



[ANNUAL REPORT 2018]

NAVIGATING THE CONTINUUM



EMORY
UNIVERSITY
SCHOOL OF
MEDICINE

Department of Surgery

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FROM THE CHAIR



The surgeon-to-patient relationship begins well before surgery and can continue long after. At the first consultation, meeting a prospective patient is like greeting a new neighbor, as we balance seriousness with friendly dialogue to establish common ground. Assisted by our valuable staff, we then guide the patient through the steps that precede surgery, which can equal more time than that spent

on the actual procedure. Follow-ups become like visits from old friends, and even when physical proximity is no longer necessary or becomes problematic, telemedicine lets us stay in touch with patients for as long as we and they wish.

In the past, surgical research primarily focused on new techniques, instruments, and the basic science that could contribute to advancing these tools. Now, studies beneficial to surgery also involve such areas as health services, educational and training methods, quality and safety, and wellness. As we assimilate a deeper understanding of how these factors can affect patient management, I suspect additional frames of reference and perspectives will enter the surgical research arena.

This year, I wrote more letters of recommendation for medical students who want to pursue surgery than ever before. Fresh from our surgical clerkship and inspired by their first taste of the wide-ranging experiences a surgical residency can offer, these students hope to earn the privilege of becoming signatories in the doctor-patient contract. As they complete their residencies, many of them will undertake specialty fellowships before they begin professional practice, exemplifying that learning to be the best surgeon possible is an ongoing process that virtually never ends.

These thoughts underscore that the core acts of our mission do not exist in isolation. Instead, they are signposts that attract the ongoing and intersecting cycle of events, endeavors, and people that influence, motivate, and refine our profession and purpose, and I am thankful to be involved with all of you in such an ever-evolving enterprise.

John F. Sweeney, MD

Joseph Brown Whitehead Professor of Surgery and Chair
Department of Surgery
Emory University School of Medicine



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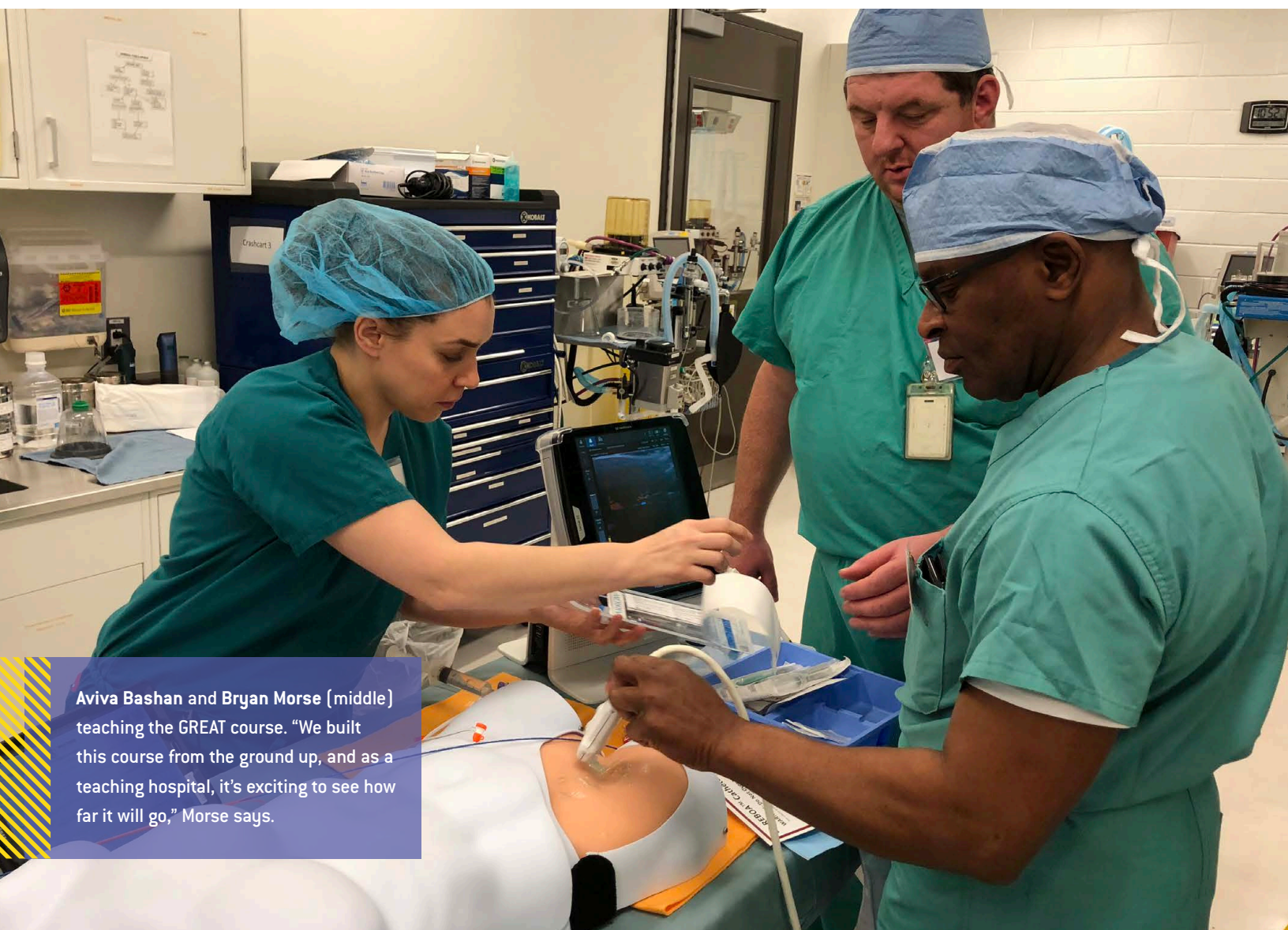
[PATIENT CARE]

AHEAD OF THE CURVE

Intended as a temporary measure to control heavy bleeding before critically injured patients can get into an operating room, resuscitative endovascular balloon occlusion of the aorta (REBOA) is a minimally invasive technique in which surgeons place a catheter into the femoral artery, maneuver it to the aorta, and inflate a balloon at its tip to stop bleeding. Despite the increased use of REBOA in trauma centers over the past several years, the specialized training required to perform the procedure is not uniformly available.

"REBOA is a perfect example of the type of modern trauma technology that should be practiced, evaluated, and taught at Grady Memorial Hospital," says Bryan Morse, an Emory surgeon-researcher-educator at Grady's Level 1 trauma/surgical critical service and director of trauma research at the facility. "We are continually pursuing innovative methods of treating our patients."

Two years ago, Morse and Morehouse School of Medicine surgeons K. Aviva Bashan and Jonathan Nguyen performed the first REBOA procedure in the state of Georgia at Grady on a patient who had been severely injured in a motorcycle accident. Inspired by the positive outcome, the three colleagues worked together to establish Georgia's first endovascular surgical skills



Aviva Bashan and Bryan Morse (middle) teaching the GREAT course. "We built this course from the ground up, and as a teaching hospital, it's exciting to see how far it will go," Morse says.



In addition to his clinical role as a liver transplant surgeon, William Kitchens is an active investigator in the areas of transplant immunology and xenotransplantation and has received several awards for the quality of his research, including being the first Emory surgeon to be awarded a research fellowship from the American Surgical Association.

REVISE TO SAVE LIVES

In early 2018, close to one year after the Emory Transplant Center (ETC) transplanted its first HIV-positive donor kidney into an HIV-positive recipient, the ETC performed its first liver transplant from an HIV-positive deceased donor to an HIV-positive recipient. The successful procedure was done by a team led by Emory transplant surgeon William Kitchens, and was the first of its kind in the state of Georgia and one of the first in the Southeast.

Along with 21 other transplant centers, the ETC is participating in the HOPE in Action clinical trial, a nationwide

course dedicated to teaching REBOA to other surgeons across the country. Called Grady Rescue and Endovascular Approaches to Trauma (GREAT), the six-hour class comprises didactic material and simulation training using the latest catheter technology to demonstrate technical aspects of the procedure on mannequins and cadavers.

"For the first GREAT course, we taught Emory and Morehouse surgical fellows, who are now performing REBOA at Grady and will take that ability with them when they leave," Morse says.

To contribute further to confirming REBOA's utility, Morse is the primary site investigator at Grady for a multicenter, Department of Defense-funded observational study that collected detailed prospective information on the use of the Prytime ER-REBOA Catheter and other emergent truncal hemorrhage control interventions such as open thoracotomy and laparotomy, and then analyzed and compared the types of outcomes and complications associated with each approach. The study team is now qualifying the data.

"Grady's position in the city and the state demands that we be leaders in research, treatment, and training," says Morse. "It is entirely logical that we be the physicians and educators to assist in making REBOA more commonly available and reliable in the state and beyond."

prospective pilot study to evaluate the safety of HIV-positive deceased donor solid organ transplants (kidney and liver) in HIV-positive recipients. The trial is an outgrowth of the HOPE Act, which became effective in November 2015 and authorized clinical trials involving HIV-positive donors and HIV-positive transplant recipients. Importantly, the organs used in these trials are never transplanted into HIV-negative recipients.

"Because of improved anti-retroviral regimens and other advances in their care, patients with HIV are living much longer and are known to have excellent outcomes after transplantation," says Kitchens. "By using organs from HIV-positive donors that were previously discarded, the HOPE Act significantly shortens the wait time for HIV-positive patients in need of a transplant."

Stable HIV-infected adults with end-stage kidney or liver disease who meet study-specific HIV criteria for organ transplantation will be offered enrollment in the study at Emory. Study participants will be followed and evaluated for four years after their transplant.

