as well as our technology."

Adult Multispecialty Case Volume



**Cardiothoracic Anesthesiology
Division Faculty**

Patrick Odonkor, M.B., Ch.B.
Interim Chief, Cardiothoracic
Anesthesiology Division
Assistant Professor

Wendy Bernstein, M.D., M.B.A.
Seema Deshpande, M.B.B.S.
Molly Fitzpatrick, M.D.
Ileana Gheorghiu, M.D.
Ashanpreet Grewal, M.D.
Michael A Mazzeffi, M.D., M.P.H.
Philip E.F. Roman, M.D., M.P.H.

Cardiothoracic Anesthesiology

The mission of the Division of Cardiothoracic Anesthesiology is to provide safe, comprehensive, state-of-the-art care to patients undergoing cardiac, major vascular, and thoracic surgical procedures. Cardiothoracic anesthesiologists also provide support to other Divisions of the Department of Anesthesiology during all surgical procedures that may require their technical expertise, such as the performance of transesophageal echocardiography in hemodynamically unstable patients in the operating room and during other challenging surgical procedures in patients at high risk of complications.

“While great advances have been made in cardiac and thoracic surgical approaches, these procedures still remain quite complex,” explains Patrick Odonkor, M.B., Ch.B., Interim Director of the Cardiothoracic Anesthesiology Division. “Patients are often considered to be high-risk due to significant underlying comorbidities. The surgical procedure being undertaken may also increase the risk for adverse outcomes. As cardiothoracic anesthesiologists, we have the skills and experience required to care for these patients using the latest evidence-based approaches.”

Such complicated procedures include coronary artery bypass graft surgery, valve replacement surgery, the placement of ventricular assist devices, and the establishment of extracorporeal membrane oxygenation (ECMO) in critically ill patients who would not otherwise survive an underlying medical condition. Patients at the University of Maryland Medical Center also undergo heart and lung transplantation. Less invasive surgical management procedures performed in very high-risk patients include transcatheter aortic valve implantation (TAVI), the LARIAT procedure (a percutaneous procedure for left atrial appendage closure to manage patients with atrial fibrillation who cannot take anticoagulants), and Mitraclip percutaneous mitral valve repair (performed in patients who are at high risk for adverse outcomes after conventional mitral valve surgery).

The Division of Cardiothoracic Anesthesiology has played a pivotal role in the establishment of a new collaboration with the Cardiac Surgery program of the University of Maryland at the Prince George’s County Hospital Center in Cheverly, Maryland. Members of the Division are providing perioperative anesthetic care for cardiac surgical procedures.

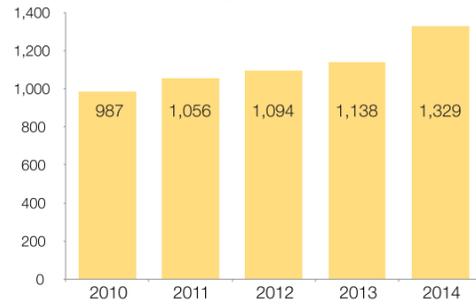
To help advance their field, Division members continue to participate in clinical trials, including the PARTNER Trial using the Edwards Lifescience TAVI procedure and the Sapien THV valve. The Division is also a participant in the COAPT clinical trial, which is designed to assess the safety and effectiveness of the Mitraclip device in the management of heart failure patients with functional

mitral regurgitation who are not candidates for conventional mitral valve repair or replacement surgery. They also actively participate in local and national meetings involving anesthesiology and cardiothoracic anesthesiology and have produced multiple publications in peer-reviewed journals and other academic texts.

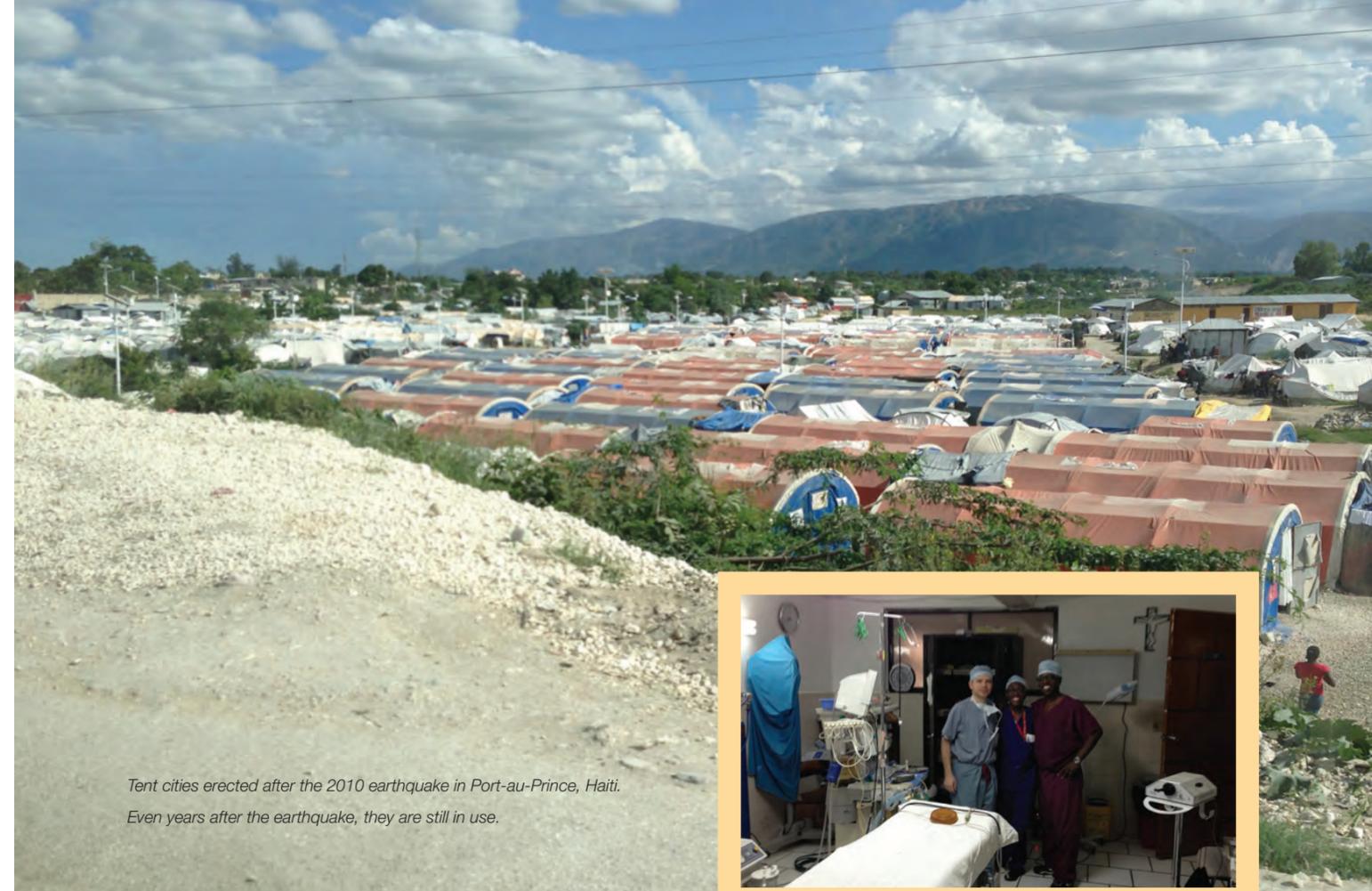
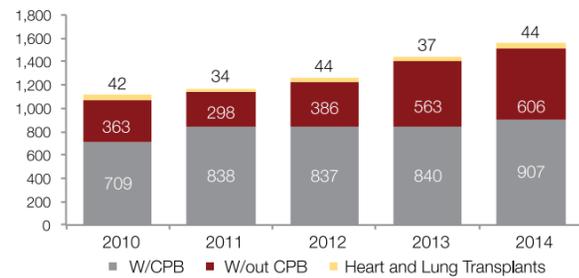
Members of the Division train anesthesiology residents and fellows in the subspecialty and in the performance and interpretation of perioperative echocardiography. This effort includes both operating room teaching experience as well as formal didactic weekly lectures, echocardiography rounds, and a journal club. Anesthesiology residents may take part in a one-month elective rotation in

echocardiography. Fellows from other subspecialties, such as surgical critical care and trauma, also rotate through the Division.

Trans-esophageal Echos



Cardio-Thoracic Surgical Cases



Tent cities erected after the 2010 earthquake in Port-au-Prince, Haiti. Even years after the earthquake, they are still in use.

Back to the Island

It wasn’t the first time that Phillip E.F. Roman, M.D., M.P.H., had been to Haiti. He spent two summers in Port-au-Prince while in high school over 20 years ago while his father worked for the State Department and was stationed there. But when he went back in November 2012, things were different.

For one, he was happy to see that country was literally greener. “Clearly there had been a big effort to preserve the rain forest,” says Dr. Roman, Assistant Professor of Anesthesiology, who remembers seeing the well-demarcated border between Haiti and the Dominican Republic from a plane years ago because Haiti looked so brown. But there was another difference. This time, he was going on a medical humanitarian mission, assisting School of Medicine Otorhinolaryngology-Head and Neck surgeon Rodney Taylor, M.D., M.P.H., and a medical team with head and neck surgeries at the Partners in Health hospital in Cange, a three-hour drive from Port-au-Prince.

Unlike many medical missions in developing countries, where facilities are spartan and supplies are often scarce, Partners in Health has been funded by private American dollars since it was established in the 1980s to meet the needs of people affected by the growing HIV epidemic. The facility is now home to more than

From left: Phillip E.F. Roman, M.D., M.P.H. (UMSOM Dept. of Anesthesiology), Phoebee Jovin, M.D., (local surgeon), and Rodney Taylor, M.D., M.P.H., (UMSOM Dept. of Otorhinolaryngology-Head and Neck Surgery)

100 inpatient beds, two operating rooms, a maternity department, blood bank, and lab, on a campus that also includes a school, artist studio, and pharmacy, fresh food from a local agricultural project, and dorms for visiting medical staff. “They have all the resources they need, except us — doctors with the kinds of medical training we have,” notes Dr. Roman.

As the only free hospital in Haiti, people travel for hours from across the country to get there. During the three days in Cange, Dr. Roman spent 14-hour days participating in some 20 procedures, as well as caring for the daughter of a visiting Cuban anesthetist (who visits the clinic every two weeks) who needed gallbladder surgery after she gave birth. At first he was taken aback by the single large PACU, which supported up to 40 patients, but its nursing staff quickly impressed him. “The nurses were very good and learned which patients were most in need of the most vigilant monitoring,” Dr. Roman recalls.

It was his first humanitarian mission, and he looks forward to others in the future. “I usually do cardiac anesthesia, so it was nice to do something different,” he concludes. “Everyone was so friendly and appreciative. It was a very rewarding experience.”

CRNAs

Linda Goetz, MHS, CRNA
Director, Nurse Anesthetists

Obinna Adogu, CRNA
Chris Amoroso, CRNA
Bonjo Batoon, CRNA
Katherine Billington, CRNA
Shane Bison, CRNA
William Boyden, CRNA
Michael Broussard, MS, CRNA
Kristy Browning, CRNA
Katharine Carr, CRNA
Jonathan Casey, CRNA
Teckla Chude, CRNA
Cheryl Cline, MS, CRNA
Marisa Conry, CRNA
Robyn Cooke, CRNA
Meagan Davis, CRNA
Jaime deBrabander, CRNA
Erika Dick, CRNA
Leanne Downey, CRNA
Emilene Drager, CRNA
Michelle Duell, CRNA
Ron Ejanda, CRNA
Tara Faw, CRNA
Matthew Fox, CRNA
Abbie Frankart, CRNA
Rachel Godwin, CRNA
Elizabeth Goins, CRNA
Joy Gonzalez, CRNA
Michelle Gonzalez, CRNA
Genevieve Grzywacz-Laughter, CRNA
Elizabeth Hammond, CRNA
Bill Howie, DNP, CRNA
Rex Huber, CRNA
Courtney Ihrig, CRNA
Emily Irish, CRNA
Catherine Kinsey, CRNA
Ashley Lacy, CRNA
Sarah Lee, CRNA
Charles Magich, CRNA
Alex Mallari, CRNA
Paul Miller, CRNA
Sharee Miller, CRNA
Courtney Mullaney, CRNA
Anne Marie Muntuerto, CRNA
Gina Muscara, CRNA
Nancy Newman, CRNA
Lilly Nguyen, CRNA
Kimberly Obereiner, CRNA
Melissa Piskozub, CRNA

Certified Registered Nurse Anesthetists (CRNAs)

Certified registered nurse anesthetists (CRNAs) are committed to patient safety and professional excellence. CRNAs collaborate in coordinating preoperative patient assessment, including ordering and interpreting diagnostic tests. They provide anesthetic techniques, including general anesthesia, regional anesthesia, and sedation. They are also skilled in specialized procedures such as advanced airway management and invasive hemodynamic catheter placement.

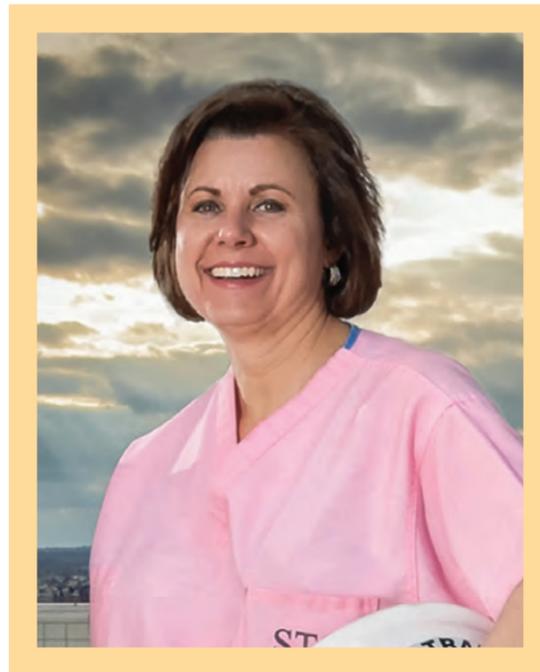
CRNAs in the Department take an active role in fashioning the framework of their profession. By serving as board members and leaders — locally, in the Maryland Association of Nurse Anesthetists, and nationally, in the American Association of Nurse Anesthetists — they play a vital role in establishing the standards of their profession, influencing national healthcare policies that pertain to CRNAs.

The University of Maryland Medical Center has the only CRNA group in the country dedicated to the specialty of trauma care. A specialty group of CRNAs work as members of the Shock Trauma Center's "Go-Team" — healthcare professionals who provide surgical and anesthesia services at the scene of an accident. Some of the CRNAs are members of the military and are integral members of ongoing military missions. Moreover, selected members of the CRNA team provide this care at national events and during regional and national emergencies. Read about Bonjo Batoon, MSN, CRNA, and his involvement with the Disaster Medical Assistance Team (DMAT) on page 35.

Students training to be CRNAs come to the University of Maryland Medical Center from six programs in nurse anesthesia: the University of Maryland, Georgetown University, University of Pennsylvania, Old Dominion University, Columbia University, and Uniformed Services University of Health Sciences. A selected group of CRNAs are faculty members at the University of Maryland School of Nursing in the Program of Nurse Anesthesia, and serve as guest lecturers throughout the year.

For more information about CRNAs, visit <http://medschool.umaryland.edu/anesthesiology/crna.asp>.

Cindy Sampson, MS, CRNA
Kristine Santos, CRNA
Christopher Scott, CRNA
Sally Sharkey, CRNA
Alex Sigalovsky, CRNA
Natalie Sigalovsky, CRNA
Faresha Sims, CRNA
Joey Sliwkowski, CRNA
Patrick Taylor, CRNA
Rose Themistocles, CRNA
Krystle Thomas, CRNA
David Travis, CRNA
Franny Tucker, CRNA
Kristy Ward, CRNA
Kristin Weatherley, CRNA
Ashleigh Wills, CRNA
Theresa Young, CRNA



Linda Goetz, MHS, CRNA, Director, Nurse Anesthetists

A Team to Lean On

Fever. A hoarse voice. Shortness of breath. Gabriela Felton's symptoms in May 2013 could have been due to any number of illnesses. Strep throat, perhaps the flu?

When they wouldn't go away after a month and she began having trouble swallowing, she knew a visit to the doctor was in order. Her husband, Patrick, a foot and ankle surgeon, agreed that something was amiss and recommended testing with high-resolution imaging.

What she wasn't prepared to hear was that an MRI and an ultrasound showed a 1.5 cm nodule on the left lobe of her thyroid gland, as well as a smaller nodule on the right. As the assistant for Alan I. Faden, M.D., Professor of Anesthesiology and Director of the Shock Trauma and Anesthesiology Organized Research Center at the University of Maryland School of Medicine, she reached out to him for a referral. He connected Gabriela to John A. Olson, Jr., M.D., Ph.D., a cancer surgeon who specializes in thyroid disease. A biopsy confirmed that the 1.5 cm nodule was papillary thyroid cancer.

Gabriela, then 36, worried about the future of her five-year-old daughter, Gabrielle. "My first thought is that I might not see my daughter grow up," she recalled tearfully. She wanted the tumor removed quickly, so Dr. Olson, whose calendar was booked, connected her with Douglas Turner, M.D., to do the surgery.

But another wrinkle would emerge: a consultation with an ear, nose, and throat specialist (to evaluate her hoarseness) revealed that Gabriela's left vocal cord was not working properly because the tumor was pressing on it. Removing the entire thyroid gland in one operation would have been too risky. If the nerves responsible for breathing, speaking, and swallowing were injured during the surgery, there would have been a possibility of Gabriela needing a tracheotomy (a hole in her throat to breathe) and losing her voice.

To err on the side of safety, the surgeons planned to do two operations. In the first, in August 2013, half of the thyroid gland would be removed. If Gabriela was still hoarse, it would indicate that the rest of the gland could not be removed safely. If she spoke clearly, they could remove the remainder of the gland in a second procedure.

Gabriela thanks Sarah Lee, the CRNA assigned to her case, for helping her through the anxiety-provoking surgery. "I was really nervous, but her bedside manner was so remarkable," says Gabriela. "Sarah said she'd be with me to the end." In addition, her parents spoke only Spanish, and Sarah's past experience working in Texas taught her enough Spanish to let Gabriela's parents know how their daughter was doing.



Gabriela Felton

The first surgery was deemed a success, so the second was scheduled for November, when the rest of her thyroid gland was removed without damaging the vital nerve. Once again, at Gabriela's request, Sarah was by her side. She had a single dose of radioactive iodine therapy to treat any lingering cancer cells that may have been lurking in her body and was declared free of evidence of cancer by the end of January 2014. She now takes thyroid hormones to replace those that were once produced by the missing gland.

"I am so grateful for the care I received as a patient and the support I received as an employee at the University of Maryland School of Medicine," says Gabriela. She is studying for her doctorate in business administration through Northcentral University, leads Gabrielle's Daisy Girl Scout troop, and co-coaches her lacrosse team with Patrick. "Sarah's demeanor was so soothing and calming for me and my parents. Dr. Faden has been so understanding, visiting me after surgery and telling me to go home and take care of myself when I had the high fevers. I couldn't ask for a better team."

Critical Care Anesthesiology Division Faculty

Vadivelu Sivaraman, M.B.B.S.

Chief, Critical Care Anesthesiology Division
Assistant Professor

Megan Graybill Anders, M.D.

Christopher Franklin, M.D.

Samuel Galvagno, D.O., Ph.D.

Thomas Grissom, M.D., F.C.C.M., M.S.I.S.

Caron M. Hong, M.D., M.Sc.

Maureen McCunn, M.D., M.I.P.P., F.C.C.M

Mary J. Njoku, M.D.

Peter Rock, M.D., M.B.A., F.C.C.M.

David Schreiber, M.D.

Darin Zimmerman, M.D.

Critical Care Anesthesiology

As its name implies, critical care medicine is just that: health care delivered in an intensive setting where time is of the essence and patients must be constantly monitored. At the University of Maryland Medical Center, members of the Division of Critical Care Anesthesiology care for critically ill patients in Trauma ICUs, the Surgical Intensive Care Unit, the Neurosurgical ICU, and the Cardiac Surgical ICU.

“Our goal is to meet and exceed the best standards of care that are available in any developed nation for critically ill patients in our intensive care units,” explains Vadivelu Sivaraman, M.B.B.S., Chief of the Division of Critical Care Anesthesiology. “We maintain a significant presence in our ICUs. I am not aware of any Anesthesiology Critical Care Division in an academic practice that has this degree of presence in the intensive care units.”

