



Passion for the Process



EMORY
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MEDICINE

Department of Surgery

CONTENTS

- 1 Chair's message
- 2 Patient care
- 7 Education
- 11 Research
- 17 New faculty
- 18 Faculty appointments and awards

On the cover

Douglas Murphy and his operating room team prepare a patient for a robotic cardiothoracic surgical procedure at Emory Saint Joseph's Hospital. See the story on page 3.



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FROM THE CHAIR



I believe one of the great privileges is working to improve the surgical and medical treatment of disease, illness, and injury. The pursuit of accolades and praise has nothing to do with why we dedicate ourselves to this mission. Instead, we love the work, and that love fuels our efforts to make a difference in our patients' lives.

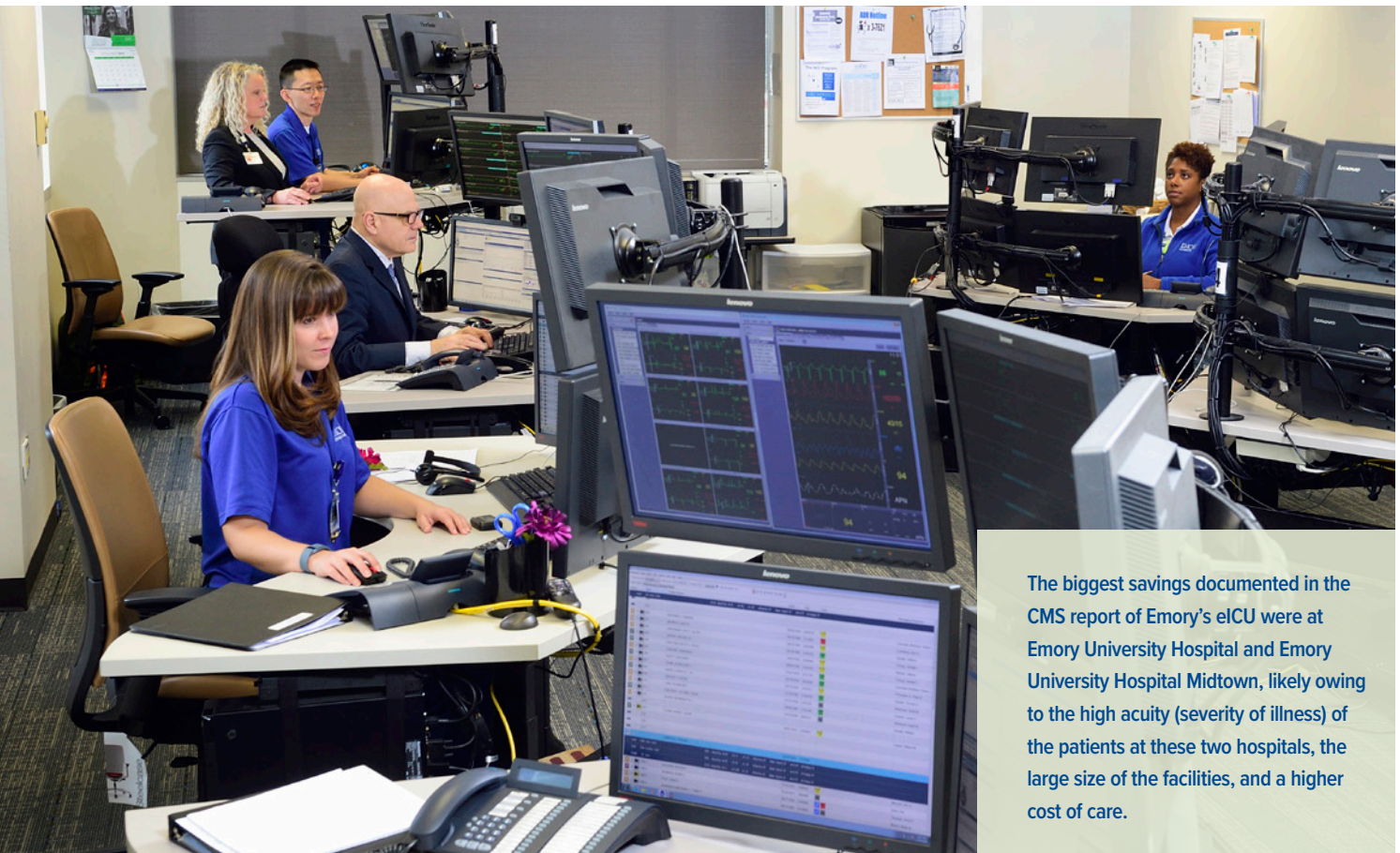
My time as a fullback for the Fighting Irish while an undergrad at the University of Notre Dame fortuitously prepared me for becoming an academic surgeon. I came to realize that sustained and deliberate practice was necessary to execute properly on game day, which is the same formula our profession requires to build a foundation from which important work can be done. I also learned that no amount of training can guarantee every game will be won, though it will gift you with the quiet glory that comes from knowing you have done your best, no matter the outcome.

In research, we must enjoy striving with our colleagues in isolation from the public eye to achieve a greater good. In clinical settings, we must love getting to know the person within the patient and trying to help that person in any way we can. In teaching, we have to be grateful for every interaction with every student and for the lessons that reveal how to best reach and inspire them.

Building personal legacies and elevating our names is absent from our motivations in the Department of Surgery. Instead, we are enriched by making lasting contributions to Emory as an institution and to the futures of our patients and trainees.

John F. Sweeney, MD

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



The biggest savings documented in the CMS report of Emory's eICU were at Emory University Hospital and Emory University Hospital Midtown, likely owing to the high acuity (severity of illness) of the patients at these two hospitals, the large size of the facilities, and a higher cost of care.

PATIENT CARE

Transmission Vision

The original proposal for the Emory Electronic ICU (eICU), conceived by Timothy Buchman, director of the Emory Critical Care Center, was funded by a 2012 Health Care Innovations Award from the Centers for Medicare and Medicaid Services (CMS). Two years later, the eICU's digital linkage of critical care units at Emory University Hospital, Emory University Hospital Midtown, Emory Saint Joseph's Hospital, Emory Johns Creek Hospital, and East Georgia Regional Medical Center had enacted 24/7 monitoring of the facilities' ICU patients by centralized teams of critical care physicians (intensivists) and nurses.

In 2017, a CMS report created by Abt Associates found that Emory's eICU had realized Buchman's initial goals of reducing the length of patient stays, lowering readmissions, and decreasing substantial costs, and had mitigated the shortage of intensivists and critical care nurses. During the evaluation period of April 1, 2014 through June 30, 2015, more than 60 percent of the eICU's 8,109 patients were federal beneficiaries. The report found a reduction of \$1,486 in Medicare spending per patient stay, saving \$4.6 million.

"We attribute those savings to standardizing our care delivery and offering more immediate access to intensivist-led interventions," says Cheryl Hiddleston, the eICU's operations director. "Our patients are going home more frequently instead of entering long-term care or rehab because they have more consistent care in the hospital."

The eICU's technical grid was installed by global health technology company Philips, and consists of cameras, video monitors, microphones, and speakers in ICU rooms at the five hospitals, as well as in the control rooms at three of the hospitals for continuous monitoring, observation, and communication with on-site staff and patients.

This remote observation was credited to consistent detection of problems before they became serious, and—most importantly to



the hospitals' ICU staff—timely emergent interventions during the night and rapid attention to patients' needs when physicians weren't present.

"Patients were discharged healthier and had fewer readmissions for 60 days following their inpatient stay, relative to a comparison group composed of nine hospitals in the region with similar patient populations and case mix indexes as our eICU group," says Buchman.

Buchman and Hiddleston continue to address the challenge of providing comprehensive critical care to a growing number of critically ill patients with a new pilot effort referred to as "Turning Night into Day." Aiming to improve clinician quality of life and work efficiency, Emory eICU providers were relocated to an eICU center at Macquarie University's MQ Health in

Early in his career, **Douglas Murphy** established himself as a pioneer. In 1987, he was appointed director of cardiac transplantation at Emory Saint Joseph's Hospital, and performed the facility's first heart transplant. That year, his team completed 47 heart transplants, making it one of the highest-volume programs in the U.S.