"We commend the bravery of our recipient who participated in this trial and also extend our deepest gratitude to the donor and the donor's family for providing this gift of life," says Kitchens. "More than 7,000 Americans die annually while waiting for an organ transplant, highlighting the critical need to expand the donor organ supply. The HOPE Act makes an important contribution to

solving this medical crisis, as previously organs from HIV-positive donors were discarded, despite the fact that they were often well-functioning and capable of saving lives. However, we encourage everyone—both those living with HIV and those who are not—to register as an organ donor, as a critical need remains.”

REACHING THE UPPER ECHELON

The Emory Cardiothoracic Surgery services located at Emory University Hospital, Emory University Hospital Midtown, and Emory Saint Joseph's Hospital earned a distinguished three-star rating from the Society of Thoracic Surgeons (STS) for patient care and outcomes in isolated coronary artery bypass grafting procedures (CABG), placing Emory among the elite programs for heart bypass surgery in the United States and Canada. This ranking was derived from analysis of data submitted to the STS Adult Cardiac Surgery Database (ACSD), the coverage period being July 2017 through June 2018.

Historically, less than 10% of STS participant programs receive three stars for isolated CABG surgery, with this most recent ranking recognizing approximately 60 out of 1,100 community and academic heart hospitals and institutions. The ratings use a composite of morbidity and mortality outcomes to score hospital systems across the U.S. that perform CABG and other heart operations.

“Increasingly, quality data is driving practice patterns and even reimbursements,” says Michael Halkos, chief of the Emory Division of Cardiothoracic Surgery. “Achieving the highest quality outcomes is often challenging at tertiary and quaternary academic

medical centers like Emory, particularly since we are referred a disproportionately more complex patient population, and requires great diligence by surgeons and surgical teams.”

The STS National Database was established in 1989 as an initiative for quality improvement and patient safety among cardiothoracic surgeons across the U.S. and Canada, and its star rating system is one of the most highly regarded overall measures of quality in health care. The STS ACSD houses approximately 6.5 million surgical records and gathers information from more than 3,700 participating physicians, including surgeons and anesthesiologists from more than 90% of groups across the nation that perform heart surgery. STS public reporting online enables participants to voluntarily report their heart surgery scores and star ratings to each other and the public.

“Attaining this rating was a goal of our clinical database and outcomes manager, Iman Aziz, and all of our teams at the three hospitals worked with her and contributed to making it happen,” says Halkos. “It was the result of a tremendous collaborative effort among our heart surgeons, advanced practice providers, nursing and OR teams, and anesthesia and critical care teams as well as other disciplines, including neurology and respiratory therapy.”

REINFORCING THE METHOD

Charles Staley, chief of the Division of Surgical Oncology, started performing hyperthermic intraperitoneal chemoperfusion (HIPEC) at Emory University Hospital in 2009, and Maria Russell began doing the procedure at Emory University Hospital Midtown when she



Jeffrey Miller (right), surgical director of advanced heart failure, heart transplant, and mechanical circulatory support at Emory Saint Joseph's Hospital, regularly performs CABG at Saint Joseph's.



Since Joshua Winer joined Charles Staley and Maria Russell in providing hyperthermic intraperitoneal chemoperfusion (HIPEC) at Emory, the program's morbidity and mortality rates have either been lower than or kept pace with national levels.

joined Emory in 2012. They were the only surgeons performing the resource-intensive procedure at Emory and two of the few in Georgia, and when Saint Joseph's Hospital joined Emory that same year, Staley wanted to find another.

HIPEC is used to treat cancers of the appendix, colon, stomach, ovaries, and lining of the abdominal cavity and is the antithesis of get-in-and-out-as-fast-as-you-can. The procedure typically takes longer than eight hours, begins with the painstaking removal of all visible tumors, and proceeds with the delivery of a highly concentrated, heated chemotherapy treatment directly to the abdomen to kill any remaining, microscopic cancer cells.

"The longest HIPEC I've performed took more than 22 hours," says Joshua Winer, who became the additional surgeon Staley was looking for. "In addition to needing extreme patience, you have to be able to navigate all of the abdomen's nooks and crannies so you don't miss any of the metastatic implants."

The common link between Staley and Winer was the University of Pittsburgh. Staley had done his general surgery residency there, and knew and contacted David Bartlett, Pitt's vice chair for surgical oncology services and an early HIPEC advocate. Bartlett recommended Winer, his former mentee.

"When I was a resident at Brigham, David Sugarbaker, the brother of Paul Sugarbaker, the father of modern HIPEC, regularly performed intra-thoracic heated chemotherapy for

mesothelioma patients, which was considered radical back then," says Winer. "This was not a procedure that was widely accepted in the standard surgical oncology world, but I also wanted to offer it to my patients. An important factor in choosing to do my fellowship at Pitt was because Dr. Bartlett's fellows often did two-to-three HIPECs a week while on service."

When he arrived at Emory in 2013, Winer added a HIPEC service to Emory Saint Joseph's to treat peritoneal surface malignancies. Now, Winer, Staley, and Russell perform approximately 100 HIPECs per year.

The next step for HIPEC's expansion is application to other disciplines. Depending on the extent of the particular cancer, urologists already assist with bladder reconstruction, thoracic surgeons help when the diaphragm is involved, and plastic surgeons contribute to abdominal wall repair. Winer's future plans for collaboration include working with Emory gynecologic oncology practitioner Lesley Conrad to treat ovarian cancer.

FACING THE FACTS

When Emory University Hospital (EUH), Michigan Medicine Hospital, and Kentucky's Albert B. Chandler Hospital participated in a pilot study conducted by the U.S. Department of Veterans Affairs in 1999, they were the first private hospitals in the country to evaluate the incorporation of continuous quality improvement into their practices. The VA had observed improved operative outcomes after implementing the first National Surgical Quality Improvement Program (NSQIP) at its facilities, and wanted to determine if NSQIP could be useful outside the VA sector. Within a year, the hospitals found that NSQIP's data collection and transmission methods and predictive and risk-adjustment models catalyzed measurable benefits.

Shortly thereafter, the American College of Surgeons (ACS) launched its NSQIP pilot and began enrolling additional hospitals in 2004. ACS NSQIP provided its members with sophisticated resources and tools to facilitate dependable care, offered abstracted

analyses of hospital data transcribed into discrete categories, and distributed reliable benchmarking reports based on risk-adjusted 30-day outcomes to its participant institutions.

EUH joined ACS NSQIP in 2009 under the direction of then-chief of quality John Sweeney, now chair of Emory Surgery. General and endocrine surgeon Joe Sharma became the steward of the partnership, and oversaw the collection of patient data from EUH's general, plastics, oncology, colorectal, endocrine, and critical care services, and the submission of 30-day outcomes and other categories from this data to NSQIP. Today, EUH's patient database contains more than 13,000 cases and remains an essential source for the risk-adjusted and benchmarked outcomes that fuel Emory Surgery's ongoing improvement efforts.

"One of the first things we saw with NSQIP was that our rate of surgical site infections (SSIs) after colon surgery was too high. We formed the Wound Infection Group, or WIG, and developed the blueprint that's driven most of our quality projects," says Sharma.

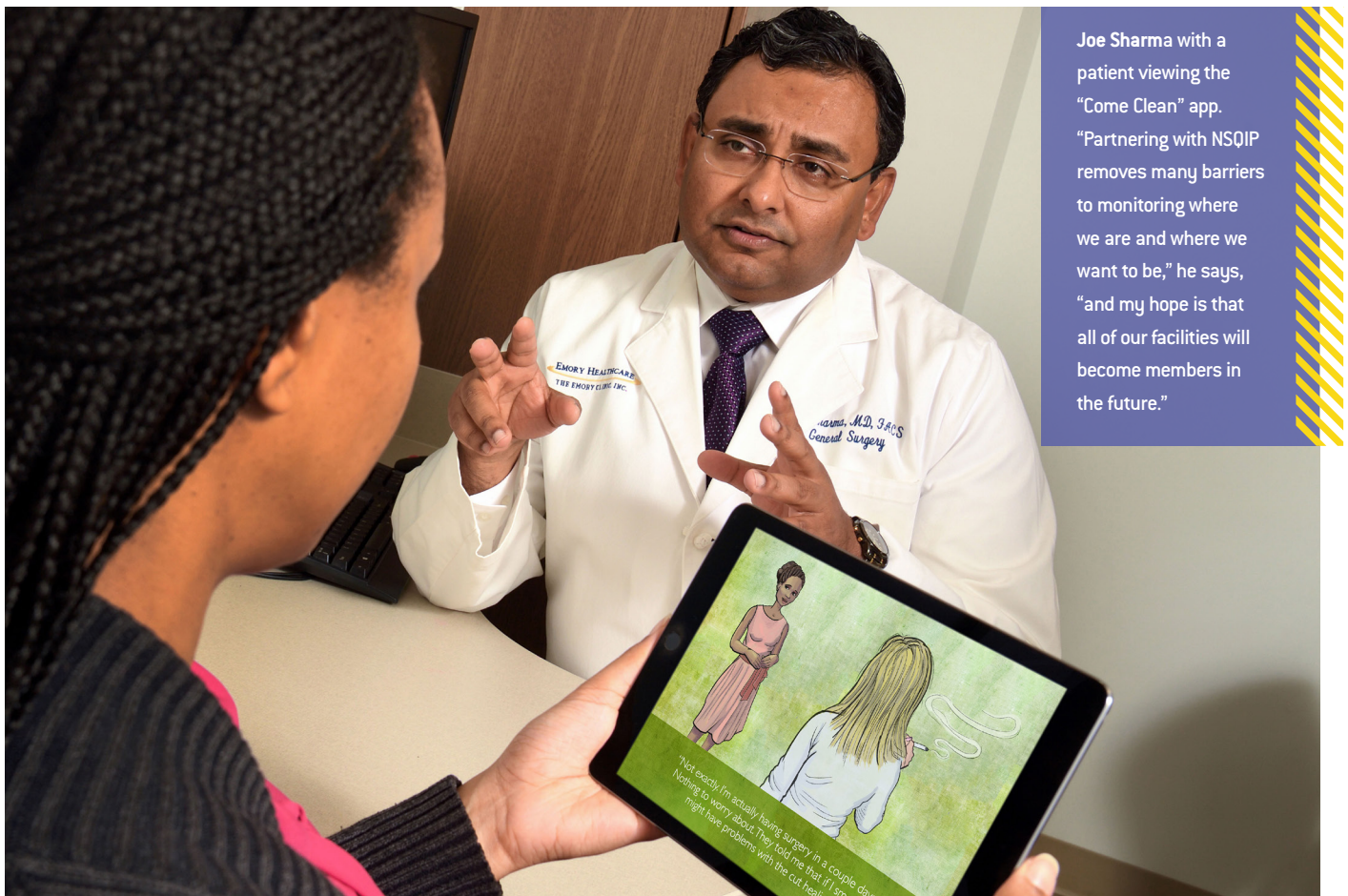
After reviewing published accounts of other SSI-reduction projects, conferring with clinical personnel, and examining EUH's perioperative protocols for colon surgery, Sharma led the WIG team in standardizing the delivery of antibiotics by anesthesia, producing the "Come Clean" pre-op app for educating patients about wound care