The patient population cared for by Division members in the Surgical ICU includes those who undergo major vascular surgery, patients being treated for severe pancreatitis or septic shock with multi-organ failure, and recipients of liver, pancreas, and kidney transplants. The Surgical ICU has been expanded to 24 beds, with two teams providing care.

In the Neurosurgical ICU, anesthesiologists care for patients with subarachnoid hemorrhage and its associated complications, stroke with complications, and patients with brain tumors. Patients being cared for in the Cardiac Surgical ICU include those undergoing heart valve repair and replacement, patients receiving ventricular assist devices for right and left heart failure, those who undergo coronary artery bypass graft for coronary artery disease, and recipients of heart and lung transplants.

All units are now equipped with emergency airway equipment and ultrasound machines for the safe placement of central venous catheters and arterial catheters and the drainage of pleural and peritoneal fluid.

The Division offers a Critical Care Anesthesiology Fellowship accredited by the ACGME. Faculty members conduct weekly lectures and a monthly journal club for critical care fellows. Medical students and residents rotate through the Surgical and Neurosurgical ICUs. In 2013, Megan Anders, M.D., identified a problem in the management of patients with laryngectomy and tracheostomy who develop respiratory arrest. She created a teaching tool to provide safe care for these patients and has conducted hospital-wide educational sessions to instruct small groups of providers about the use of this valuable tool.

Residents and medical students in the Surgical ICU have benefitted from the addition of a curriculum from the Society of Critical Care Medicine entitled Fundamentals of Critical Care Support (FCCS). Put into place by Caron M. Hong, M.D., M.Sc., this curriculum supplements the residents’ and students’ clinical experiences. “In a busy ICU, it can be a challenge to integrate structured learning experiences into a heavy clinical care environment,” says Dr. Hong. “This course is one of the steps we have taken to achieve this.”

Expanding the Quality of Care

Within the Department’s Division of Critical Care, eleven intensivists play a vital role in the care of the extremely ill patients in the Trauma, Surgical, and Neurosurgical Intensive Care Units. The patients in the Surgical Intensive Care Unit (SICU) may be suffering from a range of severe conditions, from septic shock and multi-organ failure, or be recovering from major surgical procedures, while those in the Neurosurgical ICU present with such devastating injuries as stroke, subarachnoid hemorrhage and uncontrollable seizures.

There is a growing demand for greater patient capacity in the SICU. Therefore, in June 2013, a more spacious and modernized SICU opened its doors, growing from 19 to 24 beds. While the addition of five beds may not sound like a huge change, it completely “reformulated the flow of patients in the SICU,” says Assistant Professor of Anesthesiology and attending intensivist Caron Hong, M.D., M.Sc. “Before the expansion, anesthesiology intensivists were in the SICU every other week,” she notes. “Now, the SICU has two attending physicians present every day, so an anesthesiology critical care provider is onsite 52 weeks a year.”

To better manage patient care, the unit has reorganized its medical staff into two care teams, each responsible for 12 patients. Each team is led by a critical care attending physician (one always an anesthesiologist), along with residents, medical students, nurse practitioners, and representatives from essential disciplines including pharmacists, registered nurses, nutrition experts, and physical and occupational therapists. “We now have the capability to provide better care and better educate our teams,” contends Dr. Hong. “Every component is in place for us to take care of these critically ill patients in the most effective way possible.”

Clinical Researchers Define Care for ICU Delirium

Clinical trials are vital for making progress in the way we care for patients. The Department is participating in the Modifying the Impact of ICU-Associated Neurological Dysfunction-USA (MIND-USA) Study, a national multicenter Phase III clinical trial evaluating methods currently used to treat delirium in patients in the intensive care unit (ICU). We spoke with La Toya Stubbs, Lead Clinical Research Specialist, and Karin Wallace, Clinical Research Nurse, about this study and clinical research in general in the Department of Anesthesiology.

Why is this study important?

La Toya: Delirium is a big issue in critical care. We used to think it was normal, but we now know that it can have serious long-term effects. There has been no standard of care for treating ICU-associated delirium. So we are looking for ways to treat it more effectively. This has been an area of study for our Department for some time.

Karin: Patients in the ICU who suffer from delirium have a greater risk of death, a longer hospital stay, and long-term cognitive impairment similar to moderate dementia. Plus the cost of their care is higher. As someone who worked as a critical care nurse for 15 years, I am aware of this challenge.

What is MIND-USA assessing?

Karin: MIND-USA is comparing three approaches to treating delirium in ICU patients: two antipsychotic drugs and a placebo. One of the drugs is haloperidol (Haldol), a first-generation antipsychotic which is frequently used by ICU doctors for delirium. The second is ziprasidone (Geodon), which is a second-generation antipsychotic. Patients in the study will receive one of the antipsychotic drugs or a placebo. Neither they nor their doctors will know what they are receiving until the study is over, which reduces any possibility of bias.

La Toya: We’re going to be comparing the number of delirium-free days in the ICU as well as hospital length of stay, survival, and longer-term neurological function and quality of life for



La Toya Stubbs, BS, CCR (left) and Karen Wallace, BSN, RN, CCRN

the three groups of patients. A lot of practitioners are eagerly awaiting the results of this study, which could lead to a defined standard of care to improve the lives of these patients.

What do you enjoy about conducting clinical research like this study?

La Toya: I like meeting the people who are participating, especially when the study involves a follow-up to see how patients are doing. We forge long-term relationships with the participants and their families. We practically become part of the family!

Karin: Some patients in the ICU don’t have a lot of visitors. So they look forward to seeing us and speaking with us. I also like looking over the data we collect to spot any trends.

La Toya: We are so grateful to patients and their families for participating. We have so much respect for them. They are contributing to the way medicine will be practiced in the future.

Karin: I also think that through clinical research, I get to spend more time talking with my patients, and I enjoy when they are well enough that they can leave the ICU.

Can you talk about the role of clinical research in the Department of Anesthesiology at the University of Maryland Medical Center?

La Toya: We’re an academic medical center, so research is built into everything we do.

Karin: When we approach physicians about a study, they’re happy to contribute. Everyone is supportive of our studies.

La Toya: This makes it easier to do our job, which we couldn’t do without such a strong clinical team.

Neurosurgical Anesthesiology Division Faculty

David L. Schreiberman, M.D.
*Chief, Neurosurgical Anesthesiology
Division
Assistant Professor*

Beatrice M. Afrangui, M.D.
Christopher M. Franklin, M.D.
Caron M. Hong, M.D., M.Sc.
Chinwe A. Ihenatu, M.B., B.Ch.
Douglas G. Martz, M.D.
Robert J. Noorani, M.D.
Mary J. Njoku, M.D.
Vadivelu Sivaraman, M.B.B.S.

Neurosurgical Anesthesiology

The brain is the body's most complex organ, making anesthesia for neurosurgery one of the most complex anesthetic subspecialties. Members of the Division of Neurosurgical Anesthesiology provide care for patients undergoing sophisticated surgeries and interventional procedures on the brain, spine, or peripheral nerves. Utilizing a team approach, anesthesia is provided in a variety of locations, including the operating rooms and interventional neuroradiology suites. Members of the Division also care for patients in the Neurosurgical Intensive Care Unit, where they work alongside members of the Departments of Neurosurgery, Neurology, and the Program in Trauma to provide state-of-the-art neurocritical care. This collaboration allows Division faculty to be involved in the continuum of care for each patient, from admission throughout the acute care period.

Neurosurgical anesthesiologists care for patients undergoing vascular neurosurgery (such as management of intracranial aneurysms, arteriovenous malformations, and ischemic neurovascular disease), resection of infra- and supratentorial brain tumors, complex spinal cord and spine surgery (including tumors and spinal fusions), the insertion of cerebrospinal fluid shunts, care for traumatic injuries, and surgery for epilepsy and functional disorders. This year, Division members provided anesthesia for 1,379 cases in the operating room and 191 in the neuroradiology suites.

Division members provide physician supervision of neuromonitoring, a service unique amongst anesthesiology departments. Intraoperative electrophysiologic monitoring modalities include

somatosensory/brainstem auditory/transcranial motor evoked potentials, cranial and peripheral nerve electromyography, brain mapping, nerve conduction studies, and transcranial Doppler.

"Neurosurgical anesthesiologists have an expert understanding of the complex anatomy, pathology, physiology, and pharmacology of neurologic diseases," says David L. Schreiberman, M.D., Chief of the Neurosurgical Anesthesiology Division. "We provide monitoring of the patient's brain or spinal cord to assist the neurosurgeon in making decisions during critical portions of a procedure. This monitoring improves the ability of the surgical team to identify new neurologic impairments and to correct them promptly, minimizing the risk of permanent neurological deficiency." The Division's anesthesiologists are also experts in safely providing the necessary operative milieu, such as "awake"

craniotomies and various patient positions — from sitting to three-quarter prone — facilitating the ability of their surgical colleagues to perform critical procedures.

Division members are actively involved in research and education. For example, they participate in collaborative basic science and clinical research projects related to the fields of neuroanesthesiology and critical care, focusing on areas such as subarachnoid hemorrhage and vasospasm, biomarkers and inflammation, management of intracranial hypertension, and intraoperative evoked potential monitoring. Through the Department's Simulation Program, the Division employs high-fidelity simulation and task-training techniques to help anesthesiology residents achieve proficiency in fiberoptic intubation, intubations utilizing a laryngeal mask airway, cricothyroidotomy, retrograde intubation, and the use of tube exchange catheters.



Tibor Kristian, Ph.D.

Delineating the Roots of Brain Cell Death

Much remains to be learned about what happens in the brain when it does not get enough oxygen or blood (cerebral ischemia, which can happen with stroke or a heart attack). At the University of Maryland School of Medicine, investigators are studying the molecular mechanisms of brain cell death during ischemia to identify the biochemical culprits involved, and using their data to develop innovative therapies that hold promise for preventing or reversing brain damage.

When the brain is deprived of oxygen and glucose — a source of energy — during cerebral ischemia, brain cells cannot remain stable. But they don't die right away; cell death takes a few days. Tibor Kristian, Ph.D., Associate Professor of Anesthesiology, and his team have created animal models to study this phenomenon. "We're trying to understand why brain cells don't die right away, determine the molecular mechanisms behind it, and find ways to improve the survival of brain cells after ischemia," says Dr. Kristian.

The scientists are focusing on mitochondria, known as the "powerhouse" of cells because they produce an energy-storing molecule known as ATP. They mark the mitochondria with a fluorescent protein that can be seen under a microscope when

studying brain tissue from animals whose cerebral blood flow has been impaired. What they found could someday translate to a treatment for patients: enzymes that become activated inside cells following ischemia reduce levels of a substance in brain cells called nicotinamide adenine dinucleotide (NAD), which is needed for ATP production. Plummeting NAD levels cause a variety of problems in brain cells that can lead to cell death. Dr. Kristian and his colleagues have learned that giving the ischemic animals another compound, called nicotinamide mononucleotide (NMN) (delivered intraperitoneally — through their abdomen), raises NAD levels inside cells and prevents brain cell death.

The investigators assess a mouse's level of brain damage by putting it through a series of memory tests, such as seeing if it can remember where a resting platform is in a swimming tank. Mice whose brain cells are surviving perform better during these tests than those whose brain cells are dying. Dr. Kristian hopes that NMN holds the same promise for patients. "While treatments that work well in rodents aren't always as effective in people, we hope to move into clinical trials in patients and see positive results," he concludes.

**Obstetric Anesthesiology
Division Faculty**

Andrew Malinow, M.D.
Vice Chair, Faculty Affairs
Chief, Obstetric Anesthesiology
Division
Professor of Anesthesiology
and Obstetrics/Gynecology and
Reproductive Sciences

Beatrice Afrangui, M.D.
Shobana Bharadwaj, M.B.B.S.
Kathleen Davis, M.D.
Andra Distefano M.D.
Chinwe Ihenatu, M.B.,Ch.B.
Aaron W. Lange, M.D.
Douglas Martz, M.D.
Sheryl Nagle, M.D.
John Pallan, M.D.
Maurice Sheppard, M.D.
Erik R. Strauss, M.D.
Shafonya Turner, M.D.
Edwin Villamater, M.D.

Obstetric Anesthesiology

Mothers remember the birth of their children as life-changing. But the next memory is likely to be related to her degree of comfort. Were her labor pains well-managed? Was she able to get a labor epidural to ease the discomfort of childbirth? How was her pain after a C-section? As a result, obstetric anesthesiologists are highly sought-after members of a woman's childbirth team.

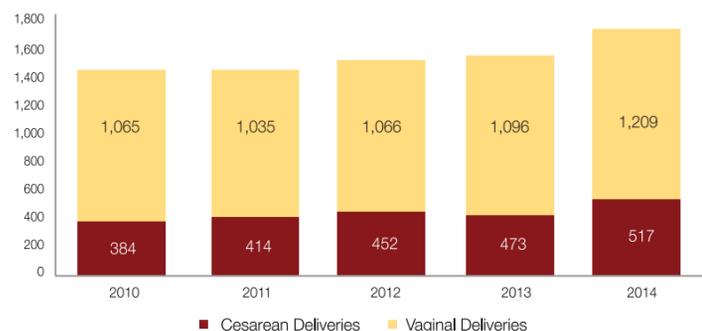
At the University of Maryland Medical Center, 14 faculty members in the Division of Obstetric Anesthesiology provide pain relief for labor, anesthesia for C-sections and other obstetric surgeries (including fetal surgery), and bedside acute resuscitative care of the maternal population. What sets the Division apart from many other hospitals, however, are the complex cases that come through its doors.

"Our patients reflect the immediate urban catchment area — high-risk pregnancies — and include transports of challenging cases from every part of the state, and beyond," explains Andrew Malinow, M.D., Chief of the Obstetric Anesthesiology Division. "We see complex patient cases that other hospitals have chosen not to treat — including those with supermorbid obesity, co-existing neurologic and respiratory diseases, and adult congenital heart disease. We have the expertise to provide them with the advanced care they need."

This diverse environment is an ideal place to learn obstetric anesthesiology and to conduct research. The Division has maintained a database of anesthetic care of pregnant women for 29 years. It is analyzing this database to determine factors that lead to adverse outcomes in mothers and babies. For example, one project is examining the association between increasing maternal obesity and neonatal acidemia at birth. The Division is one of the first groups in the country to be approved by the ACGME for an Obstetric Anesthesiology Fellowship; the first fellow began in July 2013. The program provides excellent training in the care of high-risk obstetric patients.

A daily educational session for junior and senior anesthesiology residents who rotate on the service is well received. Residents achieve consistently high scores on the obstetric portions of the American Board of Anesthesiology in-training and written exams. Third-year and fourth-year medical students also rotate through the Division and participate in small group sessions on regional anesthesia and the use of simulation. All faculty, residents, and fellows are benefiting from newly expanded office and sleep room space featuring the latest computer technology, renovated on-call rooms, and proximity to the obstetric patient care areas.

Vaginal and Cesarean Deliveries



Emily Joe, M.D.

Edwin Villamater, M.D.

Candy DiCarlo

Running for *Their* Lives

Competing in a marathon is not for the faint of heart. This grueling, 26.2-mile event takes a major physical and mental toll on participants, even those who have trained rigorously for months in advance. Yet today, running marathons and half-marathons has never been more popular, with hundreds of events held around the world every year. So, why do runners do it? Within the Department of Anesthesiology we have many distance runners who make time even after their busy workdays to pursue this extreme sport. Here are three of their stories.

“A Big Part of It Is the Challenge”

Running is nothing new to the Department's Emily Joe, M.D., a regional anesthesiologist. After participating in track in high school, Dr. Joe started competing in shorter foot races during her residency in 2005, and then ran her first marathon in Philadelphia in 2007. She's run several marathons since, barely breaking stride through two pregnancies. "The last four years have been marathons, child raising, marathons, child raising," she laughs. Dr. Joe admits that for her, "A big part of it is the challenge. The first time, completing a marathon was a physical and mental feat I wanted to accomplish. After that, it became all about improving my running times. In medicine, my work is very mentally focused. So balancing that out with the physical high of accomplishment after a race is very fulfilling."

“Not So Much a Sport as Stress Relief”

When regional anesthesiologist Edwin Villamater, M.D., turned 47 in 2010, facing health issues related to weight and stress, he had a light bulb moment. As he watched from the sidelines of the New York City Marathon, cheering on his wife and father-in-law as they ran by, his young son asked him why he wasn't running, too. "The very next week," he recalls, "I started training for my first marathon." Since then, Dr. Villamater has completed two marathons in Chicago and Washington, D.C., and is preparing for the New York City Marathon in 2015. "Running is my way of stealing an hour for myself every day," he admits. "Marathoning relieves stress, gives you more energy, and makes you more productive in mind and body."

“I Just Had to Do It”

An Administrative Assistant 3 at the Pain Management Center, Candy DiCarlo confesses that initially it wasn't the lure of competition itself that caused her to take on her first half-marathon in April 2013. The annual Women's Nike Half-Marathon in Washington, D.C. benefits the Leukemia and Lymphoma Society. "My Mom has leukemia, so I just had to do it," recalls Ms. DiCarlo. "It was a very emotional experience for me, since I was running for her." Since then, Ms. DiCarlo has completed other races and plans to compete in two half-marathons a year. "They are addicting!" she admits. "Even after you're done, when you're tired and beat up and everything aches, you realize that you've just run 13.1 miles."

Pain Medicine Division Faculty

Thelma Wright, M.D., J.D.
Chief, Pain Medicine Division
Fellowship Director
Assistant Professor

Stephen Bono, Ph.D.
Natasha Durant, Ph.D.
Kanchana Gattu, M.B.B.S.
Seung J. Lee, M.D., M.B.A.

Pain Medicine

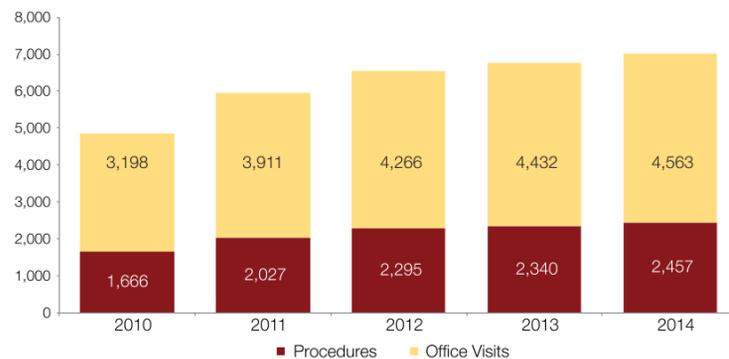
Chronic pain that is not well managed can dramatically reduce quality of life. The multidisciplinary team of the University of Maryland Rehabilitation and Orthopaedic Institute's Pain Management Center (formerly Kernan Hospital) provides compassionate and comprehensive services for patients with chronic pain to alleviate their discomfort, promote coping strategies, and improve function and quality of life. The Center encourages the active involvement of patients in their care.

The Pain Management Center staff treat all types of chronic pain — especially pain in the abdomen, back, legs, chest wall, face, head, joints, muscles (fibromyalgia), neck, arms, nerves, pelvis, and shoulders — along with cancer-related pain, complex regional pain syndromes, and anxiety, depression, and stress related to pain. “One of the most important approaches to effective pain management is an accurate evaluation of the factors contributing to pain,” says Thelma Wright, M.D., J.D., Chief of the Division of Pain Medicine. “With this information in hand, we can create customized treatment plans to optimize our patients’ comfort and function.” Among the advanced approaches the Center uses to alleviate chronic pain are ultrasound-guided nerve blocks.

Dr. Wright was invited to participate as a member of the advisory committee that determined how Maryland’s new Prescription Drug Monitoring Program would be implemented. The new system, which debuted statewide in October 2013, enables doctors to access a central electronic database to view all controlled schedule drugs that have been prescribed for the patient. Before prescribing an analgesic for a patient, the doctor can make sure the patient hasn’t already obtained similar prescriptions from other physicians. “The beauty of this program is that it has made us more aware of how compliant our patients are with their medications, and also to identify those who may be ‘double-dipping’ or ‘triple-dipping’ by getting drugs from multiple sources,” explains Dr. Wright. “With this system, we now have another tool to ensure the safety of our patients and to help us better manage their care.” She encourages all physicians to sign up to access this valuable resource.

The Division of Pain Medicine offers an ACGME-accredited Pain Medicine Fellowship, featuring training in the management of chronic pain using medication as well as fluoroscopic and ultrasound-guided regional approaches. Education is also provided for anesthesiology residents, who rotate through the Division for one to two months, and medical students.

Pain Procedures and Office Visits



Stephen Bono, Ph.D.



Natasha Durant, Ph.D.