Sydney, Australia. This allowed the clinicians to work simultaneously with Atlanta's onsite staff in delivering nighttime care to their Emory patients during Sydney's daylight hours, ensuring total coverage from both sides of the world.

Resetting the Benchmark

Douglas Murphy, chief of cardiothoracic surgery at Emory Saint Joseph's Hospital and one of the most accomplished robotic heart surgeons in the world, performed Georgia's first robotic mitral valve surgery at the hospital in 2002. In December 2016, he attained a world record after completing his 2,000th robotically assisted mitral valve surgery.

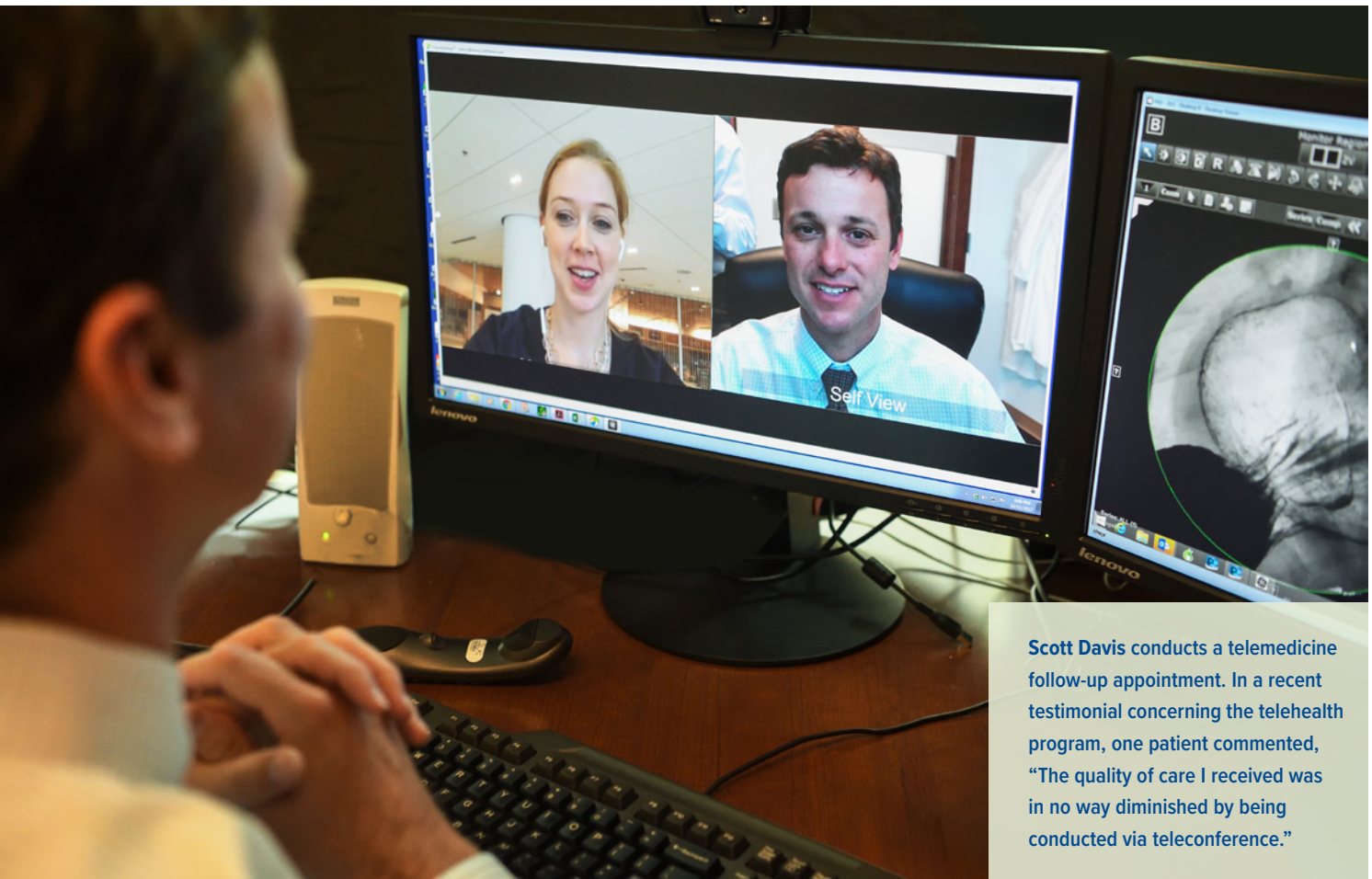
When performing robotically assisted heart surgery, Murphy controls surgical instruments on thin robotic arms from a specially designed computer console. The device's wristed instruments and high magnification video monitoring system allow for great precision, range of motion, and the ability to make extremely small incisions. "We basically go through the ribs without disturbing them, sort of like building a ship in a bottle," he says.

Murphy was an early advocate of the Intuitive da Vinci Surgical System, the first robotic system to be used in American operating rooms. He was principal investigator of one of the first U.S. cardiac surgery teams to test the system in performing atrial septal defect repair and coronary bypass. The clinical trials were a success, and the FDA approved the system for these procedures in 2002. Emory Saint Joseph's was later named the exclusive cardiac southeastern training center for the da Vinci system in 2004.

"Being involved in those trials gave us a huge jump on using the robot when it was approved," says Murphy. "By 2008, it had become pretty much routine."

Murphy has since trained surgical teams around the world in operating the da Vinci system, as well as how to use it to perform the LEAR technique (lateral endoscopic approach using robotics), a method he and his team developed that allows open heart surgery to be performed through five small holes in the right chest.

"Patients appreciate the less invasive aspect of the LEAR technique with its fast recovery. The driving force for LEAR



Scott Davis conducts a telemedicine follow-up appointment. In a recent testimonial concerning the telehealth program, one patient commented, “The quality of care I received was in no way diminished by being conducted via teleconference.”

surgeons, however, has been the ability to perform an advanced procedure with very low complication rates,” he says.

Murphy gratefully acknowledges the efforts of his support team in his achievements. “The successful patient outcomes we have had are all due to our team—from the nurses to anesthesiologists to perfusionists,” he says. “When I am working at the robotic console, I rely on the team for their invaluable assistance with sutures and instruments at the operating table.”

Same Time, Different Places

For her first post-op exam, the patient was in her workplace conference room. Scott Davis, the patient’s Emory laparoscopic surgeon, was in his office at Emory University Hospital. He asked if she was experiencing abnormal soreness. No, she answered, stood up, and showed him the tiny incision scars on her abdomen.

“Those are healing nicely,” Davis said as he tilted his laptop screen.

The patient readjusted her iPad, and sat back down. When the exam ended and the two disconnected, Davis had completed his 11th telemedicine patient follow-up. Such distance exams are

becoming an agreeable alternative to physical appointments for Emory physicians and patients alike.

“Dr. Davis’ telemedicine visits have saved his patients a total of 2,062 driving miles thus far,” says Meagan Moyer, a member of Emory Healthcare’s Patient Access Optimization Team and one of the primary leaders in developing telemedicine appointments at Emory. “The program has been operating for a year now, and patient feedback is very positive. They don’t have to spend hours on the road to get here if they live outside of Atlanta, spend money on gas, or take the day off from work.”

The technical arm of the telemedicine initiative is provided by Vidyo, Emory’s contracted video-conferencing platform. The company specializes in HD-quality, multipoint video communications, and encrypts those communications to be HIPAA compliant. Activating the service merely requires installing an app. Then, the patient clicks an emailed link at a pre-scheduled time, connects, and the exam begins.

When Moyer’s team started looking for physicians interested in doing the first visit, Davis volunteered immediately. “Taking as much onus off the patient as possible is essential, and there are many ways we can do that, be it by reducing their recovery

times with something like minimally invasive surgery, or making it so they don't have to jump through hoops every time they need to see us," he says.

Moyer has made it known that any Emory physician is welcome to become involved. Felmont Eaves of the Emory Aesthetic Center liked the idea, and has done 24 telemedicine visits thus far, saving his patients 3,500 driving miles.