and lessening their risk for SSIs, and instituting the use of wound edge protection devices during surgery. Within two years, the incidence of SSIs after colon surgery dropped from 18% to 8%.

Having become adept at reviewing benchmarked data, identifying shortfalls, conferring with the clinical reviewers that evaluate outcomes, defining goals and metrics, selecting team leaders for improvement initiatives, securing stakeholder support, and auditing progress, Sharma was appointed EUH's NSQIP champion and Emory Surgery's chief quality officer.

The insights provided by NSQIP's risk-adjusted outcomes data and best practice guidelines and the commitment of Emory faculty and staff produced successful efforts to guard against urinary tract infections (a nurse-led initiative), reduce postoperative pneumonia (co-led by Sweeney), apply Enhanced Recovery After Surgery (ERAS) best practices to colorectal surgery protocols (led by Patrick Sullivan), and reduce the time patients spend on the ventilator in the ICU (helmed by Craig Coopersmith).

This culture of sustained internal auditing and localized-to-systemic renovation has contributed to lowering EUH's readmissions and overall mortality, and led to the hospital being included in NSQIP's annual listing of the top 10% of meritorious member hospitals. ■



Joe Sharma with a patient viewing the "Come Clean" app. "Partnering with NSQIP removes many barriers to monitoring where we are and where we want to be," he says, "and my hope is that all of our facilities will become members in the future."

[EDUCATION]

FROM PASSION TO PRACTICE

Despite the growing popularity of robotic surgery, surgical trainees often have to enroll in specialized fellowships or continuing education courses for formal training in the technology. General and GI surgeon Ankit Patel received his robotic surgery training and certification as an Emory endosurgery fellow prior to joining our faculty and was convinced that incorporating robotics training into Emory's residency curriculum made complete sense, particularly since Emory already had an established track record in teaching minimally invasive techniques.

"There's a commonality between laparoscopy and surgical robotics, such as both relying on instrumentation that negates the need for surgeons to physically touch anything in the surgical field," says Patel, who has been attracted to robotics ever since a family member had one of the first robotic prostatectomies performed in Georgia. "I love the precision of motion in robotics and how it can achieve things that even laparoscopy can't do."

Working with Edward Lin, associate program director of the endosurgery fellowship and chief of the Division of General and GI Surgery, Patel began building the curriculum by combining training methods distilled from commercial sources and industry collaborators with other simulation models and robotic skill set exercises. Lin and Patel test-drove the program with the 2014 class of endosurgery fellows, one of whom was Jamil Stetler. He also became



Ankit Patel (right) coaches a resident through a training session on the da Vinci robotic surgical skills simulator that has been donated to Emory for two years as part of a grant led by Jamil Stetler (left). "It's a state-of-the-art machine and very expensive," says Patel. "The residents are using it around the clock."



Faculty research mentor Shishir K. Maithel (3rd from left) with past and current Emory research residents Adriana Gamboa (1st left, current), Cecilia Ethun (4th, 2015-2017), Alexandra Lopez-Aguiar (5th, 2016-2018), and Rachel Lee (6th, current), and current research fellow Mohammad Zaidi (2nd from left, from Indiana University).

certified, joined the faculty, and expanded the robotics training team.

Meanwhile, Patel chaired Emory University Hospital's Robotic Steering Committee, helped add a second robot to the hospital's armamentarium, and enacted measures that reduced inefficiencies and lowered costs during robotic surgery. He was also appointed co-director of robotic education for the Society of American Gastrointestinal and Endoscopic Surgeons, and was the chief editor of *The SAGES Manual of Robotic Surgery*, the society's first comprehensive text on robotic surgery training, credentialing, instrumentation, procedural platforms, and multi-specialty applications.

By 2017, the residency's robotic curriculum consisted of online modules for the console surgeon and the patient-side assistant; simulator exercises for delivering focused energy and practicing camera manipulation, range of motion, and needle handling; a hands-on course; and a prescribed number of cases as both patient-side assistant and console surgeon. Intuitive Surgical had been the sole source of certification in robotic surgery, but now Emory and other academic centers could provide equivalency certificates in robotics.

The curriculum got an extra boost when Stetler was awarded a grant that provided a robotic simulator to Emory Healthcare. To facilitate Stetler's study of robotic simulation skill decay, trainees across all divisions and departments have 24-hour access to the simulator, which is housed in the Surgical

Education Office on the Clifton campus.

"Simulation-based training is poised to be a key component in future robotics training," says Patel. "Trainees have variable exposure to robotic surgery in the operating room and may experience long stretches without using the platform, increasing the possibility of skill decay. Dr. Stetler's project will determine the intervals when such decay could occur and the optimal timing for refresher training on the simulator platform."

WEAVING THE COMMON THREAD

While surgeons don't need an affinity for research labs and scientists

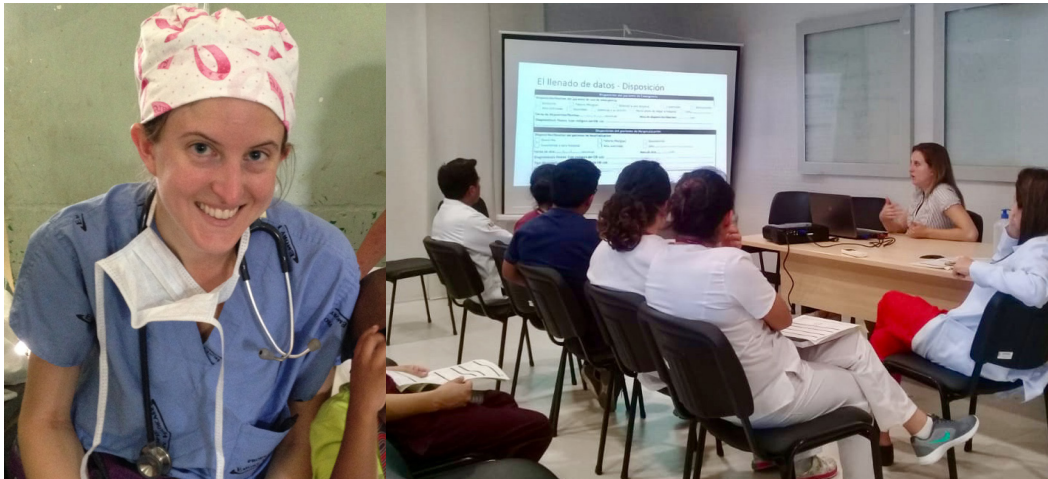
don't have to feel comfortable in operating rooms, moving between the two environments can strengthen the traits essential to each vocation, from confident decision-making to withstanding rigor.

"Our curriculum does not mandate research, though being an academic medical center inclines us towards wanting to develop game-changing researchers as well as world-class surgeons," says surgical oncologist Michael Lowe, director of extramural studies for the general surgery residency. "Each pursuit can advance the other, which is why we offer protected research time for qualified projects."

Surgical oncologist-scientist Shishir Maithel's positions as scientific director of the Emory Liver and Pancreas Center and founding director and national principal investigator for a number of national collaboratives dedicated to studying various uncommon tumors insure a dynamic research environment for his sabbatical residents.

"Residents in our research program lead novel projects, learn statistics, earn advanced degrees, work with other Emory surgical oncologists, and form relationships with peers and senior surgeons from around the country," he says.

While working in Maithel's lab, PGY-3 resident Alexandra Lopez-Aguiar won the 2017 and 2018 Merit Awards of the American Society of Clinical Oncology (ASCO), and the 2018 Steve Sotsky Pancreatic Cancer Research Gift from Americas Hepato-Pancreato-Biliary Association (AHPBA). The latter award



Erica Ludi from her Emory Haiti Alliance days (left), and in Bolivia presenting statistics from the trauma registry to residents at Hospital Municipal de Niños before training them in how to fill-out and upload trauma registry data.

recognized her development of a novel lymph node risk score for stratifying potential lymph node metastases for pancreatic neuroendocrine tumors, while the ASCO awards acknowledged her studies involving excision of the pancreas and duodenum for bile duct cancer and the removal of lymph nodes during resection of pancreatic neuroendocrine tumors.