The Psychology of Pain

Thinking that the pain you’re having might be all in your head? You may be partially right. “Pain is a brain-mediated process,” says Stephen Bono, Ph.D., a pain psychologist in the Department of Anesthesiology’s Pain Management Center (PMC). “Depression can make pain worse, and vice versa. By mitigating the psychological factors, we can impact the sensation of pain. This is why we work so closely as a team here at the PMC.”

The Center is one of the few multidisciplinary practices in the region that closely combines medical and psychological approaches in patient assessments and treatment plans. “When managing a patient, we have to be very cognizant of the emotional experience of their condition,” says Natasha Durant, Ph.D., also a pain psychologist at the PMC. “We discuss and integrate a

patient’s physical and physiological profiles. Our multidisciplinary team meets every Monday to discuss our patients and their comprehensive treatment plans, with doctors, psychologists, residents, fellows, physical therapists and nursing staff all taking part in the conversation. As a team, we believe that’s how we’ll achieve the best outcomes.”

The PMC’s Chief, Thelma Wright, M.D., J.D., agrees. “Most of the patients we see here have co-existing psychological issues like depression and anxiety, so there is a need to incorporate pain psychology with pain management for them to cope better,” she says. “This integrated approach has given us a better success rate. The whole really is greater than the sum of its parts.”

PREP Center Faculty

Beatrice M. Afrangui, M.D.
Medical Director, PREP Center
Clinical Assistant Professor

Megan Anders, M.D.
Kathleen M. Davis, M.D.
Virginia E. Murphy, M.B., B.Ch., B.A.O.
Sheryl Nagle, M.D.
Robert J. Noorani, M.D.
Maurice R. Sheppard, M.D.
Daniela Smith, M.D.

Patient Readiness and Evaluation Program (PREP) Center

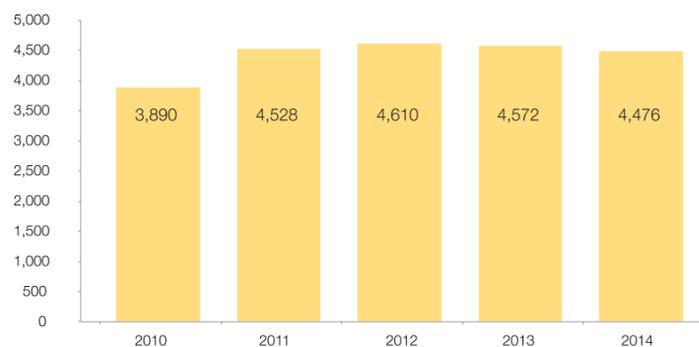
Preparing a patient for surgery is just as important as the operation itself. Anesthesiologists have to be sure that patients are able to tolerate the planned anesthesia and the rigors of the operation. They must also become aware of any comorbidities and medications the patient is taking so the faculty anesthesiologist in the OR will be fully prepared to address any medical situations that may arise during the procedure.

Staff in the Patient Readiness and Evaluation Program (PREP) Center at the University of Maryland Medical Center not only perform a thorough health assessment of all patients before surgery, but are ready to address any anxieties patients may be experiencing. “We see patients at one of the most challenging times of their lives,” says Beatrice Afrangui, M.D., Medical Director of the PREP Center. “Patients meet or speak with us just before surgery, and we have to establish a level of trust in a short amount of time.” She teaches her staff and residents in training to be sensitive to patients’ worries as they get ready for surgery. (For more about Dr. Afrangui, see her story on page 14.)

PREP Center staff members provide preoperative history and physical documentation and perform pre-anesthesia evaluations for patients scheduled for surgery. Some patients are seen in person, while many others are evaluated by telephone. Any necessary tests are ordered and performed, and consultations with other medical specialists are coordinated for patients who need them. To streamline care, the PREP Center has started implementing an electronic medical record system for preoperative histories and physicals as well as pre-anesthesia evaluations.

The PREP Center team includes an attending anesthesiologist, anesthesiology resident, nurse practitioners, nurses, patient care technicians, and administrative staff. Reviewing each patient’s case and consulting with other specialists when further assessment is needed enhance the safety of patients receiving anesthesia. Such a thorough assessment before surgery also keeps the cancellation rate on the day of surgery extremely low — less than one percent — while providing learning opportunities for anesthesiologists, residents, medical students, and other clinical staff. Case discussions and resident teaching occur regularly in the PREP Center.

PREP Center Patient Visits



One Trip, One Love

Frank Lhotsky, 77, relied on his left arm for everything from drinking to feeding himself to shaving. He needed it more than most people. That’s because Frank has been paralyzed for 24 years, the result of an accident. The only limb he is able to move is his left arm — his only connection to independence.

So he became understandably concerned when arthritis in his left shoulder made it painful to lift his hand to his mouth. In fall 2013, he learned that he needed a shoulder replacement. The operation is performed every day around the world, restoring mobility and comfort for thousands of people. Frank and his wife, Jackie, scheduled the surgery for early 2014.

A preoperative evaluation is part of the experience for every patient coming to UMMC for surgery. The Patient Readiness and Evaluation Program (PREP) Center was able to complete Frank’s evaluation by telephone, sparing Jackie from having to load her husband into the special van to transport him to the hospital. It’s a process that can take a half hour and sometimes requires Frank’s and Jackie’s son to take off from work to help. “We do presurgical evaluations by telephone for a number of patients, depending on their health. It’s best suited for those who are in otherwise good health and for patients who live far from the hospital,” explains Virginia E. Murphy, M.B., B.Ch., B.A.O., an anesthesiologist who works in the PREP Center. “For Mr. and Mrs. Lhotsky, it saved them from an extra trip to the hospital. The less often she has to take her husband to appointments, the easier it is for her.”

The PREP Center staff was able to have Frank’s presurgical blood tests performed on the morning of his surgery, requiring the Lhotskys to come to the hospital just once, on the day of the operation. They traveled from their home in Glen Burnie, about 20 miles south of Baltimore, to UMMC on March 28, 2014. “Dr. Murphy and her team made it so easy for me. When I arrived at the hospital, I felt relaxed and knew I was in good hands,” recalls Frank.

Dr. Murphy also had to arrange for multiple specialists with different types of expertise to be present in the operating room to meet Frank’s needs. For general anesthesia, he needed a fiberoptic intubation because of the position of his neck (due to his accident). He also needed a regional anesthesiologist to



Frank and Jackie Lhotsky

handle the nerve block used to control pain in his shoulder. In addition, the doctors needed to be aware of the pump that had been implanted in Frank’s body long ago to deliver morphine to his spine. “They knew exactly what to do, and the operation went off without a hitch,” adds Frank.

The surgery was a success. He was able to return home and receive four weekly physical therapy visits in the convenience of his home — “amongst the people who love me,” says Frank, who is feeling better and getting back up to speed.

“She does an amazing job taking care of him,” says Dr. Murphy of Jackie. “There’s real love there. I am happy we were able to make their lives a little easier.”

Pediatric Anesthesiology
Division Faculty

Anne M. Savarese, M.D.
Chief, Pediatric Anesthesiology Division
Assistant Professor

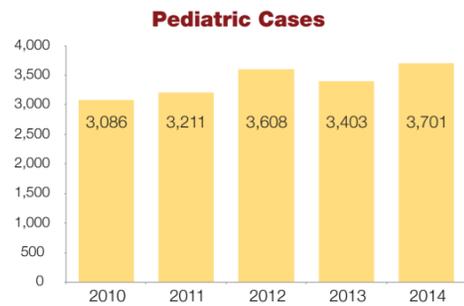
Monique Bellefleur, M.D., M.B.A.
Monika Chatrath, M.D.
Wendy Daley, M.D., M.P.H.
Stephanie Kahntroff, M.D.
Madhavi A. Naik, M.B.B.S.
Teresa Niemiec, D.O.
Shelley Ohliger, M.D.

Pediatric Anesthesiology



When an infant is born in Maryland with the most severe congenital heart defect, hypoplastic left heart syndrome, the pediatric cardiac anesthesiology team is ready to provide expert care during a challenging and life-changing surgery performed in the first few days of life. During an obstetric EXIT procedure (ex utero intrapartum treatment), pediatric anesthesiologists apply their specialized expertise to insert a tube to open a blocked airway of a newborn during a C-section — while the baby is still attached to the mother by the umbilical cord — ensuring the infant receives adequate oxygen so the rest of the delivery can be completed safely. And Division faculty provide anesthesiology services during the increasing number of pediatric surgeries that are now being performed using robotic approaches.

The Division has expanded its use of ultrasound-guided regional analgesic blocks and added more clinical decision guidance tools to the electronic Anesthesia Information Management System (AIMS). University of Maryland remains one of only two hospitals in the state to offer anesthesiology services for pediatric cardiac procedures and anesthesia for children receiving radiation therapy.



“Our mission is to provide safe and effective family-centered anesthetic care for diagnostic and therapeutic interventions in infants, children, and teens in Maryland,” explained Anne M. Savarese, M.D., Chief of the Division of Pediatric Anesthesiology. “As part of a multidisciplinary pediatric tertiary referral center, we care for a diverse range of patients across a wide spectrum of ages and illnesses — from the well outpatient to the critically ill inpatient. Whatever care a child needs, we have the expertise to provide it.”

Faculty in the Pediatric Anesthesiology Division are also involved in education and research, making presentations at national anesthesiology meetings. All anesthesiology residents rotate through the Division. Faculty offer weekly subspecialty tutorials, multiple tutorials in the formal didactic sessions of Clinical Anesthesia years 1 and 2, and Board reviews about pediatric topics during the third Clinical Anesthesia year. New educational features include simulation through small group sessions, as well as skills task-training experience (for airway management, vascular access, and regional anesthesia) delivered over a six-week period. Each month, the faculty also participate in a pediatric anesthesiology journal club for rotating residents as well as PACU nurses, allowing for a shared educational experience.

All patients needing anesthesia require specialized care. When the patient is a child, however, the anesthesiologist must also possess a special understanding of the anxieties and concerns that children and adolescents — as well as their families — may have before a surgical or diagnostic procedure. Faculty in the Division of Pediatric Anesthesiology combine skill and compassion to care for the hospital’s youngest patients.

When an infant is born in Maryland with the most severe congenital heart defect, hypoplastic left heart syndrome, the pediatric cardiac anesthesiology team is ready to provide expert care during a challenging and life-changing surgery performed in the first few days of life. During an

Stepping Up For Our Smallest Patients

The Heart Center at the University of Maryland is a new center of excellence composed of three divisions: cardiology, cardiac surgery, and pediatric cardiology. The premise of the Center is to provide a lifelong spectrum of care for anyone with heart disease, from infancy through adulthood.

A vital part of this initiative is the Children’s Heart Program, a service that draws from many different disciplines — including anesthesiology, pediatrics, cardiac surgery, cardiology, and radiology. As the only anesthesiologist at UMMC experienced in pediatric cardiac care, Anne Savarese, M.D., Chief of the Pediatric



From left: Anne Savarese, M.D., Shelley Ohliger, M.D., Stephanie Kahntroff, M.D., and Teresa Niemiec, D.O.

Anesthesiology Division, was charged with forming a subspecialty group in Pediatric Anesthesia to support the Children’s Heart Program.

The new focus on pediatric cardiology nearly doubled the size of the Division. “We needed to increase our staff quickly to continue to cover all of our other commitments to pediatric general surgeons, urologists, plastic surgeons, and others,” says Dr. Savarese. She turned to three members of the junior faculty who had just completed their respective fellowships — Stephanie Kahntroff, M.D., Teresa Niemiec, D.O., and Shelley Ohliger, M.D.

While each had exposure to pediatric cardiac anesthesiology in their fellowships, they hadn’t trained specifically for it. “This wasn’t the subspecialty that I was originally pursuing when I came to the Department,” says Dr. Ohliger. “The opportunity fell into my lap! These are the sickest patients we can care for, so it’s intellectually challenging on a daily basis.”

To provide subspecialty training in pediatric cardiac anesthesiology to the three anesthesiologists, the Department created its own in-house mentoring program. “It is a tribute to all of us working together that we succeeded with an innovative and non-traditional approach that most centers don’t attempt, which is to grow your own group,” says Dr. Savarese.

“The in-house training and the mentoring by Dr. Savarese gave me the opportunity to learn and improve my technical skills as a pediatric anesthesiologist treating very young and sick patients with cardiac malformations,” says Dr. Niemiec.

“The fact that our patients range from infants to adolescents makes every day here unique,” adds Dr. Kahntroff. “It’s an exciting and dynamic area.”

“We’ve expanded our surgical volume threefold with the help of a designated pediatric anesthesia group to take care of these complex congenital heart surgeries,” says Sunjay Kaushal, M.D., Ph.D., Director of Pediatric Cardiac Surgery in the Children’s Heart Program. “We’ve also expanded the range of the surgeries we perform to include the most complex congenital heart surgeries done today. Their expertise has contributed to excellent surgical outcomes for our patients, especially when measured against national averages.”

“What I’m most proud of in my 24-year career is what we’ve accomplished as a team with this new program,” affirms Dr. Savarese. “The work ethic and enthusiasm of the junior faculty have been phenomenal. We have a rock-solid pediatric anesthesiology group with highly developed cognitive and technical skills who make this program work.”

Program in Regional Anesthesia Faculty

Ron E. Samet, M.D.
Director, Program in Regional Anesthesia
Assistant Professor

Paul Bigeleisen, M.D.
Jeremy Kaplowitz, M.D.
Aaron Lange, M.D.
Hanni Monroe, M.D.
Roger Shere-Wolfe, M.D., J.D.
Matthew Tulis, M.D.

Program in Regional Anesthesia

The idea of numbing a portion of the body with epidural, spinal, or peripheral nerve blocks is far from new. What is new at the University of Maryland Medical Center, however, is the dedicated University of Maryland Regional Anesthesia Service (UMRAS), which consists of an attending, a resident, and a regional anesthesia fellow. The team is available Monday through Friday to place and manage neuraxial and peripheral nerve blocks.

UMRAS was created in 2013 in response to increasing recognition that regional anesthesia can contribute to improved patient satisfaction and better outcomes after surgery. Better technology has increased the safety and success rate of this anesthetic technique. A team was formed to integrate regional anesthetic approaches among surgical, trauma, and other disciplines. UMMC has supported this new service with high-resolution ultrasound machines, needles, catheter kits, and nerve stimulators. "Combining the dedicated service with up-to-date equipment has made regional anesthesia more available and more successful, facilitating our efforts to meet our mission of providing patients with superb pain control," explains Ron E. Samet, M.D., Director of the Program in Regional Anesthesia and founder of UMRAS.

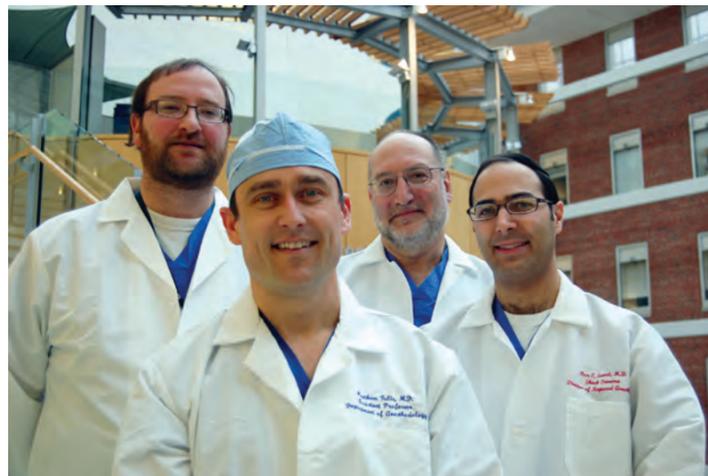
Using state-of-the-art equipment and advanced ultrasound-guided regional techniques, anesthesiologists in the Program excel in perioperative pain management as well as analgesia for the acute trauma patient. The number of blocks performed has risen to roughly 2,000 annually. New blocks added to the armamentarium, such as transversus abdominis plane (TAP), serratus

anterior muscle (SAM), and pectoralis blocks, provide greater relief in patients with abdominal and breast surgeries.

A significant change in anesthetic practice has been the ability to offer lumbar plexus catheters to patients undergoing hip surgery, resulting in fewer side effects from opioids and neuraxial blocks and an improved postoperative experience for patients. Trauma patients benefit from both one-time and continuous regional anesthetics shortly after their admission from the scene — a service offered by few institutions.

Goals for the Program in Regional Anesthesia include advancing the education of trainees, standardizing analgesia protocols with regional techniques and multi-modal therapy, improving operating room efficiency and

patient flow, continuously assessing the efficacy and complications of techniques with appropriate quality assessment, and developing a clinical research arm. The creation of UMRAS has already benefited the residents' curriculum, which has been subsequently revised and detailed to include education on all aspects of regional anesthesia — particularly ultrasound-guided techniques — and training on perioperative acute pain management and patient follow-up within the medical system. The Program also features a competitive Regional Anesthesia Fellowship, with training at both UMMC and the University of Maryland Rehabilitation and Orthopaedic Institute.



From left: Jeremy Kaplowitz, M.D., Matthew Tulis, M.D., Paul Bigeleisen, M.D., and Ron Samet, M.D.



Ken Lawson

A Room with a View

Ken Lawson had every intention of watching the Baltimore Orioles baseball game on television on a Wednesday evening in May 2013. But his chainsaw had other ideas.

Ken, 62, had been cutting up branches on his four-acre property in Finksburg, Maryland, about 30 miles northwest of Baltimore, when the chainsaw slipped. "My leg got into a fight with the chainsaw, and my leg lost," recalls Ken, who suffered trauma to his calf muscles. He tied his shirt around his leg as a tourniquet and called an ambulance. The EMTs told him it would be best to bring him to the R Adams Cowley Shock Trauma Center at the University of Maryland Medical Center.

Once in Shock Trauma, the anesthesiologist prepared to anesthetize him while surgeons cleaned and repaired his leg. "I told the doctor that I had been following the Orioles and they were making a comeback. I asked him if I could receive something like an epidural that women get during childbirth so I could stay awake and watch the game," says Ken. His passion for Baltimore baseball was a family affair: his loved ones in the ER waiting area

were bedecked in Orioles garb, and his 2-year-old granddaughter is named Camden (after Camden Yards, where the Orioles call home).

The attending anesthesiologist — Ron E. Samet, M.D., the Director of the Program in Regional Anesthesia — was able to comply by using a nerve block. The OR staff connected a computer monitor to the Internet and streamed the game live into the operating room so Ken could watch his beloved Orioles. "I was watching the game, and they were done before I knew it," Ken notes. "I felt extremely comfortable and engaged in the game, and had no pain."

"It takes the right patient to know they don't have to be sedated during a procedure," explains Dr. Samet, Assistant Professor of Anesthesiology. "Not everyone wants to stay awake, but for those who do, we can sometimes offer that option with regional anesthesia." The anesthesiologist gives the patient a nerve block and asks if he or she is comfortable or if they wish to go to sleep.

The benefits of avoiding sedation are clear. The patient's heart rate and breathing are not depressed, and recovery is immediate. *Continued on page 56*

**Transplant Anesthesiology
Division Faculty**

Obi Udekwo, M.B.B.S.
Chief, Transplant Anesthesiology
Assistant Professor of
Anesthesiology

Ileana Gheorghiu, M.D.
Mary J. Njoku, M.D.
Phillip E.F. Roman, M.D., M.P.H.
Vadivelu M. Sivaraman, M.B.B.S.

**Trauma Anesthesiology
Division Faculty**

Yvette Fouché-Weber, M.D.
Chief, Trauma
Anesthesiology Division
Assistant Professor

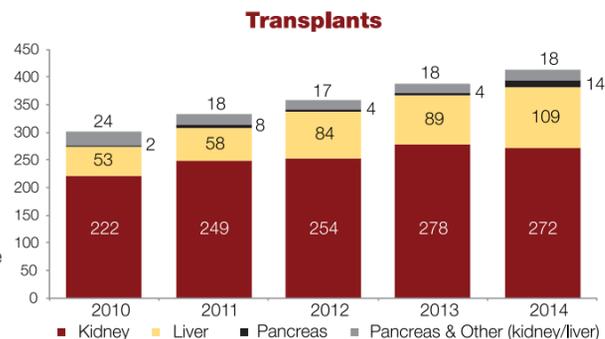
Maged Andrews, M.D.
Deondra Asike, M.D.
John Blenko, M.D.
Cynthia Bucci, M.D.
Bianca Conti, M.D.
Stephanie Esposito, M.D.
Samuel Galvagno, D.O., Ph.D.
Karla M. Greco, M.D., M.H.S.
Thomas Grissom, M.D.,
F.C.C.M., M.S.I.S.
Mary Hyder, M.D.
Albert K. Koerner, M.D.
Maureen McCunn, M.D.,
M.I.P.P., M.C.C.M
Ron E. Samet, M.D.
Sukhwant Sidhu, M.B.B.S.
Robert Sikorski, M.D.
Christopher Stephens, M.D.