"We are also piloting the program at the TravelWell Center, the departments of neurology, dermatology, and psychiatry, and the Emory Voice Center," says Moyer. "Patients being able to see their doctors remotely can become a basic, common part of the health care continuum, similar to the adoption of electronic medical records several years ago."

Fulfilling an Essential Patient Need for Over Three Decades

After rotating on the Nutrition and Metabolic Support Service (NMSS) at Emory University Hospital (EUH) as a resident, John Galloway joined the Emory faculty and was appointed director of the program in 1987. He now co-directs the service with endocrinologist Thomas Ziegler, who came aboard in 1993.

"Initially, I was attracted to the relationship between nutrition and surgical outcomes," says Galloway. "Then I saw firsthand how serious poor nutrition can be when I went on surgical missions to other countries. Those experiences inspired me to do all I could to help patients here and elsewhere."

Nutrition support restores optimal nutrition and health to often critically ill patients. When a patient has difficulty eating for whatever reason, the enteral and parenteral methods are used. The enteral approach delivers a balanced combination of protein, sugars, fats, vitamins, minerals, and other nutrients through a tube into the patient's stomach or small intestine, while parenteral nutrition provides an intravenous, blood-compatible mixture.

Under Galloway and Ziegler's guidance, the EUH NMSS has become one of the most high-volume programs of its type in the country, with an average of 40-50 inpatients per day



The current EUH NMSS team (save for **Laura Jones**), left to right: **Glen Bergman, Erin McAllister, Dan Griffith, John Galloway, Tom Ziegler, Therese McNally, Vivian Zhao, and Nisha Dave.**

on its consult service and approximately 150 outpatients that require intravenous feeding. Unlike most nutrition support services that can only provide consultation regarding patients' specialized nutrition, the EUH team has primary order-writing approval.

From its beginnings in 1979 to the present day, the service has been multidisciplinary. Galloway and Ziegler are joined by pharmacological and nutritional specialists Dan Griffith, Nisha Dave, and Vivian Zhao; dietitians Glen Bergman and Erin McAllister; and nurses Therese McNally and Laura Jones. All team

members are certified by the American Society for Parenteral and Enteral Nutrition (ASPEN).

This year, ASPEN acknowledged the EUH NMSS with its Clinical Nutrition Team Distinction Award, commending its excellence in meeting ASPEN national standards involving screening, evaluation, management, rehabilitation, risk analysis, training, assessment of therapeutic effectiveness, and quality-driven research.

"We collaborate regularly on research with the departments of medicine and surgery, the nursing school, and other Emory groups," says Galloway. "Since 1996, Dr. Ziegler has also led a variety of NIH-funded studies."

Current investigations includes studies of metabolic and blood glucose control in nutrition support patients, developing protocols for monitoring patients' blood for infections from central line catheters, determining how to alleviate micronutrient loss in dialysis patients, and defining the timing and delivery of the ideal amount of protein and calories in the septic ICU patient.

The Emory nutrition support residency for PharmDs is one of only two in the nation, and NMSS members mentor pharmacy residents from the critical care, transplant, hematology/oncology, and infectious disease programs, as well as advanced pharmacy students from Emory and various outside institutions. They also train dietetic interns, critical care and anesthesiology residents, nursing staff, medical students, GI fellows, and foreign physicians.

Vigilance, Versatility, and Proximity

Surgical oncologist Cathy Graham's career pedigree includes serving as medical director of the Breast Health Program at St. John West Shore Hospital in Westlake, Ohio, and being a faculty member in the departments of surgery, medical oncology, and anatomy at Case Western Reserve University in Cleveland. She joined Emory Surgery early in the year, and shortly thereafter was appointed the new director of breast surgery at the Glenn Family Breast Center of Winship Cancer Institute at Emory Saint Joseph's Hospital.

The Glenn Family Breast Center at Winship supervises and coordinates breast cancer care and research throughout the Emory system, and is founded on principles of prevention, early detection, and multidisciplinary collaboration for treatment and research.

Graham's certification in breast ultrasound, ultrasound-guided biopsies, and stereotactic biopsies facilitates her focus on identifying cancer as early as possible in prospective patients. "Finding cancer before it has made serious inroads—when it is more treatable—is key, paired with periodic screenings, regular follow-ups, and consistent monitoring," she says.

In addition to having extensive experience in breast conservation surgery, oncoplastic surgery, nipple-sparing mastectomy, partial breast brachytherapy, and intra-operative radiation therapy, Graham specializes in breast cancer risk assessment. She oversees the breast center's clinic for patients at high risk of developing breast cancer, which offers preventive medicine for patients with a family history or genetic predisposition to the disease, and/or those who present with high-risk breast lesions. The chemoprevention medications tamoxifen and raloxifene are the standard prescription, though their use requires careful, case-by-case consideration due to potential side effects.

Graham's clinic also manages benign breast diseases, an uncommon clinical service in the northern section of Atlanta. "The general community served by Emory Saint Joseph's has a real need for a program close to home that focuses on treating non-lethal diseases such as fibrocystic breast change, nipple discharge, and lactation issues, all of which are more common than people realize. Our specialized program allows us to make this type of care more convenient for local patients," she says. ♦



Cathy Graham is part of a multidisciplinary team at the Glenn Family Breast Center, where patients also receive care from specialists in radiology, genetics, medical oncology, radiation oncology, and surgical oncology.



The CORE leadership team, left to right: Kate Pettorini, Virginia Shaffer, Michele Sumler, Darlene Mashman, and Joe Sharma. CORE's monthly training sessions include three operating room or perioperative scenarios, video review and debriefing of each scenario, and participant insights and recommendations.

EDUCATION

Prepping to Meet Adversity with Coordinated Action

When rare but potentially devastating emergencies arise in the operating room, swift and efficient teamwork is critical to patient safety. Studies show that simulation-based practice can improve team performance in preventing and managing these events, reduce risks, mitigate declines in infrequently used skills, and lead to design of new and better processes of care. Inspired by these observations, Sharon Muret-Wagstaff, director of the high-fidelity simulation program at Emory's Carlos and Davis Center for Surgical Anatomy and Technique, founded the Co-management of Operating Room Emergencies (CORE) Simulation Program.

Designed as a cooperative effort of Emory's departments of surgery and anesthesiology and the patient care and nursing services of Emory University Hospital (EUH), CORE's objectives for enhancing patient safety are to emphasize the use of checklists in the OR; instill closed loop communication, where surgical teams repeat back requests and directives to avoid misunderstandings; and expose teams to crew resource management, a set of communication, leadership, and decision-making methods initiated in the aviation industry for use in environments where human error can have grave consequences.



Sharon Muret-Wagstaff

After Muret-Wagstaff established the CORE faculty leadership team of surgery's Joe Sharma and Virginia Shaffer, anesthesiology's Michele Sumler and Darlene Mashman, and Kate Pettorini of the EUH operating room staff, they developed perioperative scenarios that are enacted in a mock operating room simulation facility.

"The interdisciplinary teams at the training sessions consist of a minimum of two surgeons, two anesthesiologists, and two nurses, with additional participants as appropriate," says Muret-Wagstaff. "We prioritize and update scenarios by consulting Emory quality committees, past adverse events, closed claims analysis, the Stanford Emergency Manual, and literature from health care, aviation, and other high-stakes industries. Examples include hemorrhage, malignant hyperthermia, oxygen failure, power failure, transfusion reaction, venous air embolus, and advanced cardiac life support events."

CORE is working to secure funding for residents to be included in future training, though faculty involvement is the program's primary imperative. Muret-Wagstaff adds, "Faculty role models are the exemplars that residents and fellows emulate in the operating room. Faculty also understand that education is ongoing, and CORE offers them additional opportunities for development and improvement."

As a CORE session participant, Emory colorectal surgeon Patrick Sullivan is enthusiastic. "Until you are in the heat of the moment in a crisis, you don't know how the team will respond," he says. "A tremendous amount of growth occurs when you are challenged with new scenarios. This type of training is critical to optimizing the best care for our patients."

In 2017, CORE received the Emory Quality Conference's Outstanding Safety Intervention Award for documentation of its post-launch growth over a six-month period.