During her two years in Maithe's lab, PGY-4 Cecilia Ethun received two ASCO Merit Awards, an AHPBA Travel Grant, Winship Cancer Institute's Rochfort Scholarship, and the Southeastern Surgical Congress 2017 Gold Medal Award and was the first and only surgical resident to be accepted into the AACR/ ASCO Methods in Clinical Cancer Research Workshop, where she wrote an international clinical trial protocol.

Transplant surgeon Andrew Adams regularly accepts residents into his transplant immunology research program, which concentrates on costimulation blockade and costimulation independent rejection, novel diagnostic methods, xenotransplantation, and outcomes research. PGY-3 Steven Kim's two-year tenure in the lab was funded by a Resident Scientist Scholarship from the American Society of Transplant Surgeons, and peaked with the *American Journal of Transplantation's* award for Best Translational Science Article of 2017. For the study, Kim, Adams, and their co-authors evaluated the efficacy of a novel anti-human CD154 domain antibody (dAB) in a nonhuman primate kidney transplant model, concluding that the dAB showed potential for preventing rejection.

Brendan Lovasik also received an ASTS Scholarship to work in Adams' lab, and is currently using genetically modified porcine donor kidneys in a non-human primate transplant model. The kidneys have been optimized by eliminating the standard antigens

that cause rejection. Abraham Matar, the lab's second two-year resident, is focused on novel therapeutics and transplantation tolerance in both murine and primate models.

Lily Yang, a member of the National Cancer Institute's Alliance for Nanotechnology in Cancer, directs the Surgical Oncology Nanomedicine Research Lab, which is dedicated to developing unique, targeted cancer imaging and therapeutic agents. Funded by an AHPBA research grant, PGY-3

Raheel Jajja is working with Yang on evaluating the use of receptor-targeted imaging nano-probes in detecting colon cancer liver metastases in preclinical models.

"We are engineering these probes to seek out tiny molecules associated with cancer growth, potentially leading to enhanced imaging sensitivity," he says. "It is exciting work, and we want to keep pushing the envelope for nanotechnology use in cancer."

WORKING TO CUT TRAUMA DEATHS IN BOLIVIA

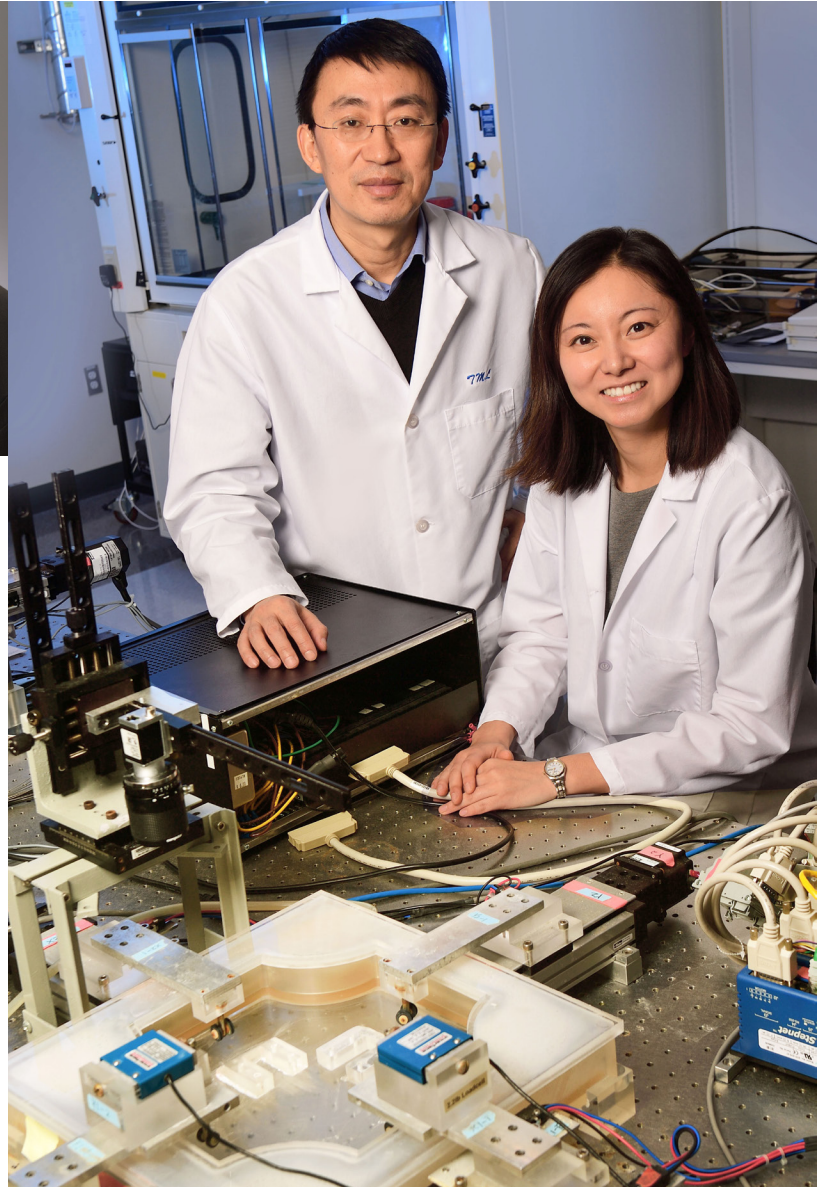
As the global health fellow of the Center for Global Health of Northwestern University Feinberg School of Medicine, PGY-2 Erica Ludi has temporarily relocated to Santa Cruz, Bolivia, where she is striving to improve the region's rudimentary trauma and emergency medical services system.

Ludi began establishing a foundation in global health with her participation as a medical student and resident in the Emory Haiti Alliance's summer surgical trips to Haiti. After the alliance's 2015 surgical trip, she co-led a team that piloted a trauma surveillance logbook at four Haitian hospitals.

For the fellowship, Ludi's stateside project mentor is Mamta Swaroop, founder of the Northwestern Trauma and Surgical Initiative (NTSI), an organization dedicated to building sustainable access to surgical care through education and research in low resource settings. Her primary adviser on the ground is Jorge Esteban Foianini, governor of the Bolivia Chapter of the American College of Surgeons, medical director of the Clínica Foianini Hospital in Santa Cruz, and secretary of the Panamerican Trauma Society.

Preliminary research conducted by NTSI's Bolivian Trauma Initiative found that eight out of the top 20 causes of prehospital death and 1.4% of all in-hospital deaths in Santa Cruz were trauma-

Bradley Leshnowe, Wei Sun (right), and Xiaoying Lou (2nd right) also worked together on Leshnowe and Sun's CTSA Pilot Grant to develop an imaging process that could predict risk of rupture or dissection in patients with thoracic aortic aneurysms.



related, and that the average time of transport from injury to treatment hospital was 14 hours, suggesting that the majority of trauma patients die before reaching care. In reaction, Santa Cruz's State Departmental Health Service is partnering with NTSI—and by association, Ludi—to move supporting legislation and research projects forward.

Following up on work begun by her fellowship predecessors, Ludi is establishing hospital-based trauma injury and outcome registries as well as developing trauma first responder courses for the lay community. She is making regular trauma registry data presentations at regional hospitals, has revised the official medical records form to incorporate trauma registry data points for more accurate data collection and analysis, and is writing proposals to establish governmental management of the trauma registry and organization of the state wide trauma network.

“The trauma first responder course intends to minimize pre-hospital mortality by equipping laypersons with basic treatment skills to stabilize trauma victims before professional help arrives,” Ludi says. “It will highlight bleeding control techniques practiced on leg mannequins using combat gauze and tourniquet supplies, which I obtained from the American College of Surgeon's Stop the Bleed campaign with Northwestern funding support.”

Ludi's future plans include assisting with the organization of a single emergency phone number similar to 911, implementing a general surgery operative registry at regional hospital facilities, and evaluating pediatric patients with surgically manageable congenital malformations to assess treatment and outcomes in partnership with Mario Ortíz Suárez of Hospital Municipal de Niños.

ALL IN THE TIMING

Courtesy of a Georgia Clinical and Translational Science Alliance TL-1 Award, Xiaoying Lou, Emory integrated cardiothoracic sur-

gery resident, is receiving stipend support for her research sabbatical under the mentorship of thoracic aortic disease co-investigators Bradley Leshnowe, Emory cardiothoracic surgeon, and Wei Sun, bioengineer in the Wallace Coulter Department of Biomedical Engineering at Georgia Tech and Emory University. The award is also funding Lou's tuition for the Master of Science in Clinical Research program at Emory's Laney Graduate School.

Lou's study aims to determine the optimal timing of surgical intervention for uncomplicated type B aortic dissection (TBAD) by examining differences between acute and chronic aortic dissection flaps. Minimally invasive thoracic endovascular aortic repair (TEVAR) is considered the treatment of choice for acute TBAD—a tear in the inner lining of the descending aorta—when it presents with such complications as loss of blood supply to other organs or rupture. TEVAR covers the primary aortic tear with a stent, enabling

re-expansion of the true lumen (the normal passageway for the blood) while obliterating the false lumen (the passageway that forms after dissection that diverts normal blood flow) and preventing further aneurysmal degeneration.

Although excellent short and long-term outcomes have been observed for TEVAR in acute complicated TBAD, the optimal management of uncomplicated TBAD remains controversial. The standard approach for the latter has been medical treatment until complications arise, at which point open surgery or TEVAR is performed, though this strategy often fails.

Lou, Leshnowar, and Sun suspect that understanding the conflicting results between TEVAR for complicated and uncomplicated TBAD, as well as defining when intervention would be best for both conditions, can be achieved by studying the histology and biomechanics of aortic dissection flaps of patients undergoing open surgery for TBAD. This hypothesis builds upon the team's prior work, which showed that patients presenting with complicated TBAD who received TEVAR had more favorable aortic remodeling and improved long-term survival compared with patients with chronic TBAD who did not have intervention until complications developed.