Transplant Anesthesiology

As the population ages and people live longer, the need for organ transplants is increasing. At the University of Maryland Medical Center, transplant anesthesiologists are witnessing this trend in multiple ways. The number of kidney transplants in 2014 was 272 — a nearly 25 percent increase since 2009. The number of liver transplants was 109, double what it was five years prior. There were 18 pancreas transplants and eight liver transplants made possible by living donors. UMMC is the only hospital in Maryland performing adult living donor liver transplants.

The trend is expected to continue, with a goal of doing more than 100 liver transplants a year. But there is another trend afoot. “Surgical staff are seeing transplant candidates who are sicker and cases that are generally more

complicated,” says Obi Udekwo, M.B.B.S., Chief of the Transplant Anesthesiology Division. “To handle these challenging cases, you need a transplant team with exceptional skills and extraordinary collaboration — a team like the one we have here at Maryland.”

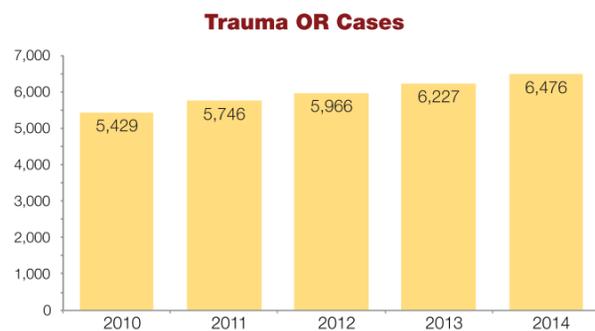


Trauma Anesthesiology

The word “trauma” has Greek origins, meaning “a wound, a hurt, a defeat.” Anesthesiologists at the University of Maryland Medical Center’s R Adams Cowley Shock Trauma Center treat trauma patients in every respect of that definition: relieving their pain so they won’t be defeated by their wounds.

Shock Trauma is the world’s first freestanding trauma facility. It serves as the primary adult trauma referral center for Maryland and features capabilities that not only meet, but exceed the designation of a Level 1 trauma center.

Trauma anesthesiologists improve the management of peri-operative pain, provide appropriate anesthetic management for reconstructive surgeries, and utilize novel resuscitation therapies to optimize patient outcomes. “We want our center to be the one that others follow,” says Yvette Fouché-Weber, M.D., Chief of the Trauma Anesthesiology Division. “Our goal is not only to help support patients during surgery and help them feel better while they’re here, but to make their stay in Shock Trauma the first step on their journey to recovery — a journey that leads back to living a productive life.” The Division continues to grow, with the addition of another new operating room in 2013.



All of this means that Shock Trauma is an exceptional place to be educated. Paramedics, student nurse anesthetists, medical students, and anesthesiology residents all receive instruction in the Center. The Division also offers the only full-time Trauma Anesthesiology Fellowship in the United States.

An Inspired Friendship



Photo by Coos Hamburger

Robert Sikorski, M.D. and Adam Keys

As an anesthesiologist at the University of Maryland’s R Adams Cowley Shock Trauma Center, Bob Sikorski, M.D., sees hundreds of patients in the course of a year. But sometimes he encounters patients who make a deep impression — and spark a growing friendship. Such a patient, 27-year-old Adam Keys, is an Army veteran who arrived at Shock Trauma’s ICU by way of Walter Reed National Military Medical Center. While deployed in Afghanistan, the Humvee in which he was riding with three others was struck by an improvised explosive device, and he was the only survivor. Adam’s injuries were grave: he lost both of his legs and one arm, and suffered severe head injuries and burns. But what Adam didn’t lose, according to Dr. Sikorski, were his courage and perseverance.

“Initially, we didn’t know the extent of his brain injuries,” Dr. Sikorski recalls. “Coming from a military family myself, I bonded with him on the very first night.” Knowing Adam was a Philadelphia Flyers fan, as he was, Dr. Sikorski visited the unconscious soldier in the ICU and told him the scores of the previous night’s hockey games. Throughout Adam’s six-month stay, doctor and patient became friendly, chatting over sports scores and the like. During his first visit with Adam after he was discharged to Walter Reed, Dr. Sikorski asked him what he remembered from his initial weeks

Continued on page 56

Ready, Waiting, and Eager to Help

The State of the Union Address is a majestic event. The country watches as the President, flanked by the Speaker of the House and the Vice President, delivers the annual address to members of Congress and other invited guests in the historic House chamber. What viewers don’t see, however, are the members of emergency medical response teams standing in the wings...just in case.

Bonjo Batoon, a CRNA at the University of Maryland Medical Center, had that honor and responsibility when he attended the State of the Union address in 2012. In the event something disastrous like a biological weapons attack happens, the team is ready to respond with biohazard suits and portable showers. If a terrorist attack results in mass casualties, the team is there to triage patients and provide emergency medical care.

As a nurse anesthetist at the R Adams Cowley Shock Trauma Center, Mr. Batoon is trained to respond quickly and skillfully in emergency situations. A member of the Shock Trauma Go-Team, he’s had the opportunity to provide anesthesia and resuscitative services in the field to critically injured patients. After reading about the efforts of national and international medical teams who responded to the earthquake in Haiti in 2010, he signed on for wider-scale duties.

Continued on page 56



Bonjo Batoon, CRNA

**University of Maryland Rehabilitation and Orthopaedic Institute
Anesthesiology Division Faculty**

Edwin J. Villamater, M.D.
Chief, University of Maryland Rehabilitation and Orthopaedic Institute
Division of Anesthesiology
Assistant Professor

Lise R. Asaro, M.D.
Mark D. Dimino, M.D.
Andra D. DiStefano, M.D.
Jeffrey T. Haugh, M.D.
Emily Joe, M.D.
Aaron Lange, M.D.
Hanni Monroe, M.D.
Kathleen Ranney, M.D.
Eric K. Shepard, M.D., F.C.C.M.

University of Maryland Rehabilitation and Orthopaedic Institute (Kernan)

Regional anesthesia has dramatically changed the landscape of outpatient surgeries, particularly orthopedic procedures, by avoiding the need for general anesthesia and by enabling some surgeries to be done on an outpatient basis. The University of Maryland Rehabilitation and Orthopaedic Institute (UMROI, formerly Kernan Hospital) is home to a robust regional anesthesiology program. Located about seven miles from UMMC, UMROI specializes in orthopedic surgery and serves as the University of Maryland Medical System's primary rehabilitation facility.

More than half of the surgeries performed at UMROI are performed using regional anesthesia, making Division faculty experts in these approaches. Faculty members pioneered the use of ultrasound-guided peripheral nerve blockade. Improvements in ultrasound technology are leading to better image quality, enabling anesthesiologists to use newer ultrasound-guided regional anesthetic approaches.

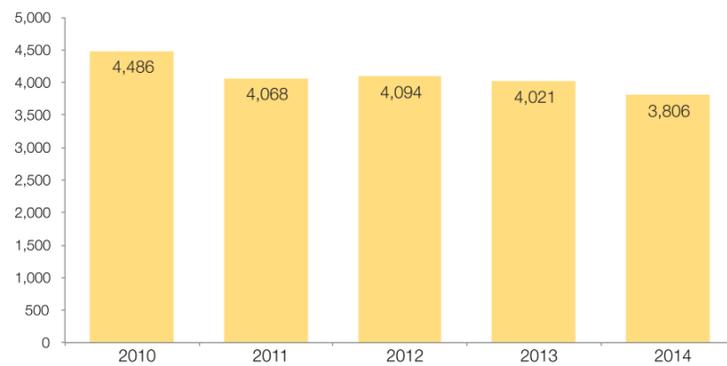
At UMROI, patients' pain is well controlled during and after surgery, and a 24-hour service manages the pain of inpatients. An outpatient peripheral nerve catheter service has greatly improved postoperative pain management as well as patient satisfaction. "The ambulatory peripheral nerve catheter service is unique — no other hospital in the greater Baltimore area is currently providing this service," notes Edwin J. Villamater, M.D., Chief of the UMROI Division of Anesthesiology.

In addition to patient care, UMROI anesthesiologists are conducting clinical trials evaluating a liposomal extended-release version of bupivacaine. Anesthesiology residents rotating through UMROI benefit from an ideal environment for learning regional anesthesia techniques. A monthly morbidity and mortality conference and a weekly journal club are supplemented by an annual workshop on ultrasound-guided regional anesthesia and acute pain management, offered in conjunction with anesthesiology faculty from the Uniformed Services University of Health Sciences. Regional anesthesiology fellows also rotate through UMROI and can take an elective regional anesthesia rotation at the Uniformed Services Medical Center at Andrews Air Force Base in Prince George's County, Maryland.

Faculty from UMROI and the UMMC Program in Regional Anesthesiology have collaborated to create simulation exercises for residents at the Maryland Advanced Simulation, Training, Research and Innovation (MASTR) Center, combining real-life cases with simulated scenarios to provide a well-balanced educational experience. Faculty from UMROI and the UMMC Program in Regional Anesthesiology are also actively collaborating to expand regional anesthetic opportunities throughout the Department to ensure consistency in the Department's approach to regional anesthesia, to develop a broad clinical research program in regional anesthesia, and to partner in formulating educational offerings regarding regional anesthesia.

Faculty from UMROI and the UMMC Program in Regional Anesthesiology are also actively collaborating to expand regional anesthetic opportunities throughout the Department to ensure consistency in the Department's approach to regional anesthesia, to develop a broad clinical research program in regional anesthesia, and to partner in formulating educational offerings regarding regional anesthesia.

UMROI OR Cases



Different Strokes

The Greek island of Rhodes appears to float in the sapphire waters of the Aegean Sea, bordered by golden beaches under a seemingly liquid sky. Kathleen A. Ranney, M.D., who was there in August 2007, captured the magic of this place with her camera while visiting a small café. After returning home to Maryland — where she is an anesthesiologist on staff at the University of Maryland Rehabilitation and Orthopaedic Institute — she would eventually paint the scene, translating the light and serenity of the location to her canvas.

It's possible that painting is in her genes: She is a distant relative of William Ranney, a 19th century painter treasured for his depictions of western scenes. "I've been drawing and painting on and off throughout my life, but I didn't think I was good enough," she says. All of that changed in fall 2013, when a friend who knew she dabbled in art encouraged her to submit one of her paintings to the UMMC Commitment to Excellence Art Show. She exhibited Café in Rhodes "because of the beautiful perspective, colors, and light."

Dr. Ranney has really just been showing her work over the past year, entering pieces in other exhibitions. One painting, showing wisps rising through cracks in the ice of Lake Michigan in -8° F weather, was part of a show in Green Bay, Wisconsin. Another painting conveys the repose of Huck and Tuck, her family's cats, during a feline siesta. She created a pen and ink drawing as a gift for her 16-year-old son, depicting The Seven Pillars of Wisdom containing a poem she had written. "I figured teenagers could use a little wisdom and guidance now and then," says Dr. Ranney, Assistant Clinical Professor of Anesthesiology.

"Anesthesia can be a high-stress job," she adds. "Painting is an outlet that helps me to relieve stress."



"Cafe in Rhodes" painting (left) and photograph (right) by anesthesiologist Kathleen A. Ranney, M.D.

Seeing Is Believing

Paul E. Bigeleisen, M.D., moved to Switzerland as a child, and his parents built quite a collection of Impressionist art while living in Europe. He grew up literally surrounded by masterpieces, with works by painters such as Picasso hanging on the walls of the family's home. His mother and grandmother



Paul E. Bigeleisen, M.D.

were also textile artists who designed tapestries and oriental rugs. So it should come as little surprise that Dr. Bigeleisen, a Professor of

Anesthesiology and a physicist by training who works in the field of artificial intelligence and machine vision, would turn his love for art into a successful medical business. He is a co-owner of the Rochester, New York-based Logical Images, a medical technology company whose products include VisualDx, a visual diagnostic decision support system, as well as Skinsight, which features online consumer wellness and healthcare resources.

An accurate diagnosis is the first step toward successful treatment of any illness or disorder. Logical Images has developed the most comprehensive digital medical image library in the world, with over 100,000 peer-reviewed medical images covering the skin, eyes, mouth, radiology, infectious disease, tropical and travel medicine, and more. Users of the system can enter a patient's symptoms and signs and be linked to photos displaying possible diagnoses. The process is automated so a user can also upload a photo of a lesion which can be matched with other archived photos to suggest a diagnosis. Logical Images is currently used by half of all U.S. medical schools, 1,500 hospitals (including all Veterans Administration hospitals), and Department of Defense clinics.

Images must be focused and color-balanced for the most accurate results. Dr. Bigeleisen and his colleagues are working on enabling users to take and upload these photos with a customized smart phone. "My goal is to provide enough trial cameras to enough dermatologists around the country to create a standard archive of images," says Dr. Bigeleisen. "All of these tools are designed to speed disease recognition for faster, more accurate diagnosis and decision-making and enhanced patient understanding."

**VAMHCS Anesthesiology
Department Members**

Edward J. Norris, M.D., M.B.A., F.A.H.A.
*Clinical Professor and Associate Chair,
Department of Anesthesiology
Chief of Anesthesiology, VAMHCS
Chief, Department of Anesthesiology,
Baltimore VA Medical Center*

Gregory Cheloff, M.D., Assistant Chief
Padmini Thomas, M.D.
Artemus Flagg, M.D.
Natan Fooks, M.D.
Khalil Glenn, M.D.
Ayana McIntosh, M.D.
James Rothchild, M.D.
Nigam Sheth, M.D.
Shikhar Soni, M.D.
Emmitt Whitaker, M.D.
Henry Wilson, Jr., M.D.
Sarah Wyhs, M.D.

**Baltimore VA Medical Center Anesthesiology Care Clinical Center
Veterans Affairs Maryland Health Care System (VAMHCS)**

The Veterans Affairs Maryland Health Care System (VAMHCS) Department of Anesthesiology provides perioperative care, critical care, and pain management services to veterans — many of whom have advanced cardiovascular, pulmonary, and metabolic diseases — at the Baltimore Veterans Affairs (VA) Medical Center. The University of Maryland School of Medicine maintains a close affiliation with the Baltimore VA Medical Center, which offers inpatient, outpatient, and primary care services for veterans in Maryland and adjacent states.

“Our team promotes patient safety and comfort in the perioperative period by providing compassionate, high-quality, state-of-the-art clinical care to each and every veteran requiring anesthesia services.” explains Edward J. Norris, M.D., Chief of Anesthesiology at the VAMHCS. “We are committed to forging effective relationships with our surgical colleagues and other healthcare providers to provide care to veterans that is second to none.” Services are provided in nine operating rooms, a 12-bed Post-Anesthesia Care Unit, a nine-bed Same Day Surgical Unit, and a 10-bed Surgical Intensive Care Unit. In 2013, the VA Department of Anesthesiology purchased new OR equipment, including state-of-the-art patient monitoring, computerized and secure medication cabinets (Omniceil Workstations), and three fully equipped difficult airway carts.

The VA Department of Anesthesiology maintains a major commitment to the education of residents, medical students, student nurse anesthetists, and various medical and allied healthcare trainees. All CA1 anesthesiology residents rotate every year through the Department. Case selection and complexity are tailored to each resident’s level of training and interests, featuring one-on-one staffing with a board-certified anesthesiologist. “This model allows for the highest amount of teaching contact and supervision,” notes Dr. Norris.

The VA Department of Anesthesiology is also one of just a few centers nationwide participating in the U.S. Air Force’s Center for Sustainment of Trauma and Readiness Skills (C-STARS) program, which helps prepare Air Force personnel for the treatment of combat casualties. Real-life airway management training is provided to Air Force physicians, nurses, OR technicians, Special Operations medics, and other medical personnel before they are deployed to combat zones.

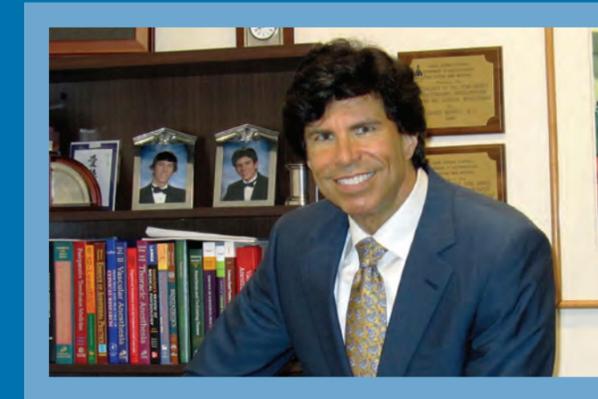
In 2013, the VAMHCS opened a new simulation lab containing a state-of-the-art patient simulator and airway management equipment. “By using high-fidelity equipment and realistic scenarios, we are able not only to provide advanced airway training, but to evaluate the airway management skills of various clinicians,” Dr. Norris explains. The VA Department of Anesthesiology’s simulation team is developing additional scenarios that can be used for medical students and residents. The simulation program is expanding to include central line training and difficult airway training in the current

academic year. Dr. Norris and his team are also actively collaborating with the Department’s Program in Simulation to expand simulation opportunities throughout the campus and to ensure consistency in the Department’s approach to simulation.



From left: Shikhar Soni, M.D., Gregory Cheloff, M.D., Khalil Glenn, M.D., Albert Yu, M.D., Natan Fooks, M.D., Henry Wilson, Jr., M.D., Nigam Sheth, M.D.

VA Anesthesia Expands Quest for Excellence



Edward J. Norris, M.D.

Since the mid-1990s, the University of Maryland Medical Center and the Baltimore VA Medical Center have pursued a close affiliate relationship involving research, clinical issues, and training. “That’s the nature of the VA medical system,” notes Edward J. Norris, M.D., Clinical Professor and the Department’s Associate Chair. “The approach is to embed VA hospitals within the campus of a university, which allows both organizations to benefit by working together.”

This collaboration became even more palpable in 2010 when Dr. Norris joined the Department of Anesthesiology and simultaneously was named Director of Anesthesiology at the VA Maryland Health Care System (VAMHCS) and Chief of the Department of Anesthesiology at the Baltimore VA Medical Center. He points to the collaborative support from the Department of Anesthesiology as a major reason behind the rapid growth of the VA Maryland’s counterpart. “It was through their expertise that the Department of Anesthesiology at the VA has grown so quickly,” he says.

And expanded it has — from a small service tucked under the larger Department of Surgery to a fully staffed department of well-trained anesthesia providers. The new Department quickly outgrew the small space first given to the Anesthesia Service in the 1990s. However, this was remedied in late 2013, when the VA anesthesiology group moved into a new, modern 12,000-square-foot space for its administrative and clinical services. The new space includes a dedicated preoperative evaluation center staffed by advanced practice nurses trained to assess patients before surgery. The Department was also able to upgrade its anesthesia equipment. “We’ve created a new, highly advanced 21st century Department of Anesthesiology that rivals any other program in the VA system,” states Dr. Norris.

The expanded capabilities of the VA anesthesiology group are not just physical in nature. The Department is also the focus of three VA initiatives designed to improve performance and medical excellence across the national VA system:

- **CREW (Civility, Respect and Engagement in the Workplace)** training is a VA-wide program to promote a positive culture in the workplace. Trained facilitators meet with various groups for up to six months to promote a civil work environment, and then allow each group to set an example for the rest of the institution. “The goal of CREW is to improve the work climate through civil and respectful interactions between employees, patients, and families,” notes Dr. Norris. “This supports higher overall job satisfaction and better patient care.” In March 2014, the Baltimore VA Medical Center’s Department of Anesthesiology was the first clinical department at the VAMHCS selected to participate in the CREW initiative.

- **The VA Department of Anesthesiology is engaged in a second VA-wide initiative that emphasizes simulation training.** The focus of this program is to re-educate and update trained physicians, ensuring they maintain the skills and competencies necessary for a high-quality practice. The first clinical proficiency program of this initiative centers on Advanced Airway Management. In 2013, the VA Department of Anesthesiology was selected as the first clinical department at the Baltimore VA Medical Center to undertake this simulation-training program. Dr. Norris and his colleagues are now conducting training for the rest of the physician staff at the Medical Center. “Equipment, protocols, and control standards change over time, so we want our physicians to be armed with the most up-to-date knowledge and skills,” says Dr. Norris. “For the VA, this program ensures our continued excellence.”