Migrate the Mission

On the second day of the Emory Haiti Alliance's June 2017 surgical trip to Hôpital Bienfaisance de Pignon in Haiti's Central Plateau region, the poorest and most medically underserved area

in the country, general surgery resident Priya Rajdev gave a crash course in minimally invasive surgery to the hospital's physicians and staff. As she taught her modification of former Emory endosurgery fellow Benjamin Martin's presentation to trainees at another Haitian hospital the year before, she never dreamed her overview would become a briefing for an actual procedure.

The alliance—a volunteer consortium of Emory medical students, surgery and anesthesiology residents, faculty physicians, and mid-level practitioners—has experienced many unexpected episodes during its 10 summer journeys to Haiti, from frequent power outages to shortages of basic medical supplies. But the performance of a laparoscopic cholecystectomy and the cooperation between the

alliance and Bienfaisance personnel that contributed to its success wasn't just unforeseen, it was a milestone.

When a patient presented at the clinic with severe gallstones, laparoscopic removal of her gallbladder was the best option because of the shortened recovery time. The Emory members of the surgical team included Rajdev as primary surgeon; long-standing alliance leader and mentor Jahnavi Srinivasan as faculty supervising surgeon; and anesthesiologist Cinnamon Sullivan, who advised the Haitian anesthesiology resident. Pierre Pinson, one of Bienfaisance's two rotating surgeons, commandeered the laparoscopic camera. Like many of the Haitian team

members, Pinson had never participated in a laparoscopic surgery.

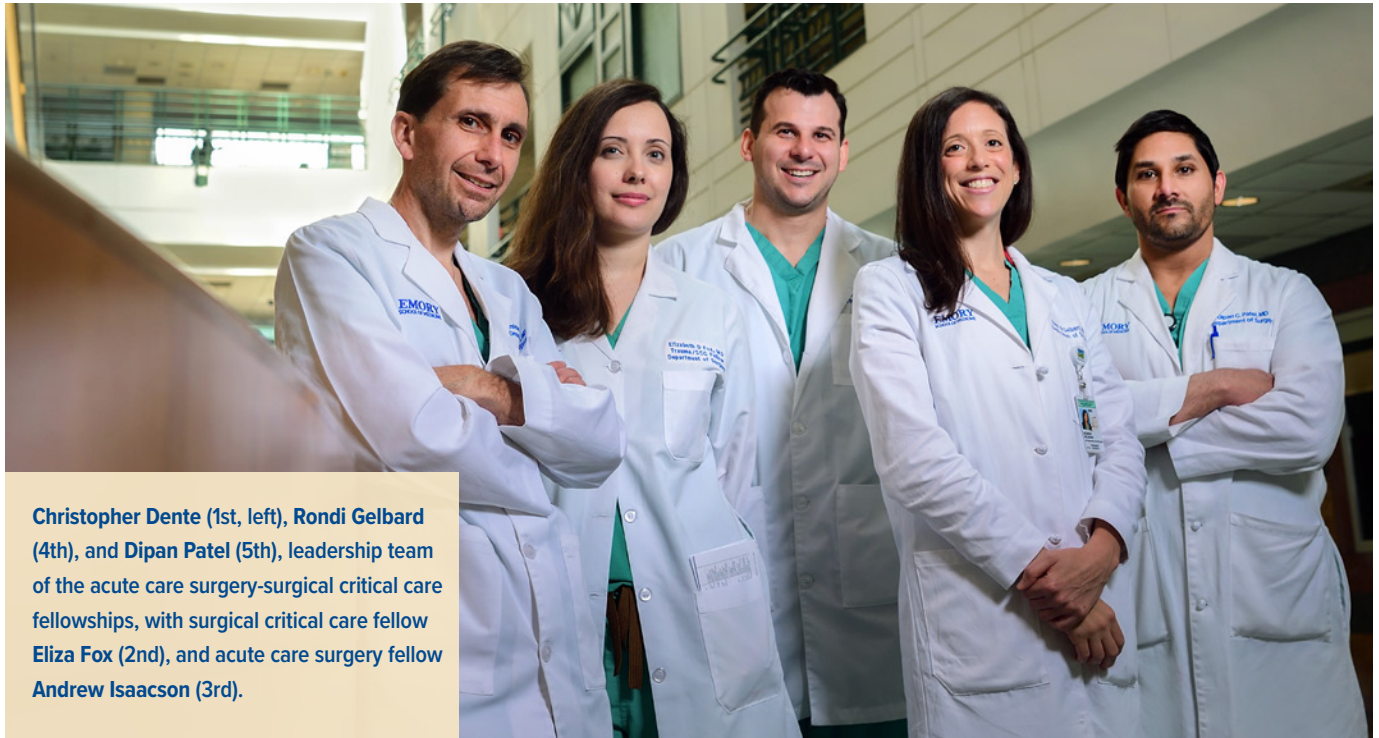
"We had brought some box trainers, so Dr. Srinivasan and I worked with Dr. Pinson beforehand," says Rajdev. "He had never used trocars, but by the time we did the surgery, he was confident and did great."

Improved communication contributed to the smoothness of the surgery and the quality of the overall trip. "The language barrier was significant on prior trips," says Srinivasan. "We always have several Haitian PAs and nurses from Emory and Grady who can translate, but constantly needing that slows things down. The Bienfaisance staff speaks Creole, French, and English, and there are a good number of them. At previous facilities, there were often shortages of local nurses and other clinical support."

Another attraction of Bienfaisance as the alliance's new summer base is its dedication to education. Haitian physician Guy



Members of the laparoscopic cholecystectomy team: **Pierre Pinson** (front left), **Jahnavi Srinivasan** (back left), and **Priya Rajdev** (back right). The team was gratified that the reduced recovery time afforded by the minimally invasive procedure also accommodated their limited stay, allowing them to observe the patient's improvement.



Christopher Dente (1st, left), Rondi Gelbard (4th), and Dipan Patel (5th), leadership team of the acute care surgery-surgical critical care fellowships, with surgical critical care fellow Eliza Fox (2nd), and acute care surgery fellow Andrew Isaacson (3rd).

Theodore, who received his graduate medical training in the U.S. and started the hospital in 1983, has fostered the facility into one of the most modern in the country. Beinfaisance has a range of clinical, surgical, and public health services, and aspires to being a national training center. The alliance has agreed to take a leading role in helping that happen, and plans on returning in 2018, ideally with laparoscopic instruments and additional simulation technology.

“We’ve rethought our educational strategy, and decided that Haitian surgeons may be a more practical training group than Haitian residents,” says Srinivasan. “They are voracious learners, and can take what they’ve been taught and train other surgeons in country, gradually creating a self-sustaining system.”

During the 2017 trip, the alliance’s teams, one each for the first two weeks and a third for doing patient follow-up afterwards, performed 60 cases and saw more than 100 patients. Joe Sharma and Steve Roser focused on head and neck surgery cases, Jeff Carney provided quaternary urology surgery, Paul Parker led the pediatric surgery cases, Carla Haack and Barbara Pettitt provided general surgery expertise (Pettitt also ran the post-op clinic), and Cinnamon Sullivan, Grant Lynde, and Mark Caridi-Scheible administered anesthesiology. All are alliance veterans. First timer Keith Delman, program director of the Emory general surgery residency, contributed to the trip’s medical student and resident education.

Medical students are already raising funds and procuring supplies and pharmaceuticals for the 2018 trip. Contributions can be made by contacting the 2018 medical student trip leader Stefanie Soelling at stefanie.soelling@emory.edu, or Jahnvi Srinivasan at jsrini2@emory.edu.

Model Program Adjusts to Changes in the Field

The Department of Surgery’s successive one-year trauma surgery residency and one-year surgical critical care (SCC) fellowship at Grady Memorial Hospital has been reliably producing exceptional surgeons to meet the needs of trauma centers and ICUs across the country for over two decades. However, in response to the increasing demand by emergency rooms for surgeons who could manage blunt and penetrating traumatic injuries and acute general surgical conditions such as devastating skin and soft tissue infections, bowel obstructions, and complications from ulcer disease, Emory’s Grady-based program has restructured the trauma surgery year into an acute care surgery (ACS) fellowship.