The team's principal supposition is that dissection flaps lose elasticity and mobility over time due to increasing fibrosis and vessel wall stiffness, which could explain why acute dissection flaps are more amenable to remodeling after TEVAR than chronic flaps. However, the mechanics of this remodeling process are uncertain.

To evaluate any intrinsic differences between the histological and biomechanical properties of acute and chronic dissection flaps, the team has created a human aortic tissue bank with samples collected intra-operatively by Leshnowar and Emory aortic surgeon Edward Chen during procedures at Emory University Hospital and Emory Saint Joseph's Hospital. The samples are classified by duration from time of dissection and then subjected to histological analysis and biomechanical strength testing in Sun's tissue mechanics laboratory.

"Our goal is to characterize the interplay of factors underlying aortic remodeling in acute versus chronic aortic dissection and define a timeline for these changes," Lou says. "Any insights we gain may optimize timing, intervention, and follow-up for patients with TBAD."

HANDHELD COMPENDIUM TO AID LUNG CANCER TREATMENT

"Surgical Anatomy of the Lung," the newest app produced by medical illustrator Andy Matlock for the Carlos and Davis Center for Surgical Anatomy and Technique (CSAT) of the Emory School of Medicine, was originally created to facilitate communication between Emory cardiothoracic surgeons at Emory Saint Joseph's Hospital and their lung cancer patients prior to surgical resection.

"The lung app allowed the physicians to educate and guide patients through their operative journey using a simple interface," says Matlock. "They also used it as an educational adjunct for residents, medical students, nurses, and all staff participating in thoracic surgery."

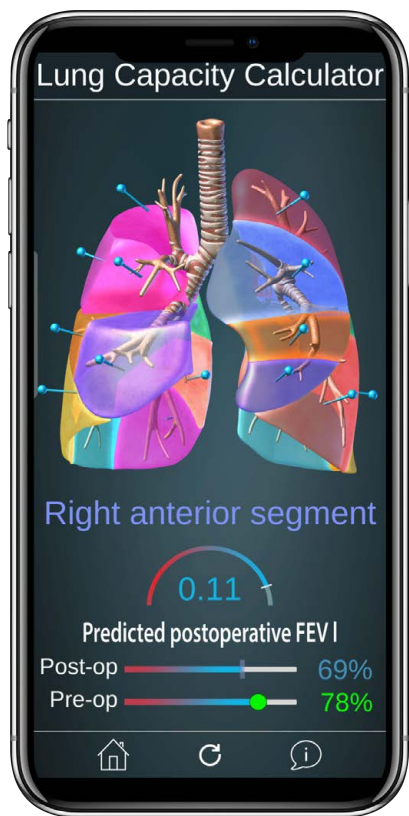
After the app proved to be a valuable clinical tool, CSAT, which promotes knowledge of surgical anatomy as crucial to the proficient surgeon's repertoire, made it accessible to professionals, educators, and trainees alike as a free download for iPad and iPhone. "Surgical Anatomy of the Lung" joins "Anatomy of the Male Pelvis" and "Surgical Anatomy of the Liver" as CSAT's third publicly available app.

Encompassing a malleable environment that features the lobes of the lung, trachea, bronchi, bronchioles, major arteries and veins, and anatomical illustrations, "Surgical Anatomy of the Lung" gives users the ability to do mark-ups, drawings, and annotations that can be saved, emailed, and printed.

It includes an interactive cancer staging calculator, which deploys detailed descriptions and illustrations to accurately categorize tumors and provide predictive analyses based on the TNM classification system, and a 3D anatomy viewer named The Virtual Lung that allows the user to show and hide various anatomical structures and place tumors of various sizes in and around the lungs.

The prototype version of "Surgical Anatomy of the Lung" garnered Matlock an award in the category of interactive media at the 2017 Annual Meeting of the Association of Medical Illustrators, acknowledging the ease of use and eye-catching graphics that are hallmarks of CSAT's apps.

The app's production team included Manu Sancheti, medical director; Keith Delman, course director; Stefan Tigges, anatomist; and Daniel Lee, programming. ■



The lung capacity calculator in "Surgical Anatomy of the Lung" can assess patients' postoperative lung function.

[RESEARCH]

IN THE TOP 10... AGAIN

In FY2017, the Emory Department of Surgery rose from the 9th position it held for the prior two years in NIH funding for all departments of surgery nationwide to reach the 7th, and preliminary data for FY2018 shows that we have retained this position as well as received an increase in funding of more than \$2 million. This renewed ranking and its associated total funding of more than \$12 million underscores the diversity, utility, and commitment to improving surgical care shared by the department's basic science, clinical, and translational research efforts.

Transplant immunologists Christian Larsen, Andrew Adams, Mandy Ford, and I. Raul Badell; novel cancer imaging and targeted therapeutic agents specialist Lily Yang; health services researcher Rachel Patzer; cardiovascular biomechanics and treatment technologies investigator Muralidhar Padala; sepsis and shock scientist Craig Coopersmith; and vascular disease researcher Luke Brewster continued to place high in the NIH's listings of funded department of surgery-based principal investigators.

"I am deeply proud of the breadth of research within the Department of Surgery," says Coopersmith, who is also vice chair of research for the department. "Considering that 76 different departments of surgery have NIH funding, placing nine researchers in the upper rankings is extraordinary. This is a true testament to the department's devotion to research and tributes our passion





Rachel Patzer plans for the HSR Center to provide training for faculty, students, and trainees in core health services research methods. “This will be one of several ways that we can prepare the next generation of HSR leaders,” she says.

for bettering the lives of the patients we treat today and those we will treat in the future.”

ZOOM IN, ZOOM OUT

Rachel Patzer’s ability to focus on individuals, widen the frame to observe the community, and widen it further still to encompass the health systems that serve them has contributed to the broad range of projects she has undertaken as a health services researcher. This talent for shifting perspectives also informs her balance of roles, one being that of an independent, highly productive researcher who often collaborates with peers in her work, and the other a leader of far-reaching and influential programs.

The latter skill was initially underscored when Patzer was named the founding director of the Emory Transplant Health Services and

Outcomes Research Program in 2015. The program went on to develop a novel surveillance data registry for kidney disease, refined quality metrics, conducted epidemiologic investigations of the causes of variability in access to renal transplantation among pediatric and adult end-stage renal disease patients, and worked to improve access to transplantation.

Patzer’s ability to marshal associates and coordinate multiple projects was acknowledged yet again in 2018 with her appointment as director of the Health Services Research (HSR) Center, a cooperative initiative of Emory’s departments of medicine and surgery. The HSR Center’s mandate is to advance health care access, quality of health care delivery, and health outcomes of patients and populations by supporting and enacting health services research studies that aim to enhance, improve, and revise health care systems so that they can perform at the highest quality and value. In addition to impacting Emory University and Emory Healthcare’s missions, the center intends to create a paradigm for clinical/research institutions nationwide.

“Faculty from the departments of surgery and medicine who are experts in monitoring, evaluating, and investigating patient-level disease prevention and management, local provisions of care, and overall health care delivery networks are a critical component of the center, particularly in mentoring and advising trainees and junior HSR faculty,” says Patzer. “We are also working together to establish the center’s strategic plan, which includes nurturing collaborative efforts in health services research across Emory University, the Centers for Disease Control and Prevention, Grady Memorial Hospital, Children’s Healthcare of Atlanta, the Atlanta VA Medical Center, and other related Emory departments and school areas that do similar research.”

While preparing the center for initiating and sponsoring various research efforts, Patzer is continuing her own projects, which include analyzing the individual, community, and health system level factors that impact post-transplant outcomes in both renal and liver transplantation, using predictive analytics to improve the real-time identification and management of high-risk transplant recipients, and working to determine the impact of neighborhood poverty, degree of rurality, distance to health care centers, and other geospatial factors in health outcomes.

MOVING CLINICAL TRIALS FROM A-TO-Z

When renal transplant research nurses visited then-nurse clinician Kim Baio’s patients in Emory University Hospital’s solid organ transplantation unit, she was intrigued. “I’d ask what they were doing, and they usually said they were administering

investigational drugs designed to prevent rejection,” she says. “Research nursing as a career option never came up when I was in nursing school, but as I learned more, I wanted to be part of it.”

That was 1997. A year later, Baio was a senior research nurse coordinating clinical trials for the Emory Transplant Center, and by 2001 she was supervising other clinical research nurses. She oversaw key aspects of transplant surgeon-scientists Christian Larsen and Thomas Pearson’s first clinical trial of belatacept as a less toxic immunosuppressive alternative to calcineurin inhibitors for renal transplant recipients, and worked on Emory’s first series of islet transplants for type 1 diabetes with Larsen, Pearson, and general and GI surgeon Juan Sarmiento.