- **The VA Department of Anesthesiology is also engaged in a third VA-wide initiative involving Lean Training.** “The core idea is to maximize customer value while minimizing waste,” says Dr. Norris. The training focuses on reducing variation within a process by filtering out actions and activities that add no value to the end product or service. “A lean organization understands customer value and focuses its key processes to continuously increase it,” notes Dr. Norris. Over half of the Department’s clinical, administrative, and support staff have completed Lean Training, with the goal being 100 percent.

Serving Community and Country

Given their commitment to clinical medicine and research in both the civilian and military sectors, a number of the Department's faculty and staff also serve as Reservists, willing to respond to protect their country when called to active duty. We proudly share this roll call of the Department's active Reservists and their thoughts about the importance of their dual mission.



Deondra Asike, M.D.

Military Role: Active Duty Major, U.S. Air Force
Baltimore C-STARS
Clinical Instructor
Deployed to Bagram Air Base, Afghanistan, January 2013-July 2013

Her Mission: My current active duty

assignment is one of the few in the country that allows its members to be involved in both military and civilian medical care. There is a lot of overlap between military and civilian practices, especially in terms of trauma medicine. I am proud to be a part of this collaboration at Shock Trauma.

Samuel M. Galvagno, Jr., D.O., Ph.D.

Military Role: Lieutenant Colonel, U.S. Air Force Reserve
943rd Aerospace Medicine Squadron, 943rd Rescue Group (Pararescue), Director of Critical Care Air Transport Team (CCATT) Operations, Flight Commander – CCATT, Senior flight surgeon



His Mission: I have been in the Air Force for over 13 years. In my role with the military and the University of Maryland, I teach Advanced Trauma Life Support (ATLS) to members before they deploy

through our Center for Sustainment of Trauma and Readiness Skills (C-STARS) program. I teach rotators in the C-STARS program in the operating room and ICU. I am actively involved with numerous research activities with C-STARS faculty, including my own Department of Defense grant designed to detect shock early during the prehospital phase. As wars wind down, the only way to stay competent is to practice in an environment similar to what one

would see when deployed. As an unfortunate consequence of the violence in our region, we see injury patterns (such as motor vehicle crashes) and an overall severity of illness at Shock Trauma that one would normally only see during wartime.

Jeff Haugh, M.D.

Military Role: Colonel, Maryland Army National Guard
29th Combat Aviation Brigade Surgeon with administrative, clinical, instructive, supervisory, and special staff advisory roles

His Mission: I have just completed an active duty tour serving as the Senior Flight surgeon for the Kosovo Force (KFOR) Aviation Taskforce, as well as the senior anesthesiologist for the Task Force Medical team. My dual role provides me with a different perspective on the application of my clinical knowledge, education, and skill sets, allowing me to interact with a variety of personnel from other countries and to educate residents and others. As I've learned from providers of other nationalities, my own knowledge of acute pain management at the University of Maryland Rehabilitation and Orthopaedic Institute has accelerated in a way I would have otherwise missed.



David Markell, CRNA

Military Role: Active Duty Navy Commander, stationed at Walter Reed National Military Medical Center. Deployed on the U.S.S. Dwight D. Eisenhower for five months in 2013 as the sole anesthesia provider for the aircraft carrier and its crew of 5,000 sailors

His Mission: I have been working at Shock Trauma for about five years. Prior to my current billet at Walter Reed, I was assigned as an Assistant Professor in the nurse anesthesia program at Uniformed Services University of the Health Sciences. In this role, I was responsible for the didactic training of student registered nurse



anesthetists during their first year. Working at Shock Trauma has offered me a unique experience and increased my effectiveness in delivering anesthesia to a diverse patient population with traumatic injuries similar to those of our wounded warriors. I love being in the military; it has provided me with many opportunities while serving my country and caring for those in harm's way.

Napoleon "Skip" Roux, M.D.

Military Role: Active Duty Major (Lt. Col. select) in the U.S. Air Force and Baltimore C-STARS Clinical Instructor

His Mission: I am a physician and career military officer. The civilian aspect of my practice has kept me clinically engaged in medicine. I've had many opportunities to stay current with my practice while teaching students, residents, fellows, and CRNAs in the trauma operating rooms. My military practice has given me an avenue to advance my military career while allowing me to provide excellent



health care to our service members. Although the mechanism of injury can be vastly different, I find that trauma anesthesia and resuscitation are extremely similar between

civilian and military medicine. The major difference is the austere environment typically seen in the military.

William Howie, MS, CRNA

Military Role: Lieutenant Colonel, US Army Reserves; currently assigned to the 2290th U.S. Army Hospital 29th Combat Aviation Brigade Surgeon with administrative and clinical anesthesia roles as well as military soldier duties.

His Mission: I have had four activations in the past 11 years. My last deployment was overseas in 2011. At the University of Maryland Medical Center, I have served as a full-time Certified Registered Nurse Anesthetist (CRNA) at the Shock Trauma Center since 1995. Recently, I was promoted to the CRNA Manager for Clinical Education and Professional Development. I enjoy caring for "wounded warriors" and their family members. I have been able to use many of the principles of volume resuscitation and pain management universally both in the military and at the Shock Trauma Center.



Christopher T. Stephens, M.D.

Military Role: Active-duty Captain in the U.S Army Medical Department, serving as the Battalion Flight Surgeon for the Maryland Army National Guard — 1-224th Support and Security Aviation Battalion. Recently deployed to Kosovo in support of Operation Joint Guardian Kosovo Campaign.

His Mission: As a former Flight Paramedic and now a Traumatologist/Flight Surgeon, I consider myself to be an expert in both aviation and emergency medicine. As an Instructor for the Maryland State Police Aviation Command, I have grown as a pre-hospital expert. At the Shock Trauma Center, there is a lot of overlap between civilian and military practice, and civilian and military



physicians have learned from each other in many ways. Many of our research efforts have evolved from the battlefield, which has benefitted both troops and civilians. Educating, training, and flying with civilian and military flight medics has been very rewarding and has given me the opportunity to become a better clinician.

Advancing Information Technology

None of the advances made in the Department of Anesthesiology would be possible without a strong technology infrastructure. Through the latest software, equipment, and the expertise to install, learn, and manage it, Information Technology staff members help Department staff provide exceptional care to patients.

- The foundation of the Department's technology rests on AIMS, the Anesthesia Information Management System, enabling the Department to build a robust clinical database and to track patient outcomes.
- Incoming clinicians practice on computer-based training modules to learn how to use AIMS.
- In 2013, the Department began developing a pre-anesthetic evaluation module for MetaVision, which was implemented in 2014.
- A collaboration between the department and J. Kathleen Tracy, Ph.D., Associate Professor of Epidemiology and Public Health, resulted in the creation of an IRB approved anesthesia clinical registry using information in AIMS, to permit investigators to run research queries.
- The Department is preparing for a transition from MetaVision to the Epic electronic medical records system, a conversion that is occurring system-wide.

AIMS By The Numbers: FUN FACTS

51.9
Average Age
Adult Patient

51%
Female
Patients

49%
Male
Patients

7.2
Average Age
Pediatric Patient

Friday is the Busiest OR day of the week

108
Average # of
Cases on Fridays

GOR-25
Busiest Weinberg
Operating Room

TOR-2
Busiest Shock
Trauma
Operating Room

Endo-6
Busiest Off
Floor location

AIMing for Clinical Excellence

Since its introduction to the Department in 2010, MetaVision — an advanced Anesthesia Information Management System (AIMS) — has become an essential component of



Julie Utz, AS, AIMS Administrator

day-to-day clinical practice. And no wonder: this powerful electronic anesthesia recording solution has captured comprehensive documentation on

more than 100,000 cases to date and has saved busy clinicians untold hours in the scribbling of notes by hand.

"Historically speaking, by the time a trauma patient was received and stabilized, about 90 minutes of vital signs had already passed, which the attending physicians would have to go back and capture in their notes," says Julie Utz, AIMS Administrator. "They were always racing to play catch-up on their documentation."

With Metavision, Department anesthesiologists can begin entering data as soon as a patient's procedure starts in the operating room, ensuring less stress for them and greater accuracy of their documentation. All biomedical information on a patient is retrieved automatically in real time from interfaced monitoring equipment throughout the operation. From an OR workstation, physicians can quickly enter information to further document their real-time interactions with a patient, from the selection of drugs to all phases of a procedure, recorded chronologically throughout the case. "I have to laugh," says Ms. Utz. "The clinicians who had said they would retire before they'd use this system are now its biggest champions!"

The aggregation of AIMS data is leading to cost-saving process improvements for the Department as well as quality improvements for patients. Ms. Utz recently generated a report from AIMS data that showed how much blood was used for different categories of cases during the busiest periods of 2013. Based on the report's projection, the Department can now anticipate the blood needs for any given week based on the scheduled cases. "Trying to create this report from paper records would have taken one person a full month to complete," says Ms. Utz. "Using AIMS, it took me two-and-a-half hours."

RESEARCH: A QUEST FOR INNOVATION AND PROGRESS

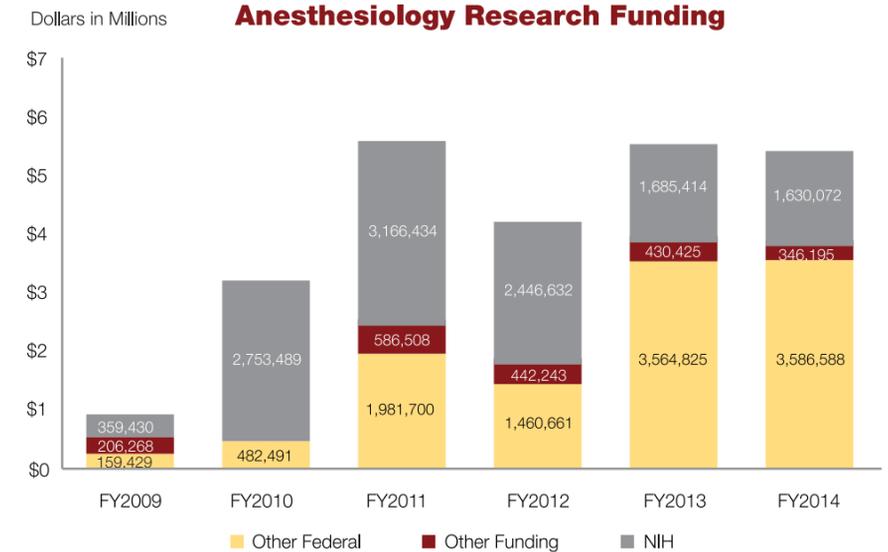
Researchers in the University of Maryland's Department of Anesthesiology conduct basic science, translational, and clinical research to improve the lives of patients who have been injured and those who require anesthesia, pain management, or critical care. Research projects are conducted primarily through the Shock, Trauma and Anesthesiology Research Center (STAR), an Organized Research Center (ORC) created in early 2008.

The STAR ORC supports translational research related to trauma, tissue injury, critical care, brain and spinal cord injury and protection, and perioperative outcomes. The STAR ORC has established collaborations with investigators from many departments and centers at the School of Medicine, as well as with the School of Pharmacy, School of Nursing, School of Dentistry, University of Maryland College Park, and University of Maryland Baltimore County. The STAR ORC is partnering to develop programs of excellence related to pain, geriatric trauma, and emergency care. Extramural research funding of the STAR ORC has also continued to increase.

STAR Faculty Research Profiles

Alan I. Faden, M.D. uses multidisciplinary approaches to examine the pathobiology of experimental brain and spinal cord injury and their treatment, focusing on cell cycle pathways, microglial activation, cell death mechanisms, metabotropic glutamate receptors, and the use of combination and multifunctional drug treatment strategies. There are active collaborations with faculty in the departments of anatomy and neurobiology, physiology, pharmacology, biochemistry and molecular biology, and medicine, the School of Pharmacy, and with the School of Nursing.

Gary Fiskum, Ph.D., studies the molecular mechanisms underlying ischemic and traumatic brain injury (TBI), using animal models of adult and pediatric brain injury to understand how oxidative stress and mitochondrial dysfunction contribute to injury. He utilizes both basic and translational research to decipher the molecular mechanisms of neural cell death, with the goal of improving survival and quality of life after brain injury. Preclinical research on mechanisms of brain injury caused by exposure to blasts is being performed in collaboration with William Fourney, Ph.D., at the University of Maryland School of Engineering, and is supported by the U.S. Army and Air Force. Neuroprotection strategies focus on optimizing the use of inspired oxygen and the



administration of drugs that promote brain energy metabolism. The lab is studying the exacerbation of blast-induced TBI caused by exposure to hypobaric during aeromedical transport.

Samuel Galvagno, D.O., Ph.D., is examining novel methods to improve the utilization of helicopter emergency medical services. A Lieutenant Colonel in the United States Air Force Reserve, Dr. Galvagno is the primary investigator for a Department of Defense grant focusing on the early detection of shock using point-of-care technology and the analysis of continuous vital signs data in the prehospital arena.

Caron Hong, M.D., M.Sc. and Marc Simard, M.D., Ph.D., are conducting innovative research supported by the American Heart Association to investigate new approaches to treating devastating brain injury caused by subarachnoid hemorrhage which occurs when a weakened wall of a blood vessel in the brain ruptures. Dr. Hong is also exploring noninvasive intracranial pressure monitoring via ultrasonographic determination of optic nerve sheath diameter in TBI and treatment models for intracerebral hemorrhage.

Bingren Hu, Ph.D., studies molecular mechanisms of ischemic damage and TBI, using ischemia, traumatic and neonatal hypoxia-ischemia animal models. His research focuses on how synaptic plasticity and protein misfolding contribute to brain injury — as well as postbrain injury neural dysfunction, complications, and recovery — and also on developing new therapies for brain injuries.

Tibor Kristian, Ph.D., investigates the role of mitochondrial dysfunction and catabolism of metabolic cofactors in ischemic brain injury. He has generated unique transgenic mice with fluorescently tagged neuronal mitochondria that enable visualization of morphological changes that precede cell death.

His research is focused on the development of neuroprotective interventions utilizing compounds that protect cellular energy metabolism (see page 23).

Marta Lipinski, Ph.D., uses in vivo and in vitro models to examine the role of autophagy (programmed cell death) after traumatic injury and to delineate the molecular mechanisms involved. Her long-term research goal is to define novel “drugable” target molecules and pathways for the effective modulation of autophagy in TBI and other neurodegenerative diseases.

David Loane, Ph.D., focuses on the mechanisms and modulation of chronic inflammation after experimental TBI, and the impact of aging on outcome after such injury. He also studies common mechanisms underlying acute and chronic neurodegeneration (see page 11).

Colin Mackenzie, M.B., Ch.B., and **Peter Hu, Ph.D., M.S.** study predictors of trauma patient outcome using automated capture of vital sign data in the Trauma Resuscitation and Intensive Care Units of the Shock Trauma Center, as well as vital sign data during the prehospital care of these patients (see page 45). They are funded to develop an autonomous critical care resuscitation system that will allow casualty resuscitation using closed-loop controllers of vital functions.

Brian Polster, Ph.D., examines subcellular mechanisms that govern neural cell death and survival in acute brain injury and neurodegenerative disorders, focusing on how inflammatory microglial activation exacerbates neuronal injury through nitric oxide production and how oxygen availability influences the mechanisms of injury.

Peter Rock, M.D., M.B.A., F.C.C.M., leads the Program in Patient Safety and Clinical Outcomes. This program is involved in several large multicenter investigator-initiated clinical trials. These include reducing the incidence of ICU delirium, improving postoperative cognitive function in the elderly, evaluating genetic factors that impact postoperative deep venous thrombosis and infections, and improving outcomes in patients with Acute Respiratory Distress Syndrome.

Bogdan Stoica, M.D., studies neuronal cell death mechanisms using in vitro apoptosis models (primary cortical neurons) as well as in vivo experimental neurotrauma models. An area of particular interest has been the role of cell cycle pathways and caspase-independent apoptosis in the induction of secondary neuronal cell loss after TBI.

Junfang Wu, Ph.D., explores secondary damage after experimental spinal cord injury, as well as the role of glial cells in the response to injury, using both in vivo and in vitro models. She also studies mechanisms of neuropathic pain after traumatic spinal cord and brain injury.

The work of researchers in the Department of Anesthesiology would not be possible without government and private funding to support its efforts. Examples of recently funded projects include:

• **Tackling Neuroinflammation in Brain Injury:**

Neuroinflammation is a ubiquitous feature of acute and chronic neurodegenerative disorders. Although initially important for clearing damaged cells following injury, a prolonged or excessive neuroinflammatory response is maladaptive and contributes to neuropathology. To better understand and treat the deleterious consequences of brain inflammation, **Brian Polster, Ph.D.**, is directing a five-year \$1.6 million study funded by the NIH to understand the influence of brain oxygen tension on injury mechanisms. Dr. Polster is investigating a novel therapeutic strategy for combating the harmful consequences of excessive neuroinflammation, centered on the preservation of neuronal energy production which he predicts will only work when the physiological oxygen concentration in the brain is considered.

• **Shock in the Prehospital Aeromedical Arena:**

Samuel Galvagno, D.O., Ph.D., was awarded a research grant for \$780,000 from the 711th Human Performance Wing, United States Air Force. His investigation will seek to identify objective measures of shock in the prehospital aeromedical arena. The title of his study is “Prehospital point of care testing for the early diagnosis of hemorrhagic shock, prediction of lifesaving interventions, and clinical course.” The study will be conducted in conjunction with MIEMSS (Maryland Institute for Emergency Medical Services Systems) and the Maryland State Police Aviation Command Medevac helicopters.

• **Learning Why the Elderly Have Worse Outcomes after Brain Trauma:**

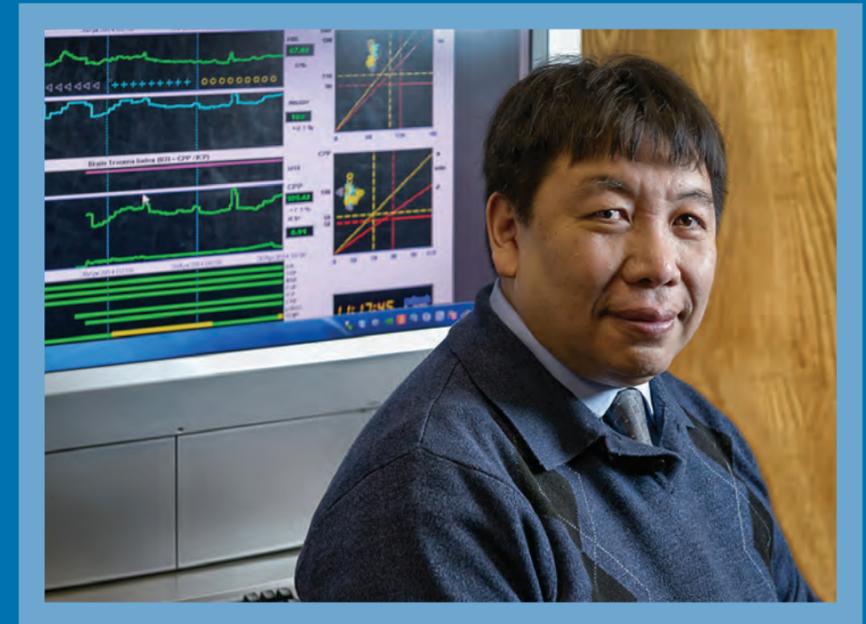
The elderly comprise the fastest growing patient population with the worst clinical outcomes after traumatic brain injury (TBI), and the reason for poor outcomes in this group are not well understood. To fill this gap in knowledge, **David Loane, Ph.D.**, is directing a four-year \$1.4 million study funded by the NIH in which his team will model the short- and long-term effects of TBI in young, middle-aged, and aged animals. Specifically, the researchers will study the inflammatory response to TBI, and the molecular and cellular analyses from this study will provide a pathophysiological basis for poorer outcomes in elderly TBI patients. In addition, they will evaluate a novel therapeutic intervention that targets post-traumatic inflammation to initiate repair processes during the chronic phase of recovery after TBI (see page 11).

Data from the Field

A pulse oximeter doesn’t look like much. The tiny clip slides over the tip of a patient’s finger and measures blood oxygen levels. But attached to a new device — designed by Peter Hu, Ph.D., Associate Professor of Anesthesiology, and his colleagues at the University of Maryland School of Medicine — it could help emergency medical technicians (EMTs) wirelessly relay vital data from the field back to the hospital to help an emergency department prepare for the arrival of a critically injured patient. An advanced machine-learning algorithm which includes real-time patient physiological data — such as oxygen saturation, pulse, and blood pressure — could help hospital personnel better determine if the patient needs a blood transfusion, mechanical ventilation, or emergency surgery, readying them to provide such lifesaving interventions as soon as the ambulance pulls in.