Emory’s one-year, American Association for the Surgery of Trauma (AAST)-accredited ACS fellowship, which remains paired with the one-year, ACGME-accredited SCC fellowship, is one of only 21 AAST-approved ACS fellowships in the U.S. While maintaining the rigorous trauma surgery training for which the Emory/Grady program has long been recognized, the ACS fellowship has added exposure to emergent general surgery conditions and dedicated rotations with surgical subspecialists on the vascular, cardiothoracic, orthopaedic, and hepatobiliary services.

Christopher Dente, program director of the ACS fellowship and a graduate of the original Emory trauma/SCC program, spent the last several years developing and refining Grady’s ACS training experience. “We have a pretty broad-based practice as faculty at Grady, so the shift from the purely trauma moniker to acute care surgery was fairly organic,” he says. “The fellows’ experiences continue to largely orbit around care of the critically injured

patient, but they are also exposed to other emergent surgical conditions. This type of training conforms to the AAST's recommended national priorities in the training of a versatile surgeon whose expertise involves time-sensitive disease."

Dente's efforts have elevated the program to one of the leading ACS fellowships in the country, with over 80 applicants this past academic year. In addition to Dente, the program's leadership team includes Rondi Gelbard, associate program director of the SCC year, and Dipan Patel, associate program director of the ACS year.

In July 2017, Emory's ACS-SCC fellowship produced its first three graduates: Travis Arnold-Lloyd, Amanda Celii, and Paul Evans. They are now applying their advanced and diverse training at San Antonio Military Medical Center (Arnold-Lloyd), the trauma and critical care program at the University of Oklahoma (Celii), and the trauma center at St. David's South Austin Medical Center (Evans).

Collaborating with Industry to Enhance Training

"The new training model for surgery residents has two primary components, with direct supervision in clinical and operating room settings being the most important, followed by practice and assessment in a simulated environment," says general surgery program director Keith Delman. "Here at Emory, we're introducing a third approach: residents leading surgical procedures while being advised and observed remotely."

Delman is describing the recent agreement between the Emory Office of Surgical Education (OSE) and KARL STORZ Endoscopy to install the STORZ VisitOR1 telemedicine system in operating rooms in Emory University Hospital. The internet-based telerenting and telepresence device can connect outside surgeons and experts to the point of care, though Delman plans to focus initially on using the system as a mechanism to allow senior faculty at another location to oversee chief residents and fellows performing procedures in the operating room. Procedures can also be recorded for review and discussion.

"We must prepare residents in a safe, supervised setting, to transition to operating alone," says Delman. "Systems like VisitOR1 will allow faculty to regularly expose residents to making decisions independently, so that the first time they have to do so in their practices will not be when they don't have backup."

The OSE has already auditioned the camera component of the VisitOR1 system by using it to document residents per-



In the Office of Surgical Education's annual bowel anastomosis course, surgery residents work with porcine tissue, staplers, and other instruments donated by Ethicon.

forming various procedures on cadavers during testing sessions. "The camera allowed a different view of the operative field than the camcorder we typically use, and gave the faculty evaluators a much better means to critique trainees' abilities," says Johanna Hinman, associate director of education. "Adapting the system to these types of uses could give Emory teaching faculty the opportunity to establish testing models and protocols that will set the regional agenda for surgical teaching activities."

While this technology promises exciting and novel benefits, the OSE will continue to offer certain mainstays of surgical education that remain valuable in elevating skill levels, such as hands-on surgical workshops where residents practice on actual tissue. The office sponsors an annual bowel anastomosis course that covers procedural principles, management of colorectal anastomotic complications, and methods of performing sutured and stapled anastomosis. The course materials are donated by Ethicon, a manufacturer of surgical technologies and training aids. Ethicon has also donated box trainers and other kits for practicing laparoscopic skills.

"Applied Medical is another company that has been helpful to our training efforts," says Hinman. "They have collaborated with us on a course about the use of electro-surgical instruments, and we have purchased several of their laparoscopic training systems for our simulation lab. Working with outside vendors can be complex in an academic enterprise, and we are very careful not to exhibit preference. We closely consider all angles before committing to any type of partnership or acquisition from manufacturers and commercial entities, and make certain that what we're getting is appropriate to its purpose, is cost-effective, and offers the most benefit to our mission." ♦



RESEARCH

Ultimately, Not About Us

For the second year in a row, the Emory Department of Surgery maintained its position in the top 10 of all departments of surgery nationwide in annual NIH funding. According to ranking tables of annual NIH funding posted by the Blue Ridge Institute for Medical Research, the department placed ninth in NIH awards in 2016, the same level it attained in 2015, which was a move up from the 12th position in 2014. This most recent ranking attests to Emory Surgery's continued status as a locus for crucial translational research.

Transplant immunologists Christian Larsen, Andrew Adams, and Mandy Ford; novel cancer imaging and targeted therapeutic agents specialist Lily Yang; health services researcher Rachel Patzer; and sepsis and shock scientist Craig Coopersmith placed in the top 100 NIH-funded, department of surgery-based principal investigators. Vascular disease investigator Luke Brewster was also highly ranked.

"This is an exciting validation of the tremendous breadth and depth of research in the Department of Surgery," says Coopersmith, the department's vice chair of research. "While we are justifiably proud of this accomplishment, the true measure of our success is how our research will benefit our patients, and I am confident that the discoveries we make today will translate into transformative changes in patient care in the future."

Improving the Breakthrough

Emory transplant surgeon-scientist Christian Larsen's history with belatacept began in the 1990s, when he and Thomas

Pearson, now executive director of the Emory Transplant Center (ETC), and researchers at Bristol-Myers Squibb started developing the drug as a less toxic alternative to standard immunosuppressants for transplant patients. Belatacept is a costimulation blocker that interferes with T cell function and halts immune rejection of a transplanted organ, while avoiding damage to the kidney and cardiovascular system observed with the transplant drugs known as calcineurin inhibitors.

The FDA approved belatacept for kidney transplant recipients in 2011. Four years later, Larsen and University of California, San Francisco transplant specialist Flavio Vincenti concluded their BENEFIT study, clearly showing that belatacept had a better record of patient and organ survival than a calcineurin inhibitor, yielding a 43 percent reduction in death or transplant failure.