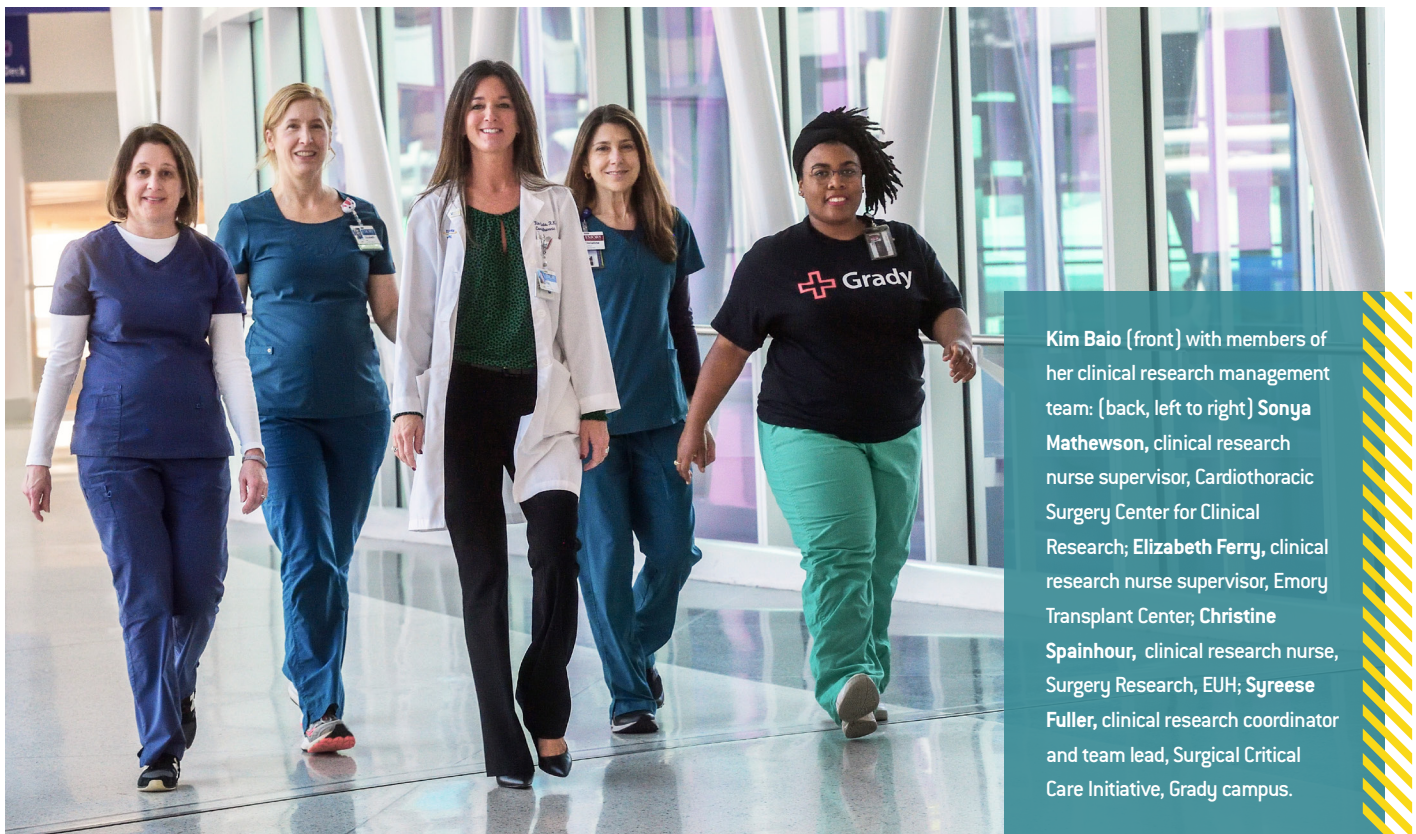
In 2005, she received her MSN degree from Emory’s Nell Hodgson Woodruff School of Nursing and became director of clinical research and education for both the Cardiothoracic Surgery Center for Clinical Research and Emory Surgery’s vascular surgery clinical research program. Her duties grew to overseeing annual research budgets of approximately \$1.3M, organizing the operations of federal and industry-sponsored biomedical and clinical scientific projects, evaluating the scientific merit and feasibility of clinical protocols, determining budgets for deployment of resources and/or expenditures of funds, writing proposals for extramural and intramural funding, training junior faculty in the academic research process, and overseeing various quality outcomes initiatives.

“Kim was directly responsible for building our clinical research program from the ground up,” says Michael Halkos, chief of the Division of Cardiothoracic Surgery. “In 2005, we had two clinical research coordinators and no clinical trial revenue. Today, we are involved in multi-institutional NIH trials, have approximately 30 active clinical trials, and publish more than 50 manuscripts per year in peer-reviewed journals and participate in major conferences. None of this would have been possible without Kim’s leadership.”

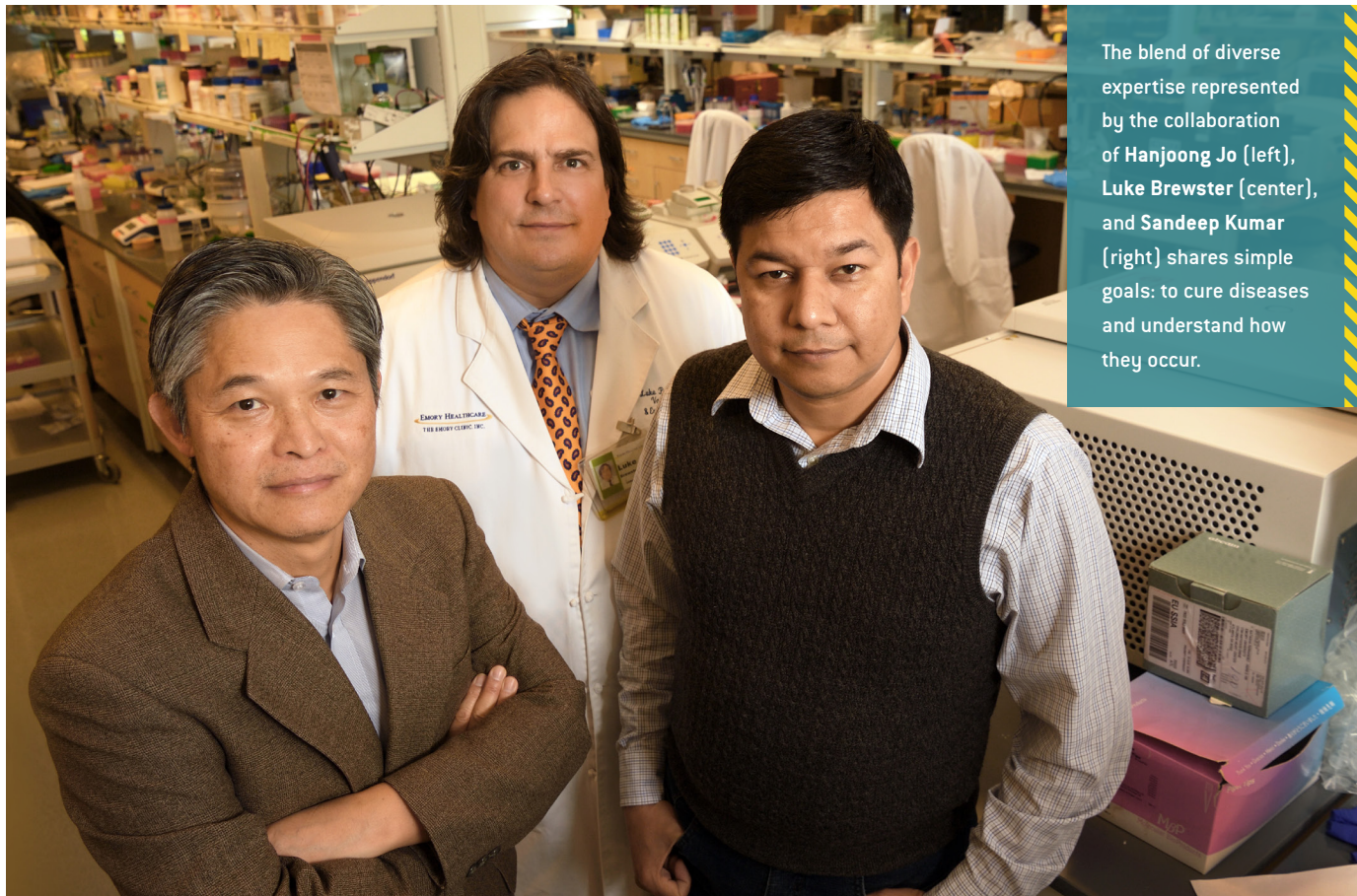
In 2016, Baio was appointed director of clinical trials for the entire Department of Surgery and presently oversees eight established research programs with more than 125 active trials. She manages allocation of resources, trial operations, regulatory and compliance matters, and fiscal accountability, while still working with cardiothoracic surgery’s quality program.

“After meeting with investigators, I assess the resources and support they may need,” she says. “I have a wonderful staff of clinical research nurse supervisors to manage the day-to-day operations of trials under my direction, and they in turn are supported by clinical research coordinators, who do much of the direct patient interaction and other important frontline duties.”

The breadth of Baio’s experience in Emory’s clinical research sector has included many pivotal projects that have evaluated and/or developed new surgical methods, technologies, devices, and innovative pharmaceutical and bioengineered products.



Kim Baio (front) with members of her clinical research management team: (back, left to right) Sonya Mathewson, clinical research nurse supervisor, Cardiothoracic Surgery Center for Clinical Research; Elizabeth Ferry, clinical research nurse supervisor, Emory Transplant Center; Christine Spainhour, clinical research nurse, Surgery Research, EUH; Syreese Fuller, clinical research coordinator and team lead, Surgical Critical Care Initiative, Grady campus.



The blend of diverse expertise represented by the collaboration of Hanjoong Jo (left), Luke Brewster (center), and Sandeep Kumar (right) shares simple goals: to cure diseases and understand how they occur.

“It is intensely gratifying to be involved in work that provides treatment options to patients that they wouldn’t otherwise have, and to see those interventions make such a difference for current and future patients,” she says.

BLOCKING HARM

Peripheral arterial disease (PAD) is a condition characterized by stiffened arteries that can double cardiovascular mortality and lead to amputation. “As patients with cardiovascular problems continue to live longer, we will see an uptick in PAD,” says Emory vascular surgeon-researcher Luke Brewster. “However, we are getting closer to uncovering the unique molecular signatures that predispose the arteries of patients with PAD to lose elasticity and have restricted blood flow. Our objective is to discover ways of manipulating these pathways to limit disease progression, improve limb salvage, and restore quality of life for these patients.”

