A CENTURY OF LEADERSHIP

DEPARTMENT OF SURGERY
ANNUAL REPORT 2014
DURING THIS CENTENNIAL OF THE DEPARTMENT OF SURGERY, we are making special efforts to document and honor the milestones and accomplishments of our surgical predecessors. In this report, we focus on how our past has shaped our current successes and look ahead to possible future directions for each of our specialties.

The work of our early surgeons was in many cases groundbreaking. Our thoracic surgeons identified the primary cause of lung cancer, opening the door to better treatments. Similarly, many of the techniques developed by our plastic surgeons in World War II strengthened the field in such areas as post-traumatic and hand reconstruction.

Since our early days, we have never really stopped making history. From the first surgical prevention of cancer based on genetic testing to surgical treatment of heart arrhythmia, our surgeons’ achievements continued through the 20th century and into the new millennium. Perhaps just as impressive, each of our surgery sections is influential today in shaping its specialty as surgery continually becomes more specialized.

You will read stories of today’s promising research, treatments and quality-improvement initiatives in these pages: thoracic surgeons collaborating with radiation oncologists to develop a new approach to lung cancer treatment, a breast cancer vaccine yielding unusually good results for a first trial, efforts of public health sciences researchers to analyze communications about genetic results, and much more.

We are pleased to announce new leadership in cardiothoracic and minimally invasive surgery; additionally, three generous benefactors have funded three endowed professorships — a vital commitment that recognizes the accomplishments of our past as it sustains our future.

Looking ahead, we are energized by the opportunity to continue shaping the future of health care, ensuring that care becomes more individualized, efficient, and most of all, effective. I urge you to read on.

Timothy Eberlein, MD
William K. Bixby Professor of Surgery
Chair, Department of Surgery
Director, Alvin J. Siteman Cancer Center
For 100 years, the Department of Surgery has been defined by a drive to excel. From its earliest days, its success has been fueled by research, from basic science to clinical investigations. Embracing an institution-wide enthusiasm for multidisciplinary collaboration, faculty have made major contributions in nearly every area of surgical practice, advancing biomedical knowledge, human health and surgical education. Today, the department faces new challenges as it has in every phase of its history: with creativity and determination. As the department honors its past, its members look forward to an even brighter future.
MEMBERS OF the Division of Public Health Sciences have made inroads in a number of areas since the division was formed in 2010: identifying and reducing disparities in access to health care, performing cancer-prevention research, and training clinicians in comparative effectiveness and outcomes research.

Several researchers also focus on how to present health information and scientific findings to the public and patients.

Scientists have known for more than 50 years that smoking causes lung cancer — initially from research by Washington University medical student Ernst Wynder and Department of Surgery Chair Evarts Graham, MD — and that it contributes to heart disease. Much of the battle against smoking still is getting people to quit, an area of interest for Erika Waters, PhD, MPH, who studies beliefs about health risks and how they influence health-related decisions and behavior.

Waters, who has studied tobacco use in the general population, became interested in communicating about the genetic component of smoking addiction after reading an online article entitled “Can’t quit smoking? Blame your genes,” reporting results of a 2008 multicenter study. “I thought, ‘Wow,
Division Chief Graham Colditz, MD, DrPH, is one of the developers of the Rosner-Colditz statistical model, a method to predict a woman’s risk of developing breast cancer that outperforms the most commonly used model by 3 to 5 percent. The model considers well-established risk factors, including body mass index, alcohol consumption and age at first menstrual period, as well as factors not considered in other models, such as a woman’s age at menopause and the type of menopause, whether natural or surgical. The model validation appeared online in the journal *Breast Cancer Research and Treatment*.

Yikyung Park, ScD, joined the Division of Public Health Sciences as an associate professor of surgery on June 1. Park formerly worked as a staff scientist in the Nutritional Epidemiology Branch, Division of Cancer Epidemiology and Genetics, National Cancer Institute, where she served as co-principal investigator of the NIH-AARP Diet and Health Study. She earned a doctor of science degree in nutritional epidemiology at Harvard School of Public Health. Park’s research focuses on the role of diet, obesity, physical activity and other lifestyle factors in cancer development, progression and survival.

In Focus

In the 1950s, Department of Surgery researchers contributed groundbreaking research findings linking smoking to lung cancer. In 1950, Surgery Chair Evarts Graham, MD, and medical student Ernest Wynder co-wrote an article in the *Journal of the American Medical Association* demonstrating the more cigarettes a person smoked, the greater the chance of developing lung cancer. It was the first published evidence linking smoking to lung cancer. By 1953, experiments in Graham’s lab provided more direct evidence lung cancer could be caused by the tars in cigarette smoke. The findings contributed to the 1964 Surgeon General’s Report on Smoking and Health, the first from this office to warn the public of smoking’s health hazards.