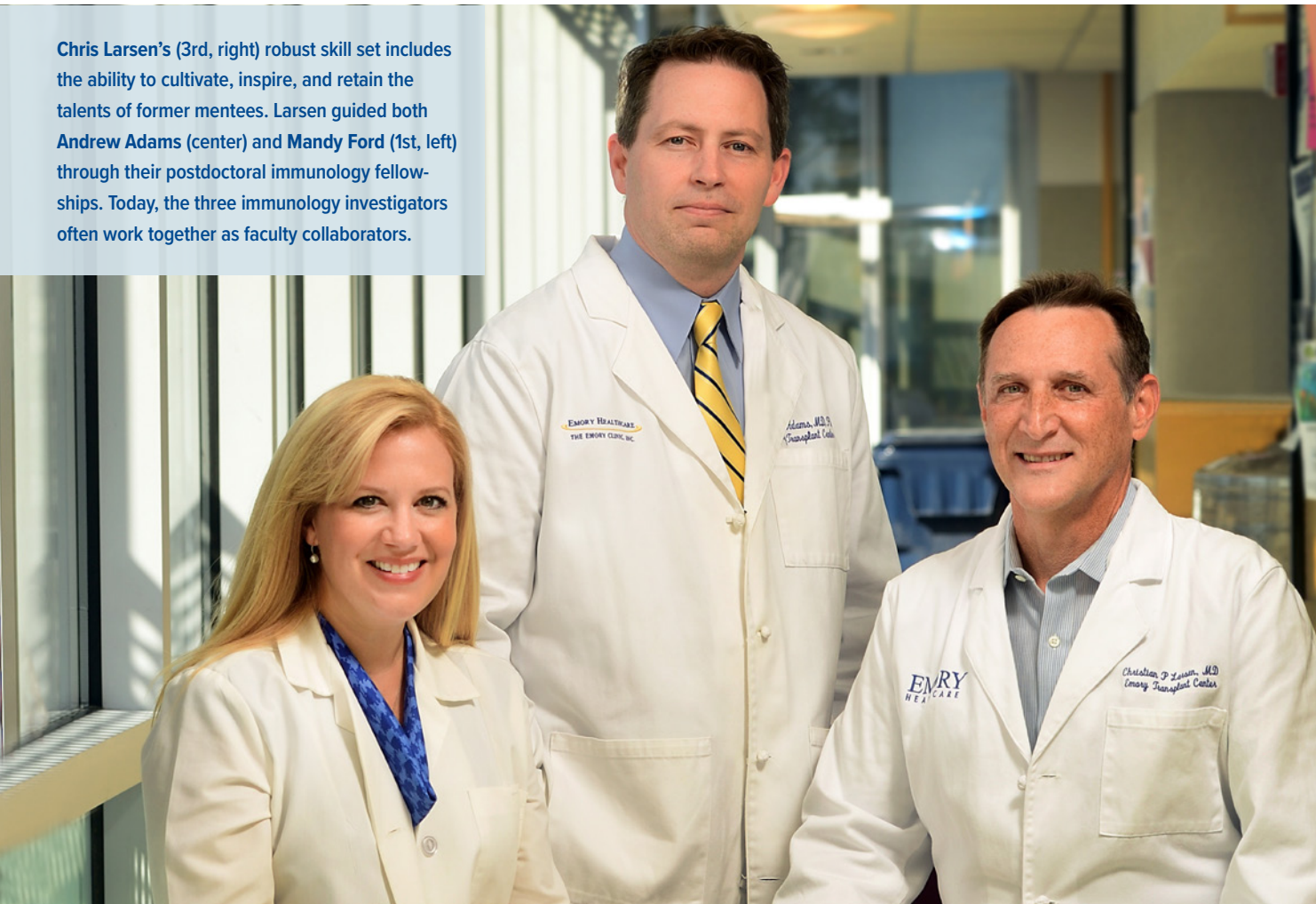
However, the widespread use of belatacept has been slowed by the higher early rejection rate observed with belatacept treatment. While this acute rejection has proven treatable with short-term, stronger immunosuppression, it poses an issue requiring

resolution. A recent grant from the National Institute of Allergy and Infectious Diseases will be applied to doing just that.

With the support of the five-year, \$12.6 million grant, co-investigators Larsen, Emory transplant surgeon and immunology investigator Andrew Adams, and ETC scientific director Mandy Ford will investigate next generation costimulation blockers at the Yerkes National Primate Research Center, with the goal of retaining the benefits of belatacept while overcoming the rejection problem.

A pair of ETC studies published in the *American Journal of Transplantation*—one led by Adams, the other by Ford—contributed to securing the grant. “Andrew’s study found that the presence of certain memory T cells in a non-human primate model of kidney transplant can predict the likelihood of belatacept-resistant graft rejection, and Mandy’s found similar results in human patients,” says Larsen, a coauthor of both studies. “This work suggested that a test for levels of these memory T cells could potentially be used as a pre-transplant screen to determine a patient’s eligibility for belatacept therapy.”

Chris Larsen’s (3rd, right) robust skill set includes the ability to cultivate, inspire, and retain the talents of former mentees. Larsen guided both Andrew Adams (center) and Mandy Ford (1st, left) through their postdoctoral immunology fellowships. Today, the three immunology investigators often work together as faculty collaborators.





I. Raul Badell and Mandy Ford. “I started working with Mandy on projects during my transplant research fellowship,” says Badell. “I knew early on that she was someone I could learn a lot from, and paid close attention to her knowledge of fundamental immunology and experimental mouse models. Her genuine interest in mentorship and collaboration has been of great benefit to a developing researcher like myself.”

In addition to Larsen, Adams, and Ford, the project team will include former Emory Pediatrics faculty member Leslie Kean at Seattle Children’s Hospital and the University of Washington. They will observe if these new biomarkers’ predictive value in non-human primate models of organ transplant is sustained, investigate pathways for targeting immune cells that are resistant to costimulation blockers, and work to advance cellular therapies and strategies for preserving protective immunity against viruses in organ transplant recipients.

Forging His Own Path

I. Raul Badell is yet another example of the lineage that exists in the Division of Transplantation. A kidney transplant surgeon, Badell was mentored by Chris Larsen when he was a research fellow in transplant immunology, and is being advised by Mandy Ford as he builds his budding research career.

Badell received an NIH K08 award in July (his proposal obtained the highest possible score), which he will apply to studying the poorly understood processes that generate anti-

human leukocyte antigen (HLA) donor-specific antibodies (DSA). DSA plays a significant role in the development of chronic rejection and fibrosis and can lead to late renal allograft loss.

HLAs are proteins located on the surface of white blood cells. There are three general HLA groups, and various subtypes within those. If the recipient and donor’s HLA are different, the recipient’s immune system can detect the donor kidney’s HLA as foreign antigen, and produce donor-specific antibodies against the donor HLA on the surface of the transplanted tissue.

Badell believes that gaining insight into the cellular interactions responsible for DSA formation after transplantation could guide the optimization of current immunosuppressive strategies and the development of novel therapies to control its production. For the study, he will do a series of interrelated experiments in a murine skin transplant model to examine the costimulatory and coinhibitory mechanisms that drive T follicular helper (Tfh) cell-mediated DSA responses in the setting of CD28 costimulation blockade, and then test methods of improving inhibition of these responses.

As Badell works through this study and beyond, he hopes to acquire the advanced skills in experimental mouse models that will allow him to realize bench-to-bedside translation of novel approaches to controlling DSA in kidney transplant recipients.

Balancing the Scales

Surgical oncologist Preeti Subhedar, pediatric surgeon Mehul Raval, and transplant surgeon Raymond Lynch have embarked on projects that investigate aspects of surgical treatment and/or research imbalance between patient populations and facility types. They only completed their postgraduate training two (Subhedar) and three (Lynch, Raval) years ago, but are already taking bold steps to correct inequities and reinforce the ethic of equal care for all.

■ Bridging the Gap

Preeti Subhedar provides breast cancer treatment and researches treatment disparities at the AVON Comprehensive Breast Center of Grady Memorial Hospital, which largely serves an urban patient population, 85 percent of whom are African American.

She is perfectly placed to use her mission grant from the V Foundation for Cancer Research to investigate why African American women rarely participate in breast cancer clinical trials.

"African American women with breast cancer continue to have poorer outcomes and higher mortality compared with Caucasian women," she says. "We've made significant progress in breast cancer research due to clinical trials, but minorities account for less than 10 percent of trial participants. I hope to identify the specific barriers and motivators behind this deficit."

With collaborators Sean Halpin and Colleen McBride of the Department of Behavioral Sciences and Health Education of the Rollins School of Public Health, Subhedar is looking to define the predominant opinions and views minority patients have toward clinical trials, and what they actually know about them. She will then formulate the most effective means of educating these patients about why enrollment in clinical trials is beneficial.

Subhedar is also the Emory principal investigator for the Alliance for Clinical Trials in Oncology 11202 multi-institutional study comparing axillary dissection vs axillary radiation in node-positive patients undergoing neoadjuvant



Preeti Subhedar (front), Mehul Raval (left), and Raymond Lynch (right). "I think the three of us share a strong sense of optimism tempered by uncynical realism. We know that positive change is possible, but only if you work very hard for it," says Raval.

chemotherapy, and principal investigator of a Service, Education and Advocacy Grant from the Emory Medical Care Foundation that is assessing obstacles to treatment adherence in under-resourced patients at Grady.

"Winship Cancer Institute of Emory University offers many clinical trial opportunities for our patients," says Subhedar. "It is not enough to simply have a trial open and offer it to a patient at Grady. We have to learn what negative assumptions they may have in regards to trial participation, and correct them."