Brewster is completing an NIH-funded K08 in which he identified the role played by the protein thrombospondin-1 (TSP-1) in stimulating the progressive collagen deposition that can stiffen arteries, in turn leading to PAD. He also found that TSP-1 production can be increased by the unique signaling pathway created by

the combination of arterial stiffness and irregular blood flow.

Armed with a new, five-year NIH R01 grant, Brewster will serve as principal investigator on a project that will build upon the K08’s discoveries to reach a wider understanding of the clinically relevant pathways in PAD. Specifically, Brewster and his colleagues have identified molecular mediators of a unique PAD signature from stiff arteries that are exposed to pathologic blood flow. In this study, the team will develop and test therapeutic strategies to limit both arterial stiffening and narrowing from focal atherosclerotic plaque. Human tissue from patients with PAD will then be used to validate these pathways in clinically relevant arteries.

Brewster’s co-investigators on the R01 are faculty from the Wallace Coulter Department of Biomedical Engineering at Georgia Tech and Emory University: Hanjoong Jo, an expert in endothelial cell mechanobiology and atherosclerosis; Sandeep Kumar, who focuses on gene network regulation; and vascular mechanics and modeling specialists Rudolph Gleason Jr., and Anastassia Pokutta-Paskaleva.

“Positive results will be useful in developing novel PAD therapeutics that disrupt these pathways and improve arterial health in our patients,” says Brewster.

ENGINEERING METHODOLOGY MEETS SURGICAL IMPROVEMENT

Robert Guyton, former chief of the Emory Division of Cardiothoracic Surgery from 1990 to 2017 and founding director of the cardiothoracic research lab at the Carlyle Fraser Heart Center at Emory University Hospital Midtown, believes that partnering with scientists like Muralidhar Padala is essential for surgical researchers to achieve early stage innovation. “Dr. Padala is an engineer who understands our language, and he has taught us his,” he says. “His approach to leading collaborative projects with a translational emphasis is an excellent model for the next generation of heart surgeons.”

As the director of the Structural Heart Disease Research and Innovation Program at Emory, Padala has cultivated a cadre of multidisciplinary associates as well as steady funding from federal, foundational, and corporate sources. In 2018, his lab reached a new pinnacle with three concurrent NIH R01 grants to develop new heart valve therapies.

For the first grant, Padala and Guyton are partnering with cardiac anesthesiologist Michael Duggan and radiologist John Oshinski on a clinical trial investigating a new surgical technique for repairing leaky mitral valves in heart failure patients. Conceived and rigorously tested in Padala’s lab, the technique is intended to increase durability of the repair while avoiding the deformation of the valve that can happen during the standard procedure.

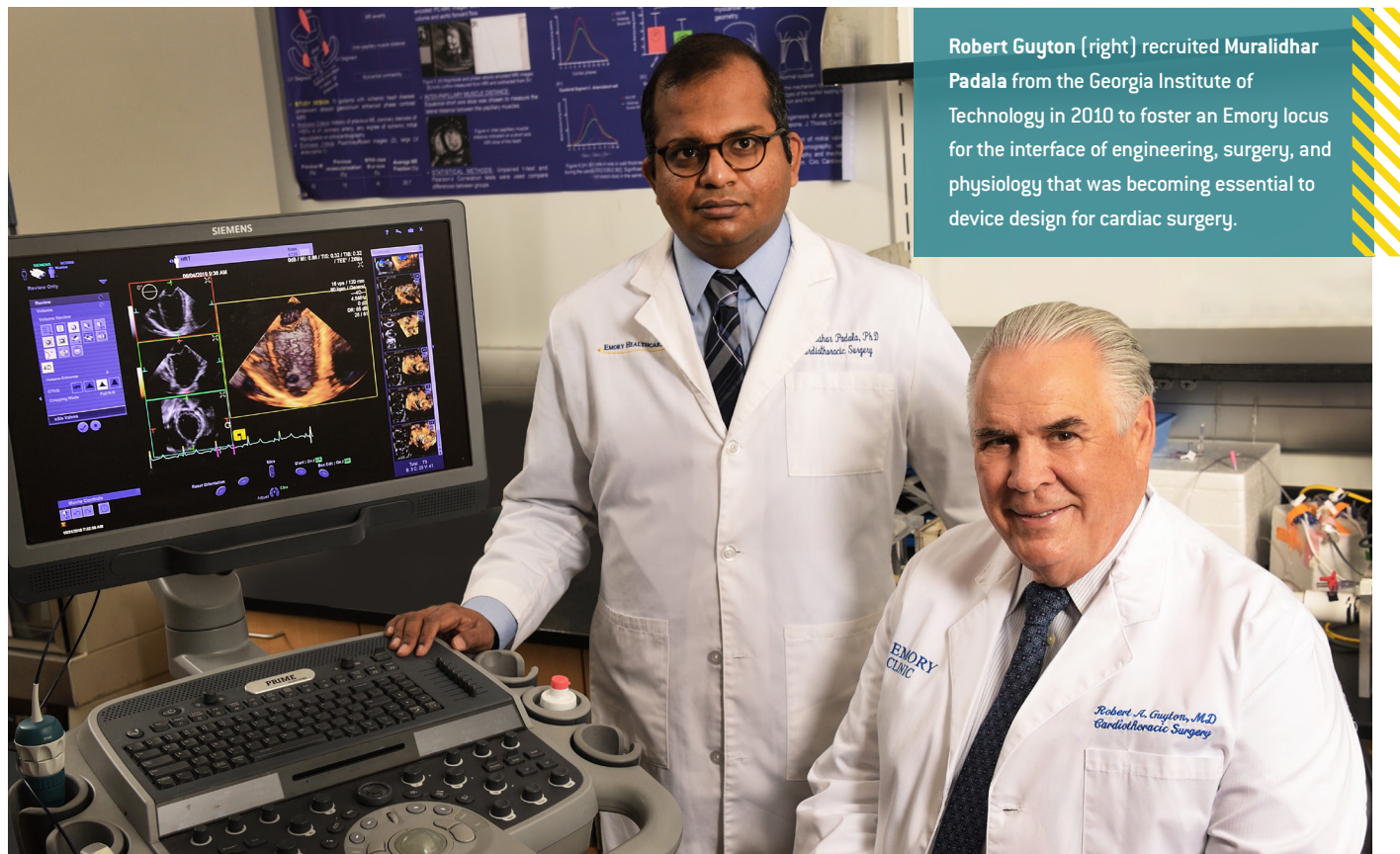
“Dr. Padala showed us that surgically induced damage to the valve could cause tissue thickening, fibrosis, and more leakage, and could potentially necessitate reoperation,” Guyton says. “This new technique has shown good results in the lab, and we are now applying it in patients.”

The second grant will fund the initial development of a miniature heart valve implant and catheter for correcting mitral valve leakage that can be inserted through a half-inch incision in the groin, thereby avoiding traditional open valve implantation and its six-to-12 inch chest incision and requirement of stopping the heart. The implant is designed to have an outer layer of biomaterial that will promote tissue ingrowth, and to be made of a shape memory metal that will allow attachment to the native valve without sutures.

“This device could be highly advantageous, particularly as a procedure without the risks of open-heart surgery,” says Padala.

The third R01 is supporting Padala’s collaboration with Jaydev Desai, associate director of the Institute for Robotics and Intelligent Machines at Georgia Tech, and Baowei Fei, director of the Quantitative Bioimaging Laboratory of the University of Texas at Dallas, to create an image-guided intravascular robotic system for mitral valve repair and implants on the beating heart.

“Our surgical teams often comment that large-bore catheters are too stiff to curve in confined vascular spaces,” says Padala. “We are solving this problem by developing multi-unit catheters that can be actuated and advanced using image guidance.” ■

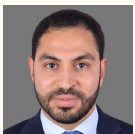


Robert Guyton (right) recruited Muralidhar Padala from the Georgia Institute of Technology in 2010 to foster an Emory locus for the interface of engineering, surgery, and physiology that was becoming essential to device design for cardiac surgery.

NEW FACULTY



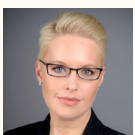
JOSHUA APPELSTEIN, MD, has joined Hakob Davtyan, MD, and other physicians on the cardiothoracic surgery service at St. Francis Hospital in Columbus, GA, and is developing programs in transcatheter aortic valve replacement and robotic coronary artery bypass grafting. The service is a partnership between St. Francis and the Emory Division of Cardiothoracic Surgery.



TAMER ATTIA, MD, PHD, received his MBBCh degree, his PhD in cardiothoracic surgery, and completed his cardiothoracic surgery residency at Cairo University. During his clinical fellowship in cardiothoracic surgery and his general surgery and cardiothoracic surgery residencies at Cleveland Clinic, he received several awards, including the Charles Bryan Clinical Excellence Award in Thoracic and Cardiovascular Surgery.

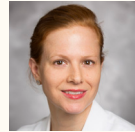


APRIL GRANT, MD, works at Grady Memorial Hospital as a trauma surgeon, emergency/elective general surgeon, and surgical critical care intensivist. She completed her general surgery residency at the Greenville Health System University Medical Center, and did her surgical critical care and trauma surgery fellowships at Jackson Health System and Ryder Trauma Center, University of Miami Health System.

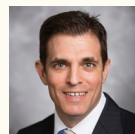


KENDRA GRUBB, MD, MHA, is the surgical director of the Emory Structural Heart and Valve Center. Prior to Emory, she was the director of minimally invasive cardiac surgery and surgical director of the heart valve program at the University of Louisville. She has led and participated in multiple clinical trials of innovative cardiac surgery technolo-

gies, including studies of TAVR and MitraClip percutaneous therapy.