“The more data we have before a patient arrives at the hospital, the better we can prepare to care for them optimally once they get here,” says Dr. Hu. He and his team, including Colin Mackenzie, M.B., Ch.B., Clinical Professor of Anesthesiology, pioneered and published the algorithm that analyzes a patient’s physiological data and determines the need for lifesaving procedures. They are now applying to the U.S. Food and Drug Administration for investigational device approval so they can begin evaluating it in patients. The work is supported with funding by the Department of Defense (DoD), and for good reason: the DoD asked the University of Maryland for a product they can use in the battlefield to give a heads-up to military medical personnel about the status of an injured soldier in need of emergency care. The wireless transmitter on the device may be integrated into the military’s secure wireless networks in battle zones.

Dr. Hu, who designed the real-time trauma patient physiological data collection network for the R Adams Cowley Shock Trauma Center 16 years ago, and his group also created a system to be used within the walls of University of Maryland Medical Center to continuously monitor patients in the intensive care units, operating rooms, and trauma resuscitation unit. “Clinicians make a lot of decisions based



Peter Hu, Ph.D.

on each patient’s physiological changes, but sometimes they can’t see them more than once an hour,” he notes. “With this tool, they have continuous access to a patient’s vital signs, such as electrocardiogram and PPG [photoplethysmograph] data, in the intensive care unit or from anywhere within the hospital using their mobile devices.” The system highlights abnormal physiological status in real time, so the medical team can respond quickly. “This tool tells doctors what is happening with each patient and can be used to identify patients who may be at risk of secondary injury to the brain or other parts of the body,” Dr. Hu adds.

The data collected by the system — 100 million data points per patient per day — are also being analyzed in a clinical study to predict patient outcomes in the year after a traumatic brain injury. “We want to learn what symptoms and other physiological data may predict how well patients recover during that first critical year,” explains Dr. Hu. The U.S. Air Force is also interested in learning how the system could be used to determine if an injured soldier is “fit for flight” — ready to be safely transported by airplane to a medical facility.

As an electrical engineer with a Ph.D. in computer science, these projects give Dr. Hu the opportunity to use his skills in a way that benefits patients. “I’m not a clinician,” he says. “But if I can apply my knowledge to create tools that help patients, that’s very inspirational.”

HONORING A “GENTLE MAN”

MARTIN HELRICH, M.D., FORMER CHAIRMAN

On June 2, 2013, the Department of Anesthesiology, University of Maryland School of Medicine, and the specialty of anesthesiology lost a close friend, mentor, teacher, leader, and champion of academic anesthesiology. With the passing of Martin (“Marty”) Helrich, M.D., at the age of 91, an era came to an end — an era that began back in 1956, when Anesthesiology was formally recognized as an independent department at the University of Maryland School of Medicine. It was in that year that Dr. Helrich was recruited to Baltimore and named Professor and Chair of the small but promising Anesthesiology Department. Over the next 31 years, until his retirement in 1987, Dr. Helrich provided the astute guidance and leadership that enabled the Department to flourish.



Anesthesiology and he was the Board’s Director. He was serious-minded about why we were there and what the examination process was all about, but he also was helpful in talking to you about how to examine candidates coming for these oral boards. “Shortly after I arrived at Johns Hopkins University, he invited me over. Over the years, we got to know each other as colleagues in the Baltimore area. He was always very kind to me. He loved the practice of anesthesia, and he loved the University of Maryland. There were sometimes rivalries between the University of Maryland and Johns Hopkins, but that was never true among our colleagues in anesthesia. Marty always set the tone for that.”

While much has been written already about Dr. Helrich and his accomplishments, the measure of his greatness is perhaps best measured by those who knew and learned from him firsthand: his fellow anesthesiologists.

Peter Rock, M.D., M.B.A., F.C.C.M.
Martin Helrich Professor and Chair, Department of Anesthesiology, University of Maryland School of Medicine

“I hadn’t met Marty before I came to Maryland, although of course I knew who he was and his importance to the specialty of anesthesiology. I got to know him over the years and appreciated his wisdom, wit, and phenomenal memory of people and events. He was still loyal to the University of Maryland School of Medicine and very proud of the Department he had created.

“The Department’s remarkable growth in the 30 years since Dr. Helrich retired has only been possible because of the foundation he built. I am humbled to serve as the Chair of the Department he founded and consider myself exceptionally fortunate to follow in his footsteps. It is an honor and privilege to be the Dr. Martin Helrich Professor of Anesthesiology. The Department, the School, and our specialty have lost a giant in the field.”

Ed Miller, M.D.
Former Dean, The Johns Hopkins University School of Medicine, Professor of Anesthesiology and Critical Care Medicine

“I was at University of Virginia, where I first met Marty in 1978 when I was a junior examiner at the American Board of

Andrew M. Malinow, M.D.
Professor of Anesthesiology and Vice-Chair of Faculty Affairs, Department of Anesthesiology, University of Maryland School of Medicine

“Today, the residents would call him ‘old school.’ I finished my residency late in Dr. Helrich’s tenure and was later recruited by him, coming back to the University of Maryland as a faculty member. Dr. Helrich was kind but demanding of his residents. He would question his residents’ knowledge of clinical anesthesiology as well as all related aspects of general clinical medicine and the basic sciences. Marty took the time to learn about his residents and was there for any of us who had a problem, either at the hospital or at home. He was a father figure to many of us.”

Colin F. Mackenzie, M.B., Ch.B.
Clinical Professor of Anesthesiology, University of Maryland School of Medicine

“I first met Marty in 1974 through the person who succeeded him as the first Martin Helrich Professor and Chair, Jane Matjasko. Jane had written to me when I was working in London, telling me how much they were looking forward to my joining the Department. It was such a wonderful letter that I realized how much Marty inspired those around him to help make his Department a special place to work.

“Marty was everything a Chairman should be. He was a wonderful mentor, personable with a terrific sense of humor, and always sharing a ‘bon mot’ at the right moment. He tended to let you do what you wanted to do, especially in terms of encouraging research, and was not a micromanager — just the opposite. He also was a quick decision maker with apparently pre-planned ideas that were acted on in short order. To use one of Marty’s favorite sayings to describe himself, ‘He was a scholar and a gentleman.’ But when I say gentleman, I really mean a gentle man.”



Martin Helrich, M.D. at the 26th Annual Helrich Matjasko Lecture in Anesthesiology

Alan Sessler, M.D.
Past Chair of the Department of Anesthesiology, Mayo Clinic President Emeritus, Foundation for Anesthesia Education and Research

“From the early 1950s onward, Marty and I saw each other regularly through a variety of associations and the examination systems — first in the American Society of Anesthesiologists, which carried reviews by the American College of Anesthesiologists, where we both served, and later on the American Board of Anesthesiology. We also were both involved with the American Society of Anesthesiologist’s Foundation for Anesthesia Education and Research (FAER), with Marty serving as its first executive director in 1988, and which I took over from 1995 until 2011.

“In the history of anesthesiology, there are generations — first the pioneers, and then the founders. Marty definitely fell into that generation of founders. He and his peers were the teachers and role models for what was then a relatively young specialty. And they were builders — they built departments, which required sharp diplomatic skills and an incredible amount of energy to achieve. Even with his many accomplishments, Marty remained a modest, civilized, and decent human being — a keen observer of the scene around him in all respects. It was a delight to work with him.”

27th Annual Professors Martin Helrich and M. Jane Matjasko Lecture in Anesthesiology



Max Kelz, M.D., Ph.D.

Each year we celebrate the Department’s history and heritage during the Professors Martin Helrich and M. Jane Matjasko Lecture in Anesthesiology. A leading anesthesiologist is invited to present his or her latest research and to speak about the field before the Department’s alumni and guests.

On September 10, 2013, the 27th invited Lecturer was Max Kelz, M.D., Ph.D., Assistant Professor, Department of Anesthesiology and Critical Care, University of Pennsylvania School of Medicine, who spoke about “Direct Activation of Endogenous Sleep Promoting Neurons by Anesthetic Drugs: Quirky Coincidence or Critical Cause of Hypnosis?”

OUR PEOPLE MAKE US THE BEST

PRIMARY FACULTY



Afrangui, Beatrice M., M.D., Clinical Assistant Professor
 Anders, Megan G. M.D., Assistant Professor
 Andrews, Maged M., M.Sc., M.B., B.Ch., Instructor
 Asaro, Lise R., M.D., Clinical Assistant Professor
 Bellefleur, Monique, M.D., M.B.A., Assistant Professor



Bernstein, Wendy K., M.D., M.B.A., Associate Professor
 Bharadwaj, Shobana, M.B.B.S., Assistant Professor
 Bigeleisen, Paul E., M.D., Professor
 Blenko, John, M.D., Associate Professor
 Boyd, Malinda T., M.D., Clinical Assistant Professor



Bucci, Cynthia J., M.D., Assistant Professor
 Chatrath, Monika P., M.D. Assistant Professor
 Conti, Bianca M., M.D., Assistant Professor
 Daley, Wendy A., M.D., M.P.H. Assistant Professor
 Davis, Kathleen M., M.D., Assistant Professor



Deshpande, Seema P., M.B.B.S., Assistant Professor
 DiMino, Mark D., M.D., Assistant Professor
 DiStefano, Andra D., M.D., Assistant Professor
 Esposita, Stephanie, M.D., Assistant Professor
 Faden, Alan I., M.D., Professor



Fiskum, Gary M., Ph.D., Professor
 Fitzpatrick, Molly, M.D., Assistant Professor
 Fouché-Weber, Yvette, M.D., Assistant Professor
 Franklin, Christopher M., M.D., Assistant Professor
 Galvagno Jr., Samuel M., D.O., Ph.D., Associate Professor



Gattu, Kanchana, M.B.B.S., Assistant Professor
 Gheorghiu, Ileana, M.D., Assistant Professor
 Goel, Kriti, M.D., Instructor
 Greco, Karla M, M.D., M.H.S., Assistant Professor
 Grewal, Ashanpreet, M.D., Assistant Professor



Grigore, Alina M., M.D., M.P.H., Associate Professor
 Grissom, Thomas E., M.D., F.C.C.M, M.S.I.S., Associate Professor
 Haugh, Jeffrey T., M.D., Assistant Professor
 Hong, Caron M., M.D., M.Sc., Assistant Professor
 Hu, Bingren, Ph.D., Professor



Hu, Fu M. (Peter), Ph.D., Associate Professor
 Hyder, Mary L., M.D., Assistant Professor
 Ihenatu, Chinwe A., M.B., B.Ch., Clinical Assistant Professor
 Joe, Emily, M.D., Assistant Professor
 Kabadi, Shruti V., Ph.D., Research Associate



Kaplowitz, Jeremy, M.D., Assistant Professor
 Koerner, Kennedy A., M.D., Assistant Professor
 Kristian, Tibor, Ph.D., Associate Professor
 Lee, Seung J., M.D., Assistant Professor
 Lipinski, Marta, Ph.D., Assistant Professor



Loane, David J., Ph.D., Assistant Professor
 Mackenzie, Colin F., M.B., Ch.B., Clinical Professor
 Malinow, Andrew M., M.D., Professor
 Martz, Douglas G., M.D., Associate Professor
 Mazzeffi, Michael A., M.D., M.P.H., Assistant Professor



McCunn, Maureen, M.D., M.I.P.P., M.C.C.M., Associate Professor
 Milholland, Arthur V., M.D., Ph.D., Clinical Assistant Professor
 Monroe, Hanni E., M.D., Assistant Professor
 Murphy, Virginia E., M.B., B.Ch, B.A.O., Clinical Assistant Professor
 Nagle, Sheryl, M.D., Clinical Assistant Professor



Naik, Madhavi A., M.B.B.S., Assistant Professor
 Niemiec, Teresa, D.O., Assistant Professor
 Njoku, Mary J., M.D., Associate Professor
 Noorani, Robert J., M.D., Assistant Professor
 Norris, Edward J., M.D., M.B.A., Clinical Professor



Odonkor, Patrick N., M.B., Ch.B., Assistant Professor
 Ohliger, Shelley, M.D., Assistant Professor
 Pallan, John, M.D., Assistant Professor
 Polster, Brian M., Ph.D., Assistant Professor
 Ranney, Kathleen A., M.D., Clinical Assistant Professor



Rock, Peter, M.D., M.B.A., F.C.C.M., Professor and Chair
 Roman, Philip E.F., M.D., M.P.H., Assistant Professor
 Samet, Ron E., M.D., Assistant Professor
 Savarese, Anne M., M.D., Assistant Professor
 Sawant, Sanyogeeta, M.B.B.S., Clinical Assistant Professor



Schreibman, David L., M.D., Assistant Professor
 Shepard, Eric K., M.D., Assistant Professor
 Sheppard, Maurice R., M.D., Assistant Professor
 Shere-Wolfe, Roger F., M.D., J.D., M.A., Assistant Professor
 Sikorski, Robert A., M.D., Assistant Professor



Sivaraman, Vadivelu, M.B.B.S., Assistant Professor
 Smith, Daniela, M.D., Assistant Professor
 Stephens, Christopher T., M.D., M.S., Assistant Professor
 Stoica, Bogdan A., M.D., Assistant Professor
 Strauss, Erik R., M.D., Assistant Professor



Tulis, Matthew R, M.D., Assistant Professor
 Turner, Shafonya M., M.D., Assistant Professor
 Udekwo, Obi R., M.B.B.S., Assistant Professor
 Villamater, Edwin J., M.D., Assistant Professor
 Wright, Thelma B., M.D., J.D., Assistant Professor



Wu, Junfang, B.M., Ph.D., Assistant Professor
 Zimmerman, Darin M., M.D., Assistant Professor

Secondary Faculty (Primary Department)

Abrams, Thomas W., Ph.D., Professor
(Pharmacology and Experimental Therapeutics)
Badjatia, Neeraj, M.D., Associate Professor
(Neurology and Neurosurgery)
Coop, Andrew, Ph.D., Professor
(School of Pharmacy)
Crawford, Robert, M.D., Assistant Professor
(Surgery)
Dorsey, Susan G., Ph.D., R.N., Associate Professor
(School of Nursing)
Frost, Douglas O., Ph.D., Clinical Professor
(Pharmacology and Experimental Therapeutics)
MacKerell, Alexander D., Ph.D., Professor
(School of Pharmacy)
Rosenthal, Robert E., M.D., Professor
(Emergency Medicine)
Sears, Andrew L., Ph.D., Professor
(University of Maryland Baltimore County)
Xue, Fengtian, Ph.D., Assistant Professor
(School of Pharmacy)

Volunteer Faculty

Ashman, Michael N., M.D., Clinical Assistant Professor
Asike, Deondra P., M.D., Clinical Assistant Professor
Atwal, Jasjit B., M.B.B.S., Clinical Assistant Professor
Bono, Stephen F, Ph.D., Clinical Assistant Professor
Cheloff, Gregory M., M.D., Clinical Assistant Professor
Durant, Natasha, Ph.D., Clinical Assistant Professor
Goldstein, Larry J., Ph.D., Adjunct Professor
Masur, Henry, M.D., Clinical Professor
McAreevey, Dorothea, B.M., B.Ch.,
Adjunct Associate Professor
Milholland, Arthur, M.D., Ph.D., Clinical Assistant Professor
Natanson, Charles, M.D., Adjunct Professor
Ognibene, Frederick, M.D., Adjunct Associate Professor
Roux, Napoleon P. III, M.D., Clinical Assistant Professor
Sears, Andrew L., Ph.D., Professor
Shelhamer, James H., M.D., Adjunct Professor
Thomas, Padmini, M.B.B.S., Clinical Assistant Professor
Wilson Jr, Henry L., M.D., Clinical Assistant Professor
Xue, Fengtian, Ph.D., Assistant Professor

Pain Management Center

Bono, Stephen, Ph.D. – Licensed Clinical Psychologist
Bower, Cathy, B.S.N., RN-BC – Clinical Nurse III, Acute Pain
Campbell Tyrice – Medical Practice Representative III
Clyde, Christina, M.S., RN-BC –
Director of Practice Operations
Collins, Norma, RN – Clinical Nurse II
Cohen, Vicki, B.S.N., RN-BC – Clinical Nurse III
Conaway, Cheryl – Medical Practice Representative III
Denbow, Bernice, B.S.N., RN-BC – Clinical Nurse II
DiCarlo, Candy – Administrative Assistant III
Durant, Natasha, Ph.D. – Licensed Clinical Psychologist
Elder, Jonathan, RT – Radiographer
Fitzsimmons, Karen, B.S.N., RN – Clinical Nurse II
Jones-Dorsey, Michelle, RN – Clinical Nurse II
Mewe-Pira, N. Janice, CRNP – Nurse Practitioner
O'Connor, Karen, RN – Clinical Nurse II
Petties, Bonnetta - Medical Practice Representative III
Ryan, Stefanie, PT – Physical Therapist
Stallings, Della, RN – Clinical Nurse II
Thiess, Tammy - Medical Practice Representative III
Watts-Gibson, La-Vett – Medical Practice
Representative III, Team Leader
Williams, Christina – Administrative Assistant III

Transesophageal Echo Sonographers

Ezzati, Babak, RCS
Jordan, Kristen, RDCS
Nguyen, Trinh, RCS
Salinas, Maria, RCS
Shats, Inna, MA, BS, RDCS, FASE - Supervisor

Neurophysiologic Monitoring Technologists

Babaran, Richie Cae, CNIM, BSMT, RMT
Cusanelli, Anthony, BS
Fencel, Robin BS
Ferguson, Bryan B., REPT, CNIM, MCSE – Supervisor
Hott, Ashley, MS
Irle, Kary, BS, CNIM, JD
Kapusta, Sarah BS, CNIM
Norris, Aaron, BS
Raimondi, Autumn, BS, CNIM
Schultz, Kortnie, R.EEG T
Singson, Hy-D, CNIM, BSPH

Anesthesia Tech Staff

Badami, Joseph
Bwamu, Douglas
Curtis, Myesha
Duffin, Courtney
Fanning, Maura
Fine, Jessica
Frances, Thomas
Freeman, Nelson
Garrett, Roger
Gilbert, Kimberly
Gilmore, Wanda
Green, Tavon
Grimm, Melissa
Gross, Theodore
Hubbard, Jeff
Huntington, Mark
Jarvis, Tierra
Lewis, Melvin
Lutz, Elizabeth
Matthews, Brandon
McKittrick, Kari-Ann
Melvin, Meyon
Moore, Corey
Nachman, Samuel
Oliver, Michael
Phelan, Thomas
Pulley, Tiffany
Quesenberry, Andrew
Sheppard, Lanell
Sommerville, Andrea
Sonza, Jay
Tabron, Victor
Terry, Keith
Walkowiak, Matthew
Watt, Christina
Wells, Jeremy
Young, Nicole

Research Staff

Akintola, Titilola – Technician
Aungst, Stephanie, Ph.D. – Post-Doctoral
Barrett, James, Ph.D., Post-Doctoral
Bordt, Evan, Ph.D. – Student
Brown, DeAngelo – Lab Helper
Cardiff, Katherine – Technician

Demarest, Tyler, Ph.D. – Student
Ge, Shealinna – Laboratory Research Assistant
Hsieh, Y-Chu, Ph.D. – Student
Jaber, Sausan, Ph.D. – Student
Kabadi, Shruti, Ph.D. – Post-Doctoral
Kumar, Alok, Ph.D. – Post-Doctoral
Li, Guanghui – Technician
Liu, Chunli – Lab Specialist
Pan, Yan – Research Assistant
Park, Yujung – Research Assistant
Proctor, Julie – Lab Supervisor
Rangghran, Parisa – Laboratory Research Assistant
Remenapp, Craig – Technician
Sabirzhanov, Boris, Ph.D. – Post-Doctoral
Sarkar, Chinmoy, Ph.D. – Post-Doctoral
Skovira, Jacob, Ph.D. – Post-Doctoral
Vaughan, Josh – Laboratory Research Assistant
Ward, Nicole – Technician
Zhao, Shuxin – Technician
Zhao, Zaorui “Jerry”, Ph.D. – Post-Doctoral

Professional Billing Office

Clayton, Tracy – Patient Account Representative III
Davis-Lifsey, Alice – Certified Coder
Ford, Grace – Certified Coder
Hallinger, Judith – Billing Coordinator
Kizina, Shelly – Patient Account Representative III
Letourneau, Eric – Patient Account Representative II
Reeves, Bonnie – Certified Coder
Sizemore, Judy – Billing Supervisor
Utz, Kassie – Office Assistant
Williams, Rita – Patient Account Representative II
Wintering, Tara – Administrative Assistant