■ Fair Costs for Standards of Care

Mehul Raval is concerned that routine procedures at children's hospitals (CH), not just specialized treatment, appear to cost more than the same procedures at non-children's hospitals (NCH), according to available health utilization cost data. As principal investigator of a grant from the Agency of Healthcare Research and Quality (AHRQ), he is comparing CH and NCH payment data for frequently performed surgical procedures. Ideally, his conclusions will encourage pricing transparency and cultivation of a high quality, value-centric health care system for all children in the U.S.

"To our knowledge, this study will be the first to directly assess the value of children's surgical care using payment data," he says. "We are testing for any quality or price differentials among CH and NCH, examining the sources of any such differentials, and seeking to define any roles that hospital market structure and competition have as potential drivers of high-cost care."

Raval is joined on the study by co-investigator and Emory economist Ian McCarthy, and Fred Sanfilippo, current director of the Emory Healthcare Innovation Program.

While outcomes for specialized surgical care are generally superior at CH, Raval and his colleagues have found that outcomes at CH and NCH are similar for such common procedures as appendectomy and pyloromyotomy, though the costs are higher at CH. Due to the unavailability of true costs or expenses, earlier research has been limited by only analyzing hospital-level charges. Instead, Raval's team is examining CH- and NCH-related payment data collected by the Health Care Cost Institute (HCCI), a non-profit, non-partisan research group dedicated to illustrating actual health care spending by aggregating payment data from four of the nation's largest insurance carriers.

"It is not enough to simply have a trial open and offer it to a patient at Grady. We have to learn what negative assumptions (patients) may have in regards to trial participation, and correct them."

—Preeti Subhedar, breast cancer surgeon

The project will evaluate HCCI data on actual payments for 11 common surgical procedures performed on 25 percent of privately insured children in the U.S. at CH and NCH, looking to determine any differentials between the two and how much marketing and competition affects quality and payment variation. Intending to influence policy and reimbursement guidelines, Raval will then present the results to pediatric accountable care organizations that are identifying instances of cost differences for procedures where higher costs are justified by improved outcomes.

■ Change (Perhaps Not) for the Better

The study Raymond Lynch presented at the 2017 American Transplant Congress concluded that proposals by the United Network for Organ Sharing (UNOS) to more broadly share livers on the basis of apparent need could actually increase waitlist mortality among already underserved populations.

The proposed change would have condensed the current 11-region system to eight, expanding the distance over which organs are shared. Lynch and his coauthors found that this would

divert livers donated in socially disadvantaged areas to areas with lesser need and greater privilege.

"Patients of lower socioeconomic status already have a higher waitlist death rate and reduced access to high-volume, high-quality transplant centers, and these risk factors are not evenly distributed among UNOS regions," he says.

Lynch and his colleagues determined that living more than 25 miles from a listing center was linked with increased mortality for liver transplant candidates, and that

patients in areas with low community health scores, a metric of sociodemographic disadvantage, experienced reduced access and heightened mortality. The eight district model would have drawn livers away from these groups, and has since been replaced with a new proposal that would expand access to livers to patients listed at a transplant center within 150 miles of the hospital where the liver is donated, even if it's in a different region.

Lynch believes this revised proposal still dissociates donation and utilization, so that the local tragedy of an organ donor's passing risks being converted into a regional or national commodity. He suspects this could remove the incentive to improve conditions or waitlist access in those areas that are productive of donors, creating a dangerous precedent.

"In attempting to fix one aspect of transplantation," he says, "the proposal would reduce access and increase risk for the most vulnerable patients. When you export a liver, you are in a sense



Ravi Rajani (left, front) and Jaime Benarroch-Gampel (left, back) with clinical trials director Kim Baio (right, back) and clinical research coordinator Heather Sigler (right, front). “Kim and Heather are integral to our research,” says Rajani. “They help manage regulatory and compliance matters, patient enrollment, trial budgets, and documentation of progress.”

importing a death because someone in the original place will not get a transplant. Our analyses show that by not considering real social disparities, this approach concentrates those deaths among the needy. We need to redesign distribution in a way that recognizes individual risk and fulfills our obligation to underserved communities.”

One Function May Suit Another

Ravi Rajani, chief of vascular and endovascular surgery at Grady Memorial Hospital, is the national principal investigator of a prospective, multicenter, non-blinded, non-randomized study of the RelayPro Thoracic Stent-Graft in subjects with traumatic injury of the descending thoracic aorta. Jaime Benarroch-Gampel, a member of Grady’s vascular surgery team, is the Emory lead for the Grady site of the study.

RelayPro Thoracic Stent-Grafts were originally designed for the management of patients with aneurysms and penetrating ulcers within the descending thoracic aorta. These conditions share certain life-threatening qualities with traumatic injuries to the region, bolstering the hypothesis that if the grafts are able

to achieve their initial purpose, it is likely they will also perform well in trauma situations.

“Traumatic aortic rupture has a very high rate of mortality and morbidity, though various types of stenting and grafting have offered more effective means of repairing aortic tears and transections,” says Rajani, who has been the PI for several trauma-specific clinical trials. “Possible advantages of the RelayPro system are that the delivery mechanism allows for better positioning, and the stent is designed to adapt to the aortic anatomy without modifying the vessel morphology.”

The trial is expected to enroll up to 50 patients nationally who are candidates for endovascular repair. “Considering the volume of blunt thoracic injuries we treat at Grady’s Level I trauma center, we will be able to substantially contribute to the national recruitment of patients,” says Benarroch-Gampel.

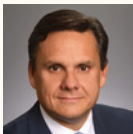
The trial’s primary objective will be to document all-cause mortality at 30 days post procedure, after which Rajani and Benarroch-Gampel will measure outcomes and any complications through five years of follow-up. ♦

NEW FACULTY



OLAMIDE ALABI, MD, completed her vascular surgery fellowship at Oregon Health and Science University.

While at OHSU, she led several systems-level quality improvement initiatives, including the development of clinical protocols to fast-track endovascular abdominal aortic aneurysm repair at OHSU's aortic center.



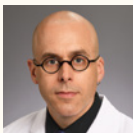
ROBERT CRAWFORD, MD, served as co-director of the Center for Aortic Disease, medical director

of the Vascular Surgery Progressive Care Unit, and associate program director of the vascular surgery fellowship at the University of Maryland, and helmed the formation of the vascular acute care surgery practice at University of Maryland Medical Center.



STEPHANIE DREW, DMD, is president-elect of the American College of Oral and Maxillofacial Surgeons,

founding chair of the Elaine Stuebner Scholarship for Women through ACOMS, and was a board member of the New York State Society of Oral and Maxillofacial Surgeons for over seven years.



DAVID ELWOOD, MD, was a general, hepatobiliary, and acute care surgeon at Kennestone Regional

Medical Center who also served terms as vice chair and chair of the Department of Surgery. He is now an attending on the acute and critical care surgery service at Emory University Hospital.

GUILLERMO ESCOBAR, MD, is the new program director of the vascular surgery fellowship and recently inaugurated residency.



He comes to Emory from the faculty of the University of Arkansas College of Medicine. He also served on the faculty of the University of Michigan.



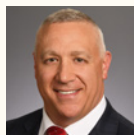
Board certified breast surgeon **CATHY GRAHAM, MD**, held numerous positions before coming to Emory, the most recent being at Georgia's Wellstar Kennestone Hospital, Northside Cherokee Hospital, and Marietta Surgery Center.



E. DEAN MCKENZIE, MD, is chief of pediatric congenital cardiothoracic surgery at Sibley Heart Center of Children's Healthcare of Atlanta. He has served as surgical director of the heart transplant and lung transplant programs at Texas Children's Hospital.

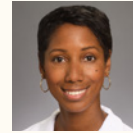


TERRAH PAUL OLSON, MD, did her fellowship in colon and rectal surgery at the University of Chicago. Her research interests include colorectal cancer in inflammatory bowel diseases, palliative surgery, end-of-life care, and surgical decision-making.



Before joining Emory as the trauma medical director of Grady Health System, **MARK SHAPIRO, MD**, was chief of acute care surgery, associate director of trauma services, medical director of total parenteral nutrition services, and chair of the transfusion committee at Duke University Medical Center.