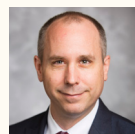
The primary focus of **ELIZABETH HECHENBLEIKNER, MD**, is performing acute care surgery and bariatric surgery at Emory University Hospital Midtown. During her general surgery residency at Georgetown University Hospital, she assisted in developing and implementing an auditing tool to evaluate adherence to surgical time-out and debriefing processes in the operating room across surgical specialties.



When **ERIC KNAUER, MD**, did his minimally invasive surgery fellowship at Baylor College of Medicine, Emory Surgery chair John Sweeney was BCM's chief of minimally invasive surgery and Dr. Knauer's primary mentor. Before Emory, Dr. Knauer was at Wellstar Cobb Hospital, and served as vice chair and chair of the Department of Surgery as well as medical staff president.

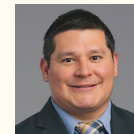


WILLIAM KNAUS, MD, specializes in hand and reconstructive plastic surgery at Grady Memorial Hospital. During his hand and upper extremity fellowship at Massachusetts General Hospital, he was an assistant in orthopaedic surgery. His articles have been published in a number of leading journals, including Plastic and Reconstructive Surgery, Journal of Surgical Oncology, and Journal of Reconstructive Microsurgery.

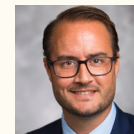


The principal clinical role of **DOMINIC PAPANDRIA, MD**, is as an acute and critical care surgeon at Emory University Hospital Midtown. During his pediatric minimally invasive surgery fellowship at

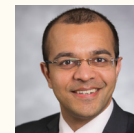
Nationwide Children's Hospital, Dr. Papandria served as a faculty member in the hospital's minimally invasive surgical skills laboratory at several national and international pediatric surgery meetings.



CHRISTOPHER RAMOS, MD, completed his general surgery residency at the University of Colorado [CU] Health Science Center, his postdoctoral research fellowship at CU's Trauma Research Center, and his vascular surgery fellowship at Emory. He was an active researcher throughout these years, and published in such leading journals as Annals of Vascular Surgery, Journal of the American Medical Association, and Surgery.



FEDERICO SERROT, MD, joined Emory after finishing his minimally invasive and endoscopic surgery fellowship at Cleveland Clinic Florida. His primary responsibilities include training general surgery residents as well as minimally invasive surgery fellows, performing general and foregut surgery at Emory Saint Joseph's Hospital, and performing bariatric surgery at Emory University Hospital Midtown.



MIHIR SHAH, MD, specializes in surgical management of tumors of the liver, pancreas, biliary tree, stomach, esophagus, bile duct, small bowel, and retroperitoneum, and is interested in outcomes research and clinical trials in hepatopancreatobiliary and foregut cancers. His training included an endosurgery fellowship at Emory and a fellowship in complex general surgical oncology at Rutgers Cancer Institute.

FACULTY AWARDS & DISTINCTIONS

I. Raul Badell, MD

- 2018 Vanguard Prize, American Society of Transplant Surgeons

Gary Bouloux, DDS, MD, MDSc

- Research Recognition Award, Oral and Maxillofacial Surgery Foundation

Luke Brewster, MD, PhD, MA, RVT

- Chair, Research and Education Committee, Society for Vascular Surgery

John Calvert, PhD

- Councilor, International Society of Heart Research, North American Section

- Transformational Project Award Study Section, American Heart Association

Kenneth Cardona, MD

- Inaugural Chair, Sarcoma Working Group, ECOG-ACRIN Cancer Research Group

Edward Chen, MD

- Randal Griep Award for Highest Rated Abstract, American Association for Thoracic Surgery 2018 Aortic Symposium

- 2019 Socrates Teaching Award, Thoracic Surgery Residents Association

Angela Cheng, MD

- Membership Committee, American Society of Reconstructive Microsurgery

- Editorial Board, Breast Section, *Annals of Plastic Surgery*

Craig Coopersmith, MD

- Co-Chair, Conflict of Interest Subcommittee, Surviving Sepsis Campaign, International Guidelines for Management of Sepsis and Septic Shock

S. Scott Davis, MD

- Chair, Publications Committee, SAGES
- Associate Editor, *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques*

Keith Delman, MD

- Academy of Master Surgeon Educators, American College of Surgeons

- Lead, Task Force on Autonomy, Committee on Resident Education, American College of Surgeons

Christopher Dente, MD

- Quality and Patient Safety Committee, Eastern Association for the Surgery of Trauma

Stephanie Drew, DMD

- President, American College of Oral and Maxillofacial Surgeons

Yazan Duwayri, MD

- MACRA Episode-Based Cost Measure Clinical Committee on Peripheral Vascular Disease Management, Acumen LLC on behalf of the Centers for Medicare & Medicaid Services

Felmont Eaves, III, MD

- 2018 Start-up of the Year Award, Emory Office of Technology Transfer

Felix Fernandez, MD

- Joint Guidelines Steering Committee, Society of Thoracic Surgeons/American Association for Thoracic Surgery

Mandy Ford, PhD

- Co-Chair, Immunologic Memory Subgroup, American Society for Histocompatibility and Immunogenetics & American Society of Transplantation

- Chair, Lab-to-Lab Interactions Subcommittee, Research Network Committee, American Society of Transplantation

Sheryl Gabram, MD, MBA

- Trailblazer Award, 2018 Healthcare Heroes, Grady Memorial Hospital, Grady Health Foundation

Theresa Gillespie, PhD, MA, BSN

- Chair, Breast Cancer Research Program, Clinical Trial-Preclinical Research-3 Peer Review Panel, Department of Defense

- Editorial Board, ASCO University

Wendy Greene, MD

- Executive Board, National Medical Association

- Chair, Post Graduate Robotics Ultrasound Course, Southeastern Surgical Congress

William Jordan, Jr., MD

- President-elect, Society for Clinical Vascular Surgery

William Brent Keeling, MD

- Membership Committee, Southern Thoracic Surgical Association

- Participant User File Task Force, Adult Cardiac Subcommittee, Society of Thoracic Surgeons

William Kitchens, MD, PhD

- Associate Editor, *American Journal of Transplantation*

David Kooby, MD

- Scientific Program Chair, Americas Hepato-Pancreato-Biliary Association

Christian Larsen, MD, DPhil

- 2018 Mentoring Award, American Society of Transplantation

Michael Lowe, MD

- Editorial Board, *Journal of Surgical Oncology* & *Journal of Surgical Research*

- Young Investigator Award, Society of Surgical Oncology

Raymond Lynch, MD

- Editorial Board, *Liver Transplantation*

Shishir Maithe, MD

- Co-Chair, Adjuvant Therapy for Biliary Tract Cancers Guideline Expert Panel, Clinical Practice Guidelines Committee, American Society of Clinical Oncology

- Clinical Trial Committee, Americas Hepato-Pancreato-Biliary Association

- Program Chair, 2019 Gastrointestinal Cancers Symposium

Bryan Morse, MS, MD

- Manuscript and Literature Review Committee, Eastern Association for the Surgery of Trauma

- Editorial Board, *The American Surgeon*

Sharon Muret-Wagstaff, PhD, MPA

- Vice Chair, Research and Development Committee, Consortium of Accredited Simulation Programs, American College of Surgeons

- Academy Fellow, Society for Simulation in Healthcare

Kenneth Newell, MD, PhD

- Co-Chair, Visiting Committee, Scientific Registry of Transplant Recipients

- Special Emphasis Panel, NIH CTSA Innovation Award

Muralidhar Padala, PhD

- Albert E. Levy Scientific Research Award, University Research Committee, Emory Office of the Provost

- Council Awards Review Committee, Council on Cardiovascular Surgery and Anesthesia, American Heart Association

- Associate Editor, *BMC Cardiovascular Disorders*; Editorial Board, *Journal of Heart Valve Disease*

Ankit Patel, MD

- Chair, Education Committee, Georgia Chapter of the American College of Surgeons

Rachel Patzer, PhD, MPH

- UNOS: Vice-Chair, Data Advisory Committee; Policy Oversight Committee; Minority Affairs Subcommittee

- Study Section, Health Services Organization and Delivery, NIH

Barbara Pettitt, MD

- Academy of Clerkship Directors, Association for Surgical Education

- Best Clerkship Director Award, 2018 Graduating Class, Emory University Medical Students

Ravi Rajani, MD

- Vice Chair, Conflict of Interest Committee, Society for Vascular Surgery

- Named Global Rising Star in Vascular Surgery, 40th Annual Charing Cross International Symposium

Monica Rizzo, MD

- Chair, Disparities Committee, Society of Surgical Oncology

Seth Rosen, MD

- Advisory Board, Institute for Surgical Excellence

- Editorial Board, *World Journal of Gastrointestinal Surgery*

Manu Sancheti, MD

- Co-coordinator of Cardiothoracic Session, American College of Surgeons Clinical Congress 2018

- Workforce on Media Relations, Communications and Patient Information Task Force, Society of Thoracic Surgeons

Virginia Shaffer, MD

- Association of Academic Surgery: Co-chair, Membership Committee; Executive Council

Joe Sharma, MD

- Georgia Chapter Representative, Board of Governors, American College of Surgeons

- Vice President, Georgia Chapter of the American College of Surgeons

Preeti Subhedar, MD

- Publication Committee, American Society of Breast Surgeons

Victoria Teodorescu, MD, MBA, RVT

- Representative of American Institute of Ultrasound (AIUM), Collaborative Committee, second revision of American College of Radiology-AIUM-Society of Radiologists in Ultrasound Practice Guideline for the Performance of Vascular Ultrasound for Postoperative Assessment of Dialysis Access



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Susan House

Senior Director of Development
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