Administration

Armiger, Josephine – Administrative Manager
Brooks, Timothy – Manager of Information Technology
Brown, Denise – Program Management Specialist I
Belton, Wanda – Administrative Assistant III
Colbert, Dawn – Executive Administrative Assistant
Curtis, Travis – Staff Accountant II
Earle-Jackson, Pamela – Project Manager
Felton, Gabriela – Program Administrative Specialist
Fitzpatrick, Kelsey – Executive Administrative Assistant
Flayhart, Kim, CMPE, CPC – Associate Administrator
Goins, Robin – Administrative Assistant II
Gough, Tiffany, Administrative Assistant III
Jones, David – Desktop Engineer
Kopec, Amy – Administrative Manager
Lamon, Lauren – Administrative Assistant II
Leshinskie, Vickie – Office Assistant
McFadden, Debbie, BA – Financial Coordinator
Pompanio, Emily – Administrative Assistant III
Saunders, Joshua – Financial Analyst
Smith, Brad, MBA, MPH – Sr. Administrator
Sohn, Brittany – Administrative Assistant II
Stubbs, La Toya, BS – Lead Clinical Research Specialist
Tchuenbou, Marie-Josiane, MBA – Director of Finance
Utz, Julie, AS – AIMS System Administrator
Wallace, Karin, BSN, RN, CCRN – Clinical Research Nurse
Webb, Taryn – Residency and Fellowship Coordinator
Williams, Christina – Faculty Coordinator

CRNAs

Linda Goetz, MHS
Director, Nurse Anesthetists
Adogu, Obinna, CRNA
Amoroso, Chris, CRNA
Batoon, Bonjo, CRNA
Billington, Katherine, CRNA
Bison, Shane, CRNA
Boyden, William, CRNA
Broussard, Michael, MS, CRNA
Browning, Kristy, CRNA
Carr, Katharine, CRNA
Casey, Jonathan, CRNA
Chude, Teckla, CRNA
Clune, Cheryl, MS, CRNA
Conry, Marisa, CRNA
Cooke, Robyn, CRNA
Davis, Meagan, CRNA
deBrabander, Jaime, CRNA
Dick, Erika, CRNA
Downey, Leanne, CRNA
Drager, Emilene, CRNA
Duell, Michelle, CRNA
Ejanda, Ron, CRNA
Faw, Tara, CRNA
Fox, Matthew, CRNA
Frankart, Abbie, CRNA
Godwin, Rachel, CRNA
Goins, Elizabeth, CRNA
Gonzalez, Joy, CRNA
Gonzalez, Michelle, CRNA
Grzywacz-Laughter, Genevieve, CRNA
Hammond, Elizabeth, CRNA
Howie, Bill, DNP, CRNA
Huber, Rex, CRNA
Ihrig, Courtney, CRNA
Irish, Emily, CRNA
Kinsey, Catherine, CRNA
Lacy, Ashley, CRNA
Lee, Sarah, CRNA
Magich, Charles, CRNA
Mallari, Alex, CRNA
Miller, Paul, CRNA
Miller, Sharee, CRNA
Mullaney, Courtney, CRNA
Muntuerto, Anne Marie, CRNA
Muscara, Gina, CRNA
Newman, Nancy, CRNA
Nguyen, Lilly, CRNA
Obereiner, Kimberly, CRNA
Piskozub, Melissa, CRNA
Sampson, Cindy, MS, CRNA
Santos, Kristine, CRNA
Scott, Christopher, CRNA
Sharkey, Sally, CRNA
Sigalovsky, Alex, CRNA
Sigalovsky, Natalie, CRNA
Sims, Faresha, CRNA
Sliwkowski, Joey, CRNA
Taylor, Patrick, CRNA
Themistocles, Rose, CRNA
Thomas, Krystle, CRNA
Travis, David, CRNA
Tucker, Franny, CRNA
Ward, Kristy, CRNA
Weatherley, Kristin, CRNA
Wills, Ashleigh, CRNA
Young, Theresa, CRNA

Residents

Class of 2017

Ayoola, Christine, M.D.
Chancer, Zackary, M.D.
DeVita, Laura, M.D.
Formanek, Arthur, M.D.
Henderson, Reney, M.D.
Running, Kati, M.D.
Watterworth, Blake, M.D.
Yu, Nansen, M.D.

Class of 2016

Cardillo, Sarah, M.D.
Chow, Jonathan, M.D.
Cunniff, Claire, M.D.
Humis, Michael, M.D.
Kak, Arushi, M.D.
Kiefer, Jesse, M.D.
Kokajko, Lauren, M.D.
Lofton, Megan, M.D.
Neary, Ruth, M.D.
Nwosu, Chinwe, M.D.
Pierre, Marjorie, M.D.
Smith, Erik, M.D.
Wright, Kedja, M.D.

Class of 2015

Chettiar, Sundaram, M.D.
Jeyakumar, Brinda, M.D.
Kim, Michelle, M.D.
Le, Denny, M.D.
Neely, Amy, M.D.
Nguyen, Wendy, M.D.

Oforu, Nana, M.D.
Patel, Roshan, M.D.
Shteyman, Michael, M.D.
Watanaskul, Lindy, M.D.
Williams, Brittny, M.D.
Zhu, Nan, M.D.

Class of 2014

Bansal, Vikram, M.D.
Geng-Ramos, Giuliana, M.D.
Goehner, Nicholas, M.D.
Gyebi-Foster, Juliet, M.D.
Hobbs, Jessica, M.D.
Jassal, Vineet, M.D.
Khan, Ansar, M.D.
Lebow, Brandon, M.D.
Piercy, Jessica, M.D.
Shander, Benjamin, M.D.
Siu, John, M.D.
Smith, Chase, M.D.

Fellows (Specialty)

Beery, Todd (Pain), D.O.
Doyle, Danielle (Pain), M.D.
Galey, Jessica (OB), M.D.
Johnson, Kyle (CT), M.D.
Lax, Peter (Trauma), M.D.
Naqib, Dahlia (Regional), M.D.
Paterson, Tara (CC), M.D.
Sharma, Tushar (Pain), M.D.
Villacin, Maria Karla (Trauma), M.D.
Walker, Andrew (CT), M.D.



2013 Resident Retreat

New Faculty Members

In 2013, the Department welcomed new faculty members to its ranks. A diverse, talented, and dedicated group of professionals, the Department has been greatly enriched by their presence and contributions.

Megan G. Anders, M.D.

Assistant Professor
Clinical Specialty: Critical Care

Deondra Asike, M.D.

Clinical Assistant Professor
Baltimore C-STARS Clinical Instructor
Clinical Specialty: Pain Medicine

Monika Chatrath, M.D.

Assistant Professor
Clinical Specialty: Pediatric Anesthesiology

Wendy Daley, M.D., M.P.H.

Assistant Professor
Clinical Specialty: Pediatric Anesthesiology

Christopher Franklin, M.D.

Assistant Professor
Clinical Specialty: Critical Care

Karla M. Greco, M.D., M.H.S.

Assistant Professor
Clinical Specialty: Trauma Anesthesiology

Albert K. Koerner, M.D.

Assistant Professor
Clinical Specialty: Trauma Anesthesiology

Michael Mazzeffi, M.D., M.P.H.

Assistant Professor
Clinical Specialty: Cardiothoracic Anesthesiology and Critical Care

Hanni Monroe, M.D.

Assistant Professor
Clinical Specialty: Regional Anesthesia

Kathleen A. Ranney, M.D.

Clinical Assistant Professor
Clinical Specialty: Regional Anesthesia

Napoleon “Skip” Roux, M.D.

Clinical Assistant Professor
Clinical Specialty: Trauma Anesthesiology

Matthew R. Tulis, M.D.

Assistant Professor
Associate Residency Director
Clinical Specialty: Regional Anesthesia

PEER REVIEWED PUBLICATIONS

1. Aungst SL, **Kabadi SV**, Thompson SM, **Stoica BA**, **Faden AI**.

Repeated mild traumatic brain injury causes chronic neuroinflammation, changes in hippocampal synaptic plasticity, and associated cognitive deficits. *J Cereb Blood Flow Metab.* 2014 Jul;34(7):1223-1232. doi: 10.1038/jcbfm.2014.75. Epub 2014 Apr 23. PMID: 24756076.

2. Barack J, **Roman P**, **Grewal AS**, **Shats I**, Dawood M, **Grigore AM**.

Transesophageal echocardiography assessment of massive left atrial thrombus due to mitral stenosis and atrial fibrillation. *J Rom Anesth Intens Care.* 2013 Oct;20(2):131-133.

3. Boretzky K, Visoiu M, **Bigeleisen P**.

Ultrasound-guided approach to the paravertebral space for catheter insertion in infants and children. *Paediatr Anaesth.* 2013 Dec;23(12):1193-1198. doi: 10.1111/pan.12238. Epub 2013 Jul 27. PMID: 23890290.

4. Clerc P, Ge SX, Hwang H, Waddell J, Roelof BA, Karbowski M, Sesaki H, **Polster BM**.

Drp1 is dispensable for apoptotic cytochrome c release in primed MCF10A and fibroblast cells but affects Bcl-2 antagonist-induced respiratory changes. *Br J Pharmacol.* 2014 Apr;171(8):1988-1999. doi: 10.1111/bph.12515. Epub 2013 Nov 11. PMID: 24206264.

5. Clerc P, Young CA, **Bordt EA**, **Grigore AM**, **Fiskum G**, **Polster BM**.

Magnesium sulfate protects against the bioenergetics consequences of chronic glutamate receptor stimulation. *PLoS One* 2013 Nov13;8(11):e79982. PMID: 24236167.

6. Colton K, Dinardo T, **Hu PF**, Xiong W, Hu EZ, Reeds G, DuBose JJ,

Stansbury LG, **Mackenzie CF**, Chiu W, Miller C, Fang R, Stein DM, Scalea TM and the ONPOINT Study Group. Full of sound and fury, signifying nothing: burden of transient noncritical monitor alarms in a trauma resuscitation unit. *J Trauma Nurs.* 2013 Oct-Dec;20(4):184-188. doi: 10.1097/JTN.000000000000010. PMID: 24305079.

7. Colton K, Yang S, **Hu PF**, Chen HH, Bonds B, Scalea TM, Stein DM.

Intracranial pressure response after pharmacologic treatment of intracranial hypertension. *J Trauma Acute Care Surg.* 2014 Jul;77(1):47-53. discussion 53. doi: 10.1097/TA.0000000000000270. PMID: 24977754.

8. Dagal A, Greer S, **McCunn M**:

International disparities in trauma care. *Curr Opin Anes.* 2014 Apr;27(2):233-239. doi: 10.1097/ACO.000000000000049. PMID: 24514036.

9. Dale Y, Dutton R, **Hu P**, Chang Y, Brown C, Chen H, **Grissom T**,

Kufera J, Scalea T. Effect of video laryngoscopy on trauma patient survival: A randomized controlled trial. *J Trauma Acute Care Surg.* 2013 Aug;75(2):212-219. doi: 10.1097/TA.0b013e318293103d. PMID: 23823612.

10. Degracia D, **Hu B**.

Protein misfolding and organelle stress after brain ischemia. *Transl Stroke Res.* 2013 Dec;4(6):579-580. doi: 10.1007/s12975-013-0302-1. Epub 2013 Nov 8. PMID: 24323412.

11. **Deshpande SP**, **Fitzpatrick M**, **Grigore AM**.

Pro: Robotic surgery is the preferred technique for coronary artery bypass graft (CABG) surgery. *J Cardiothorac Vasc Anesth.* 2013 August;127(4):802-805. doi: 10.1053/j.jvca.2013.03.003. PMID: 23849526.

12. Diamantidis CJ, Fink W, Yang S, Zuckerman M, Ginsberg J, **Hu P**,

Xiao Y, Fink J. Directed use of the Internet for health information by patients with chronic kidney disease (CKD): results from Safe Kidney Care. *J Med Internet Res.* 2013 Nov 15;15(11). doi: 10.2196/jmir.2848. PMID: 24240617.

13. **Galvagno SM**.

Comparative effectiveness of helicopter emergency medical services compared to ground emergency medical services. *Crit Care.* 2013 Jul 16;17(4):169. doi: 10.1186/cc12779. PMID: 23890322.

14. **Galvagno SM**, Dubose JJ, **Grissom TE**, Fang R, Smith R, Beberta

VS, Shackelford S, Scalea TM. The epidemiology of Critical Care Air Transport Teams in contemporary warfare. *Mil Med.* 2014 Jun;179(6):612-618. doi: 10.7205/MILMED-D-13-00474. PMID: 24902127.

15. **Galvagno SM**, **Hong CM**, Lissauer ME, Baker AK, Murthi SB, Herr

DL, Stein DM. Practical considerations for the dosing and adjustment of continuous renal replacement therapy in the intensive care unit. *J Crit Care.* 2013 Dec;28(6):1019-1026. doi:pii: S0883-9441(13)00143-3. Epub 2013 Jul 24. PubMed PMID: 23890937.

16. Greer SE, **McCunn M**:

High-frequency oscillatory ventilation. *Curr Probl Surg.* 2013 Oct;50(10):471-478. doi: 10.1067/j.cpsurg.2013.08.011. PMID: 24156845.

17. **Grissom TE**, **Sappenfield J**, **Galvagno SM Jr**, Cherry SV,

Chang YC, **Hu PF**. Performance assessment in airway management training for nonanesthesiology trainees: an analysis of 4,282 airway procedures performed at a level-1 trauma center. *Anesthesiology.* 2014 Jan;120(1):185-195. doi: 10.1097/ALN.0000000000000064. PMID: 24201030.

18. **Hong CM**, **Galvagno SM**.

Preoperative assessment and management of patients with chronic pulmonary disease. *Med Clin North Am.* 2013 Nov;97(6):1095-1107. doi: 10.1016/j.mcna.2013.06.001. Epub 2013 Aug 27. PMID: 24182721.

19. **Hong CM**, Tosun C, Kurland DB, Gerzanich V, **Schreibman D**, Simard

JM. Biomarkers as outcome predictors in subarachnoid hemorrhage - a systematic review. *Biomarkers.* 2014 Mar;19(2):95-108. doi: 10.3109/1354750X.2014.881418. Epub 2014 Feb 5. PMID: 24499240.

20. **Hu P**, **Galvagno SM**, Sen A, Dutton RP, Handley C, Shackelford S,

Pasley JD, Mackenzie CF, and the ONPOINT Study Group. Identification of dynamic prehospital changes with continuous vital signs acquisition. *Air Med J.* 2014 Jan-Feb;33(1):27-33. doi: 10.1016/j.amj.2013.09.003. PMID: 2437374.

21. **Jassal V**, **Bigeleisen PE**.

Airway obstruction mimicking superior vena cava syndrome in a patient undergoing dialysis graft revision after ultrasound guided supraclavicular nerve block. *Anesthesia and Analgesia Case Reports* 2014; 2(8): 96-98.

22. **Kabadi SV**, **Faden AI**.

Review: Neuroprotective strategies for traumatic brain injury: improving clinical translation. *Int J Mol Sci.* 2014 Jan 17;15(1):1216-1236. doi: 10.3390/ijms15011216. PMID: 24445258.

23. **Kabadi SV**, **Loane DJ**, **Faden AI**.

Traumatic brain injury: delayed intervention may still provide neuroprotection. Research Overview for “The Challenge,” reports on the future of research by Brain Injury Association of America (BIAA). 2013; 7(3): 15.

24. **Kabadi SV**, **Stoica BA**, **Loane DJ**, Luo T, **Faden AI**.

CR8, a novel inhibitor of CDK, limits microglial activation, astrocytosis, neuronal loss, and neurologic dysfunction after experimental traumatic brain injury *J Cereb Blood Flow Metab.* 2014 Mar;34(3):502-513. doi:10.1038/jcbfm.2013.228. Epub 2014 Jan 8. PMID: 24398934.

25. Kalakonda S, Nallar SC, **Jaber S**, Keay SK, Rorke E, Munivenkatappa

R, Lindner DJ, **Fiskum GM**, Kalvakolanu DV. Monoallelic loss of tumor suppressor GRIM-19 promotes tumorigenesis in mice. *Proc Natl Acad Sci USA.* 2013 Nov 5;110(45):E4213-4222. doi: 10.1073/pnas.1303760110. Epub 2013 Oct 21. PMID: 4145455.

26. **Kaplowitz J**, **Bigeleisen P**.

A new bi plane ultrasound probe for real-time visualization and cannulation of the internal jugular vein. *Case Rep Anesthesiol.* 2014;2014:349797. doi: 10.1155/2014/349797. Epub 2014 Mar 13. PMID: 24715987.

27. **Kristian T**, **Hu B**.

Guidelines for using mouse global cerebral ischemia models. *Transl Stroke Res.* 2013 Jun;4(3):343-350. doi: 10.1007/s12975-012-0236-z. Epub 2012 Dec 14. PMID: 24323301.

28. Laird MD, Clerc P, **Polster BM**, **Fiskum G**.

Augmentation of normal and glutamate-impaired neuronal respiratory capacity by exogenous alternative biofuels. *Transl Stroke Res.* 2013 Dec;4(6):643-651. doi: 10.1007/s12975-013-0275-0. Epub 2013 Aug 10. PMID: 24323418.

29. Lane-Fall MB, Speck RM, Shea JA, Ibrahim SA, **McCunn M**, Bosk

CL. Are attendings different? Intensivists explain their handoff ideals, perceptions and practices. *Ann Am Thorac Soc.* 2014 Mar;11(3):360-366. doi: 10.1513/AnnalsATS.201306-151OC. PMID: 24328937.

30. Lee HJ, **Wu J**, Chung J, Wrathall JR.

SOX2 expression is up-regulated in adult spinal cord after contusion injury in both glial progenitors and ependymal stem cells. *J Neurosci Res.* 2013 Feb;91(2):196-210. doi: 10.1002/jnr.23151. Epub 2012 Nov 21. PMID: 23169458.

31. Lissauer ME, **Galvagno SM**, **Rock P**, Narayan M, Shah P,

Spencer H, **Hong D**, Diaz JJ. Increased intensive care unit resource needs for an academic emergency general surgery service. *Crit Care Med.* 2014 Apr;42(4):910-917. doi: 10.1097/CCM.0000000000000099. Epub 2013 Dec 11. PMID: 24335442.

32. **Loane DJ**, **Kumar A**, **Stoica BA**, Cabatbat R, **Faden AI**.

Progressive neurodegeneration after experimental brain trauma: association with chronic microglial activation. *J Neuropathol Exp Neurol.* 2014 73(1):14-29. doi: 10.1097/NEN.0000000000000021. PMID: 24335533.

33. Luo T, Park Y, Sun X, Liu C, **Hu B**.

Protein misfolding, aggregation, and autophagy after brain ischemia. *Transl Stroke Res.* 2013 Dec;4(6):581-588. doi: 10.1007/s12975-013-0299-5. Epub 2013 Nov 9. PMID: 24323413.

34. Luo T, **Wu J**, **Kabadi SV**, Sabirzhanov B, Guanciale K, Hanscom M,

Faden J, Cardiff K, Bengson CJ, **Faden AI**. Propofol limits microglial activation after experimental brain trauma through inhibition of nicotinamide adenine dinucleotide phosphate oxidase. *Anesthesiology.* 2013 Dec;119(6):1370-1388. doi: 10.1097/ALN.0000000000000020. PMID: 24121215.

35. **Mackenzie CF**, Wang Y, **Hu P**, Chen SY, Chen HH, Hagegeorge G,

Stansbury LG, Shackelford S, and the ONPOINT Study Group. Automated prediction of early blood transfusion in trauma patients. *J Trauma Acute Care Surg.* 2014 Jun;76(6):1379-1385. doi: 10.1097/TA.0000000000000235. PMID: 24854304.

36. **Mazzeffi M**, Fischer S. Transesophageal echocardiographic guided placement of a right internal jugular multi-orificed dual lumen veno-venous ECMO catheter. *J Cardiothorac Vasc Anesth*. 2013 Aug;27(4):e46-47. doi: 10.1053/j.jvca.2013.02.032. PMID: 23849533.

37. **Mazzeffi M, Rock P**. Should we prone cardiac surgery patients with acute respiratory distress syndrome? *Ann Thorac Surg*. 2014 Mar;97(3):1122. doi: 10.1016/j.athoracsur.2013.07.109. PMID: 24580944.

38. **Mazzeffi M**, Szlam F, Jakubowski JA, Tanaka KA, Sugidachi A, Levy JH. In vitro effects of recombinant activated factor VII on thrombin generation and coagulation following inhibition of platelet procoagulant activities with prasugrel. *Thromb Res*. 2013 Jul;132(1):106-111. doi: 10.1016/j.thromres.2013.04.007. Epub 2013 May 9. PMID: 23664633.