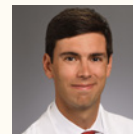
RANDI SMITH, MD, MPH, is a trauma surgeon, emergency/elective general surgeon,



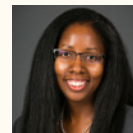
and surgical critical care intensivist at Grady Memorial Hospital. Her special interests include violence prevention, injury prevention, clinical outcomes, and the use of ultrasound in critical care.



CHADWICK STOFFER, MD, is primarily based at Grady Memorial Hospital's cardiothoracic surgery service, where he is assisting director Brent Keeling, MD, with further developing the program. He is also building a transcatheter aortic valve replacement practice at the hospital.



PETER THOMPSON, MD, completed his general surgery residency, plastic surgery residency, and research fellowship in transplant immunology at Emory. During his fellowship, he received several awards for his work with pancreatic islet transplantation as a treatment for diabetes.



KENEESHIA WILLIAMS, MD, is at Grady in the same capacity as Dr. Randi Smith. Her training included a research residency in the NIH-funded training program in trauma and burn research at the Burn and Shock Trauma Research Institute of Loyola University Medical Center.



Based at the Emory Aesthetic Center, **VINCENT ZUBOWICZ, MD**, has over three decades of experience as an aesthetic and reconstructive surgeon. He directed the craniofacial clinic for cleft lip and palate at Children's Healthcare of Atlanta at Scottish Rite, and was chief of plastic surgery at Georgia Baptist Medical Center.

FACULTY APPOINTMENTS & AWARDS

Shelly Abramowicz, DMD, MPH

- Elaine A. Stuebner Scholars Award, American College of Oral and Maxillofacial Surgeons
- President, Pediatric OMS Group, American Association of Oral and Maxillofacial Surgeons

I. Raul Badell, MD

- Emory 1% Award, for receiving NIH study section review scores in the top one percentile

Gary Bouloux, MD, DDS

- Treasurer, American Society of Temporomandibular Joint Surgeons

Luke Brewster, MD, PhD

- Chair, Grants and Scholarship Committee, Vascular and Endovascular Surgery Society
- Reviewer, Collaborative Science Research Award Study Section, American Heart Association

Kenneth Cardona, MD

- Chair, Medical Advisory Council, National Leiomyosarcoma Foundation

Edward Chen, MD

- Chair, Membership Committee, Southern Thoracic Surgical Association
- Society of Thoracic Surgeons: Workforce on Adult Cardiac and Vascular Surgery; Access and Publications Task Force, Adult Cardiac Subcommittee

Craig Coopersmith, MD

- Distinguished Service Award, Society of Critical Care Medicine
- Society of Critical Care Medicine: Discovery Research Network Steering Committee; Steering Committee, Surviving Sepsis Campaign

Keith Delman, MD

- Chair, ACS/APDS/ASE Entering Surgery Resident Prep Curriculum Committee

Christopher Dente, MD

- Recruitment and Retention Committee, Eastern Association for the Surgery of Trauma

Yazan Duwayri, MD

- Chair, Vascular Alternative Payment Model Development Committee, Society for Vascular Surgery

Felmont Eaves, III, MD

- Director, American Board of Plastic Surgery

Felix Fernandez, MD

- Richard E. Clark Paper in General Thoracic Surgery, J. Maxwell Chamberlain Paper in General Thoracic Surgery, 53rd Annual Meeting, Society of Thoracic Surgeons

Mandy Ford, PhD

- Section Editor, *Journal of Immunology*

Rondi Gelbard, MD

- Guidelines Committee, Eastern Association for the Surgery of Trauma
- Young Fellows Association Education Workgroup, American College of Surgeons

Theresa Gillespie, PhD

- Research Abstract Review Committee, 22nd Annual International Meeting, International Society for Pharmacoeconomics and Outcomes Research
- Scientific Reviewer, Partnerships in Cancer Research (P20) and Cancer Health Equity (U54), National Cancer Institute

Wendy Greene, MD

- Councilor-at-Large, Society of Critical Care Medicine

Robert Guyton, MD

- 2017 Presidential Citation, American College of Cardiology
- Lifetime Achievement Award, Annual Health Care Heroes, *Atlanta Business Chronicle*

Neal Iwakoshi, PhD

- Named to Emory's Millipub Club for publishing a paper that garnered more than 1,000 citations

Kirk Kanter, MD

- 2017 Sir James Carreras Award, Variety International Global Children's Charity

David Kooby, MD

- Scientific Program Chair Elect, Americas Hepato-Pancreato-Biliary Association
- Associate Editor, *Annals of Surgical Oncology: Pancreas*

Bradley Leshnowar, MD

- Society of Thoracic Surgeons: Workforce on Health Policy, Reform and Advocacy; Participant User File (PUF) Task Force

Shishir Maittel, MD

- Chair, GI Surgery Working Group, Eastern Cooperative Oncology Group-American College of Radiology Imaging Network (ECOG-ACRIN)
- Executive Committee, International Cholangiocarcinoma Research Network
- Program Chair, 2017 Annual Meeting of Americas Hepato-Pancreato-Biliary Association

- Program Chair, 2019 Gastrointestinal Cancers Symposium, co-sponsored by the American Society of Clinical Oncology, American Society for Radiation Oncology, Society of Surgical Oncology, American Gastroenterological Association Institute

Jonathan Meisel, MD

- Surgical Education Committee, American Academy of Pediatrics

Bryan Morse, MD

- Physician Lead, Performance Improvement Process in preparation for and during ACS Level I trauma center verification visit, verification received
- Multicenter Trials Committee, Eastern Association for the Surgery of Trauma 1st Place Poster Presentation, 2017 Southeastern Surgical Congress

Sharon Muret-Wagstaff, PhD, MPA

- Alumni Examiner/Mentor, Baldrige Performance Excellence Program, National Institute of Standards and Technology, U.S. Department of Commerce
- Society for Simulation in Healthcare: Academy Fellow; Vice Chair, Research Committee
- Research and Development Committee, Accredited Education Institutes Consortium, American College of Surgeons
- Founding Chair, Simulation Training and Research Initiative of Atlanta (STRIA)

Foad Nahai, MD

- Honorary Fellowship, Royal College of Surgeons of England

Ronald Parsons, MD

- Member-at-Large, Kidney Pancreas Community of Practice Executive Committee, American Society of Transplantation
- Cell Transplant Committee, American Society of Transplant Surgeons

Ankit Patel, MD

- Editorial Board, *Surgical Laparoscopy Endoscopy & Percutaneous Techniques*
- Lead Editor, *The SAGES Manual of Robotic Surgery*, Springer International Publishing
- Co-Chair, Robotics Task Force, SAGES

Rachel Patzer, PhD, MPH

- Planning Committee, Outcomes Research and Epidemiology Task Force, American Society of Transplantation
- Member, Joint AST-ASTS Transplant Metrics Task Force
- Editorial Board, *Transplantation Reviews*

Thomas Pearson, MD, DPhil

- Board of Directors, LifeLink Legacy Fund

Barbara Pettitt, MD

- Evangeline T. Papageorge Distinguished Teaching Award, Emory Medical Alumni Association
- Best Clerkship Director Award, 2017 Graduating Class, Emory University Medical Students
- Step 3 Interdisciplinary Review Committee, National Board of Medical Examiners-United States Medical Licensing Examination

Ravi Rajani, MD

- 2017 Dean's Teaching Award, Emory University School of Medicine

Mehul Raval, MD, MS

- Surgical Quality and Safety Committee, American Pediatric Surgical Association

Steven Roser, DMD, MD

- 2017 Donald B. Osborn Award for an Outstanding Educator, American Association of Oral and Maxillofacial Surgeons

Subhadra Shashidharan, MD

- Rising Star Award, Annual Health Care Heroes, *Atlanta Business Chronicle*

Jahnavi Srinivasan, MD

- Editorial Board, *Surgical Laparoscopy Endoscopy & Percutaneous Techniques*

Charles Staley, MD

- Chair, Vizient UHC Cancer Center Network Steering Committee

Nicole Turgeon, MD

- Councilor at Large, Board of Directors, American Society of Transplantation

William Wood, MD

- Educator of the Year Award, 2017 Christian Medical & Dental Associations



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