39. **Mazzeffi M**, Zivot J, Buchman T, Halkos M. In-hospital mortality after cardiac surgery: patient characteristics, timing, and association with postoperative length of intensive care unit and hospital stay. *Ann Thorac Surg*. 2014 Apr;97(4):1220-1225. pii: S0003-4975(13)02362-X. doi: 10.1016/j.athoracsur.2013.10.040. Epub 2013 Dec 19. PMID: 24360878.

40. Millin MG, **Galvagno SM**, Khandker SR, Malki A, Bulger EM. Withholding and termination of resuscitation of adult cardiopulmonary arrest secondary to trauma – resource document to the joint NAEMSP, ACS-COT position statements. *J Trauma Acute Care Surg*. 2013 Sep;75(3): 459-467. doi: 10.1097/TA.0b013e31829cfaea. PMID: 24089117.

41. National Heart, Lung, and Blood Institute ARDS Clinical Trials Network, Truwit, J, Bernard, G, Steingrub, J, Matthay, M, Liu, K, Albertson, T, Brower, R, Shanholtz, C, **Rock, P**, Douglas I, deBoisblanc B, Hough C., Hite R, Thompson B (Writing Committee). Rosuvastatin for sepsis-associated acute respiratory distress syndrome. *N Engl J Med*. 2014 Jun 5;370(23):2191-2200. doi: 10.1056/NEJMoa1401520. Epub 2014 May 18. PMID: 24835849.

42. **Njoku MJ**. Patients with chronic endocrine disease. *Med Clin North Am*. 2013 Nov;97(6):1123-1137. doi: 10.1016/j.mcna.2013.07.001. Epub 2013 Aug 31. PMID: 24182723.

43. **Odonkor PN, Grigore AM**. Patients with ischemic heart disease. *Med Clin North Am*. 2013 Nov;97(6):1033-1050. doi: 10.1016/j.mcna.2013.05.006. Epub 2013 Aug 9. PMID: 24182718.

44. O'Toole RV, **Sikorski R**, Castillo RC, Paryavi E, Stall A. Perioperative supplemental oxygen to reduce surgical site infection after orthopaedic fracture surgery: Too much potential to not investigate? *J Trauma Acute Care Surg* 2014 May;76(5):1332-1333. doi: 10.1097/TA.000000000000207. PMID: 24747471.

45. Owens K, Park JH, **Kristian T**. Utilizing commercial microwave for rapid and effective immunostaining. *J Neurosci Methods*. 2013 Sep 30;219(1):20-26. doi: 10.1016/j.jneumeth.2013.07.002. Epub 2013 Jul 12. PMID: 23856210.

46. Owens K, Park JH, Schuh R, **Kristian T**. Mitochondrial dysfunction and NAD(+) metabolism alterations in the patyophysiology of acute brain injury. *Transl Stroke Res*. 2013 Dec;4(6):618-634. doi: 10.1007/s12975-013-0278-x. Epub 2013 Aug 10. PMID: 24323416.

47. Park Y, Luo T, Zhang F, Liu C, Bramlett HM, Dalton Dietrich W, **Hu B**. Downregulation of Src-kinase and glutamate-receptor phosphorylation after traumatic brain injury. *J Cereb Blood Flow Metab*. 2013 Oct;33(10):1642-1649. doi: 10.1038/jcbfm.2013.121. Epub 2013 Jul 10. PubMed PMID: 23838828.

48. Pieczynski L, Laudanski K, Speck RM, **McCunn M**: Analysis of field reports from anesthesia volunteers in low-to middle-income countries. *Med Educ*. 2013 Oct;47(10):1029-1036. doi: 10.1111/medu.122622013. PMID: 24016173.

49. Py BF, Desai BN, Jin M, Penumaka A, Zhu H, Kober M, Dietrich A, **Lipinski M**, Henry T, Clapham DE, Yuan J. Caspase-11 controls interleukin-1B release through degradation of TRPC1. *Cell Rep*. 2014 Mar 27; 6(6):1122-1128. doi: 10.1016/j.celrep.2014.02.015. Epub 2014 Mar 13. PMID: 24630989.

50. Robertson CL, Saraswati M, Scafidi S, **Fiskum G**, Casey P, McKenna MC. Glucose metabolism in an immature rat model of pediatric traumatic brain injury. *J Neurotrauma*. 2013 Dec 15;30(24):2066-2072. doi: 10.1089/neu.2013.3007. Epub 2013 Dec 3. PMID: 24032394.

51. Rock KC, Bakowitz M, **McCunn M**. Advances in the management of the critically injured patient in the operating room. *Anesthesiol Clin*. 2013 Mar;31(1): 67-83. doi: 10.1016/j.anclin.2012.11.001. Epub 2012 Dec 14. PMID: 23351535.

52. **Roman P**, Devore AD, Welsby IJ. Techniques and applications of perioperative therapeutic plasma exchange. *Curr Opin Anaesthesiol*. 2014 Feb;27(1):57-64. doi: 10.1097/ACO.000000000000037. PMID:24335592.

53. **Sabirzhanov B, Zhao Z, Stoica BA, Loane DJ, Wu J**, Borroto C, Dorsey SG, **Faden AI**. Down-regulation of miR-23a and miR-27a following experimental traumatic brain injury induces neuronal cell death through activation of proapoptotic Bcl-2 proteins. *J Neurosci*. 2014 Jul 23;34(30):10055-10071. doi: 10.1523/JNEUROSCI.1260-14.2014. PMID: 25057207.

54. Sabirzhanova I, Liu C, Zhao J, Bramlett H, Dietrich WD, **Hu B**. Changes in the GEF-H1 pathways after traumatic brain injury. *J Neurotrauma*. 2013 Aug 15;30(16):1449-1456. doi: 10.1089/neu.2012.2673. Epub 2013 Jul 30. PubMed PMID: 23611588.

55. **Sappenfield J, Galvagno S, Blenko J**. Initial treatment priorities for the physiological optimization of patients with severe traumatic brain injury. *OA Emergency Medicine*. 2013 Aug 01; 1(1):2.

56. **Sappenfield JW, Martz DG Jr**. Patients with disease of brain, cerebral vasculature, and spine. *Med Clin North Am*. 2013 Nov;97(6):993-1013. doi: 10.1016/j.mcna.2013.05.007. Epub 2013 Jul 5. PMID: 24182716.

57. Shackelford S, Colton K, Hell JR, Anazodo A, Dubose JJ, Stansbury L, **Galvagno SM, Mackenzie CF**. Early identification of uncontrolled hemorrhage after trauma: current status and future direction. *J Trauma Acute Care Surg*. 2014 Sep;77(3 Suppl 2):S222-S227. doi: 10.1097/TA.000000000000198. Epub 2014 April 24. PMID: 24770559.

58. **Sikorski R, Koerner A, Fouché Y, Galvagno SM**. Choice of general anesthetics for trauma patients. *Curr Anesthesiol Rep*. 2014 June;4(3): 225-232.

59. Simard JM, Aldrich EF, **Schreibman D**, James RF, Polifka A, Beaty N. Low-dose intravenous heparin infusion in patients with aneurysmal subarachnoid hemorrhage - a preliminary assessment. *Neurosurg*. 2013 Dec; 119(6):1611-1619. doi: 10.3171/2013.8.JNS1337. Epub 2013 Sep 13. PMID: 24032706.

60. **Stoica BA, Loane DJ**, Zhao Z, **Kabadi SV**, Hanscom M, Byrnes KR, **Faden AI**. PARP-1 inhibition attenuates neuronal loss, microglia activation and neurological deficits after traumatic brain injury. *J Neurotrauma*. 2014 Apr 15;31(8):758-772. doi: 10.1089/neu.2013.3194. Epub 2014 Jan 29. PMID: 24476502.

61. Stone ME, **Mazzeffi M**, Derham J, Korshin A. Current management of von Willebrand disease and von Willebrand syndrome. *Curr Opin Anaesthesiol*. 2014 Jun;27(3):353-358. doi: 10.1097/ACO.000000000000083. PMID: 24709665.

62. Sun X, Rai R, Deschamps JR, MacKerell AD, **Faden AI, Xue F**. Boc-protected 1-(3-oxocycloalkyl)ureas via a one-step Curtius rearrangement: mechanism and scope. *Tetrahedron Lett*. 2014 Jan 22;55(4):842-844. PMID: 24563555.

63. Tobin JM, Grabinsky A, **McCunn M**, Pittet JF, Smith CE, Varon A: A checklist for trauma and emergency anesthesia. *Anesth Analg*. 2013 Nov; 117(5):1178-1184. doi: 10.1213/ANE.0b013e3182a44d3e. PMID: 24108256.

64. **Turner S, Galey J**. Super morbid obesity and pregnancy. *Current Reviews in Clinical Anesthesia*. 2014.

65. Winston CN, Chellappa D, Wilkins T, Barton DJ, Washington PM, **Loane DJ**, Zapple DN, Burns MP. Controlled cortical impact results in extensive loss of dendritic spines that is not associated with injury-induced amyloid beta accumulation. *J Neurotrauma*. 2013 Dec1;30(23):1966-1972. doi: 10.1089/neu.2013.2960. Epub 2013 Oct 12. PMID: 23879560.

66. **Wu J**, Raver C, Piao C, Keller A, **Faden AI**. Cell cycle activation contributes to increased neuronal activity in the posterior thalamic nucleus and associated chronic hyperesthesia after rat spinal cord contusion. *Neurotherapeutics*. 2013 July; 10(3):520-538. doi:10.1007/s13311-013-0198-1. PMID: 23775067.

67. **Wu J**, Renn CL, **Faden AI**, Dorsey SG. TrkB.T1 contributes to neuropathic pain following spinal cord injury through regulation of cell cycle pathways. *J Neurosci*. 2013 Jul 24;33(30):12447-12463. doi:10.1523/JNEUROSCI.0846-13.2013. PMID: 23884949.

68. **Wu J, Stoica B**, Luo T, **Sabirzhanov B, Zhao Z**, Guanciale K, Nayer SK, Foss CA, Pomper MG, **Faden AI**. Isolated spinal cord contusion in rats induces chronic brain neuroinflammation, neurodegeneration, and cognitive impairment: involvement of cell cycle activation. *Cell Cycle*. Epub ahead of print 2014 Jun 25;13(15). PMID: 24964094.

69. **Xue F, Stoica BA**, Hanscom M, **Kabadi SV, Faden AI**. Positive allosteric modulators (PAMs) of metabotropic glutamate receptor 5 (mGluR5) attenuate microglial activation. *CNS Neurol Disord Drug Targets*. 2014;13(4):558-566. Epub 2013 Oct 28. PMID: 24168364.

70. Yeatts DJ, Dutton RP, **Hu PF**, Chang YW, Brown CH, Chen H, **Grissom TE**, Kufera JA, Scalea TM. Effect of video laryngoscopy on trauma patient survival: a randomized controlled trial. *J Trauma Acute Care Surg*. 2013 Aug;75(2):212-219. doi:10.1097/TA.0b013e318293103d. PMID: 23823612.

71. **Zhao Z, Faden AI, Loane DJ, Lipinski M**, Sabirzhanov S, **Stoica B**. Neuroprotective effects of geranylgeranylacetone in experimental traumatic brain injury. *J Cereb Blood Flow Metab*. 2013 Dec;33(12):1897-1908. doi: 10.1038/jcbfm.2013.144. Epub 2013 Aug 14. PMID: 23942364.

Teaching Trainees to Think on Their Feet

Continued from page 6

on your feet. This is why we use simulation in the University of Maryland Department of Anesthesiology: to teach doctors how to respond quickly and calmly in challenging situations,” says Dr. Bernstein. She talked with the flight attendants and has spoken with Southwest Airlines about ways that simulation could be used to train flight crews to respond to such emergencies. “There are skill sets they can learn that we teach people here: leadership, situational awareness, and communication,” she adds. “It’s not a medical thing — it’s a teamwork thing.”

That kind of teamwork is exactly what Dr. Bernstein and her colleagues encourage among trainees in the Maryland Advanced Simulation, Training, Research and Innovation Center (MASTRI). MASTRI was initially a collaborative effort with the United States Air Force Center for Sustainment of Trauma and Readiness Skills (CSTARS) training program — under the leadership of Colonel Thomas Grissom, M.D. — and now serves as the primary institutional simulation center for the Department. The Simulation Program recently achieved certification from the American Society of Anesthesiologists and today is the only active simulation site for civilian anesthesiologists in Maryland.

Since its creation in 2006, many faculty members have become involved in the Simulation Program. Recent educational opportunities include training in pediatric anesthesia techniques (intravenous and intraosseous access, and caudal blocks), management of patients undergoing carotid endarterectomy, the management of obstetric trauma, and the loss of an airway in the prone position. Dr. Bernstein and her team developed a Maintenance of Certification in Anesthesiology (MOCA) course. Simulation faculty also conduct and participate in research, including a study assessing competence in combat airway management.

“Every week in Simulation, we test and strengthen the skill sets of our residents by putting them in unique surroundings — situations that they are not familiar with — which require an ability to adapt,” concludes Dr. Bernstein. “These simulations intentionally place our trainees in situations where the equipment they have to work with is different from what they encounter at work, where the surroundings are unfamiliar, and where they may not have the support from others they are accustomed to. I believe, however, that with their training and the optimal use of the resources provided, they learn to make important decisions that will result in excellent patient care and successful outcomes.”

Ready, Waiting, and Eager to Help. Continued from page 35

In the event of a disaster, emergency medical response teams partner with federal, state, and local agencies to augment the healthcare infrastructure until local resources are sufficient to reassume patient care. They are composed of emergency medical technicians, paramedics, pharmacists, physicians, physician assistants, nurses, and advanced practice nurses, including CRNAs.

After Superstorm Sandy inflicted its rage on the northeastern United States in October 2012, Mr. Batoon was called — with only 12 hours notice — as part of the Maryland-1 Disaster Medical Assistance Team (MD-1 DMAT) to provide care for one week at a Red Cross shelter in Nassau County, Long Island. Many of the approximately 1,000 shelter residents had been displaced from their homes or nursing homes. Most of the care rendered was basic, but the team treated and triaged people with respiratory distress, chest pain, nosebleeds, pressure sores, and drug overdoses. Mr. Batoon also dispensed medications for people who ran out of their prescription drugs, and often lent an ear to people who needed to vent their frustrations. “During my time at the shelter, ‘verbal Valium’ became the treatment of choice,” he recalls. “I listened to and comforted as many people as I could. Wherever they needed me, I filled a role.”

He is now a member of the International Medical Surgical Response Team (IMSuRT), a National Disaster Medical System rapidly deployable team of medical specialists who provide surgical and critical care during a disaster or public health emergency. Mr. Batoon is on call for one month every three months, his gear packed and ready so he can leave within hours of notice of a deployment.

As someone who comes from a military family, he understands the value of giving back. “This is a way for me to fulfill a duty for my country, to be available in case my skills are needed,” he says. “It’s one of the best things I’ve ever done.”

An Inspired Friendship. Continued from page 35

at Shock Trauma. Adam pointed his finger at Dr. Sikorski and said, “That voice giving me the Flyers scores.”

In late 2013, Adam returned to the University of Maryland Medical Center for a challenging but successful abdominal reconstruction, which restored his core strength. He has since returned to Walter Reed to continue his rehabilitation and is now using prosthetics to relearn how to walk. (You can follow Adam’s progress on his Facebook page: Adam Keys - “One Step Forward.”)

A Room with a View. Continued from page 33



Carole Messersmith

The anesthesiologist also uses multi-modal therapy to give the patient analgesics during and sometimes before the operation so there is no gap between the block wearing off and the pain medications kicking in.

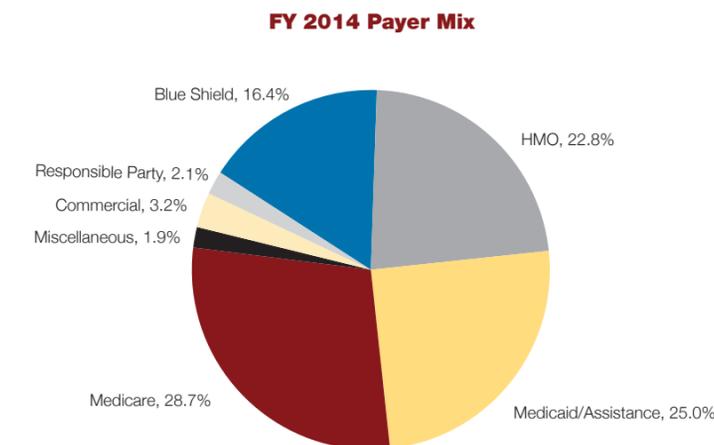
Carole Messersmith, 77, had a similar experience when she came into Shock Trauma for an infection in an elbow containing surgical hardware. Kristin Weatherly, CRNA, the nurse anesthetist on the case, suggested a nerve block followed by a live online stream of a popular sitcom. After a peripheral nerve block by Dr. Samet, the surgeons cleaned out the infected joint while Carole enjoyed the show on a large operating room monitor. “I didn’t have any pain whatsoever. I felt very calm and pleased to be aware of what was going on,” she maintains.

Dr. Samet predicts an increase in the use of television or movies in the OR for patients who undergo regional anesthetics for their procedures. “We don’t offer it to everyone yet, but I could see us eventually making it available more often,” he concludes. “It takes a little effort to set it up, but for the right patient, it can help avoid the need for sedation or general anesthesia. And that’s an incredible advance.”

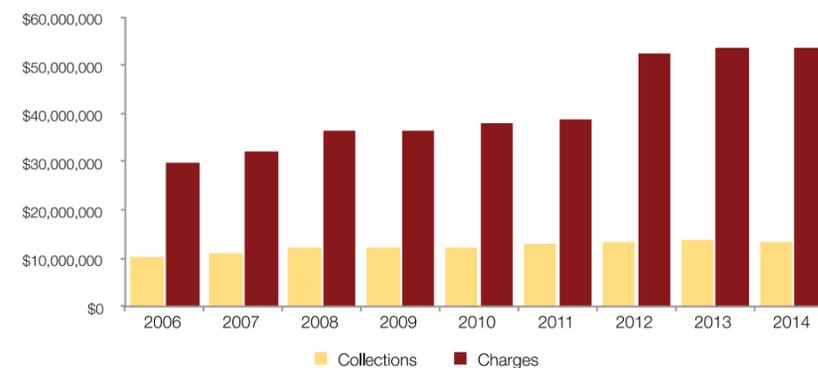
“You can never give up. You have to believe,” says Adam. “I’m living for the guys who didn’t come back. I want to help other people who have had similar challenges in their lives.”

“Adam keeps on fighting,” adds Dr. Sikorski. “Even though his battle has changed, he continues to fight courageously. He continues to inspire me to this day.”

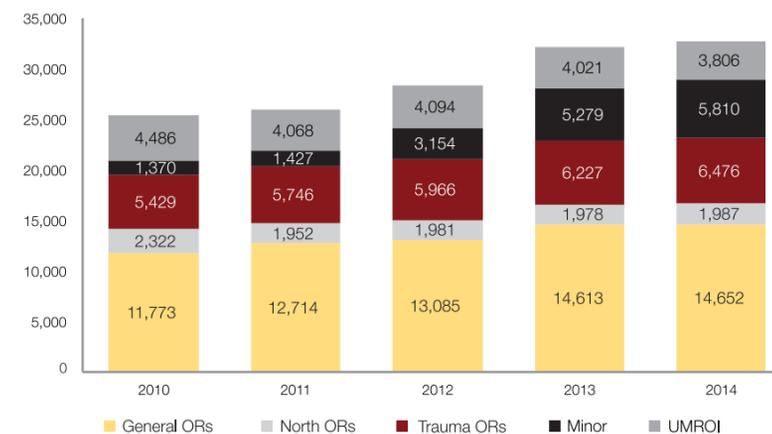
END-OF-YEAR SUMMARY



Fiscal Year Charges and Collections



Total Anesthesia Cases





UNIVERSITY *of* MARYLAND
SCHOOL OF MEDICINE

Living Quality, Safety and Excellence

Department of Anesthesiology
University of Maryland Medical Center
22 South Greene Street, Room S11C00
Baltimore, Maryland 21201
Phone: (410) 328-6120
Fax: (410) 328-5531
Email: info@anes.umm.edu

Credits:

*Project Manager: Pamela Earle-Jackson, UMSOM Department of Anesthesiology
Copywriting: Rosie Foster, Foster Medical Editorial, Inc. and Dave Beaudouin, db+c
Main Photography and Cover Design: Juan Faidley, Nuajé Visions Photography
Additional Photography: Hugh Simmons Photography; Coos Hamburger
Design: Shoot the Moon, Inc.*