In a new Surgeon General's Report, marking the 50th anniversary of the landmark publication, Division of Public Health Sciences Chief Graham Colditz, MD, DrPH, contributed a chapter on illness caused by smoking and its effect in the workplace. From 2005-2009, disease caused by smoking resulted in a loss of approximately $107.6 billion in productivity, the chapter stated. “If you are a smoker, your employer should care right now,” says Colditz. “You take more sick days and your medical costs are higher than a non-smoker’s.”

Communication will also be a major part of future research. Jennifer Ivanovich, MS, MBA, is currently funded by the National Cancer Institute to investigate how to communicate genome sequencing results to women diagnosed with breast cancer at age 40 or younger. Mary Politi, PhD, plans to partner with Washington University’s Genome Institute, an international leader in high-speed, comprehensive genomics, to learn how to better communicate sequencing results to patients as they are making decisions based on some of the results.

“The technology has advanced much faster than our knowledge of how to communicate and use these results in practice,” says Politi.

In Focus

“what does that do to a smoker’s sense of confidence?” says Waters. “Confidence is really important in making an attempt to stop smoking and actually quitting.”

Funded by the American Cancer Society, Waters conducted focus groups stratified by education and race to account for different life experiences. She showed a video clip of a news report on the 2008 genetic findings, and participants gave their responses, often discussing family history of smoking, social and environmental factors, and the roles of stress and personal finances. Individuals had widely varying reactions — from “Now I understand” to complete rejection of the findings. The project may help shape how scientists and journalists can present genetic risk factors and explain how to alleviate them.

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NEW SPECIALIZED trauma services by Washington University physicians at Barnes-Jewish Hospital focus on the needs of older adults — a major demographic that is growing quickly as the baby-boom generation ages.

“Elderly people are prone to fall and are more sensitive to major injuries,” says Grant Bochicchio, MD, the Harry Edison Professor of Surgery and chief of the Section of Acute and Critical Care Surgery at Washington University School of Medicine. “They have significant comorbidities, and if you do not optimize their care early and aggressively, they are more prone to have bad outcomes. Geriatric trauma is truly a specialty that is becoming important now with a growing aging population.”

Creation of a geriatric trauma service at Barnes-Jewish almost a year ago enabled the trauma team to better organize care for older adults. When geriatric trauma patients come to the...
Emergency room for care, they are evaluated, admitted immediately to the geriatric trauma service, and if needed, fast-tracked for surgery. Patients return to the trauma service after surgery.

Patients receive treatment tailored to their age and health conditions. This includes administering fluids without overburdening the heart and monitoring dosage of pain and other medications. “In my opinion, it is becoming a separate specialty, similar to pediatrics,” says Bochicchio.

Early data for geriatric trauma patients at Barnes-Jewish are encouraging; average length of hospital stay decreased by about 20 percent in the first six months.

Development of the service follows a trend toward greater service specialization among Washington University trauma surgeons at Barnes-Jewish. As recently as the 1980s, general surgeons all took trauma call, and the service was more loosely organized. With the recruitment of Palmer Bessey, MD, as director of burns, trauma, and critical care, and later under the extended leadership of Timothy Buchman, PhD, MD, a group of surgeons who specialized in trauma, emergency surgery and wound care began managing patients who came in through the emergency department or had problems with chronic wounds.

Future efforts to improve care for critically ill and injured patients are also taking shape in the community. Douglas Schuerer, MD, medical director of trauma, helped write new state regulations for transport of patients with stroke, heart attack and trauma as chair of the Trauma Subcommittee of the State Advisory Council for Emergency Medical Services. Under the regulations, patients with these diagnoses will be taken to the highest-level trauma center for their condition immediately.

“There is very great evidence that people who get to trauma centers sooner and initially have better outcomes,” says Schuerer.

Michael Weiss, DPM, who joined the section as an assistant professor of surgery, is part of a multidisciplinary clinic that treats patients for critical limb ischemia, or reduced arterial flow to the leg. Weiss focuses on diabetic wounds, infections and limb salvage. He earned a doctor of podiatric medicine degree at the Ohio College of Podiatric Medicine and completed postgraduate surgical training at Midwest Podiatry in St. Louis. He is board certified by the American Board of Podiatric Surgery in foot and ankle surgery.

Anja Fuchs, PhD, joins the section as a research assistant professor who will study innate immune mechanisms following trauma and infection. She earned her doctoral degree in immunology at the University of Manchester, Manchester, UK. Her PhD thesis was on “Functions of activating human natural killer (NK) cell receptors in the innate immune system.”

Obeid Ilahi, MD, was named an associate professor in the Section of Acute and Critical Care Surgery. He previously worked as a general and critical care surgeon at BayFront Medical Center in St. Petersburg, Fla., and was an assistant professor of surgery at the R Adams Cowley Shock Trauma Center, University of Maryland, in Baltimore, and at the State University of New York Upstate Medical University in Syracuse, N.Y.

Two surgeons who completed surgical critical care fellowships at Washington University in July 2014 joined the faculty as assistant professors of surgery. Sara Buckman, MD, PharmD, earned medical and doctor of pharmacy degrees and completed a general surgery residency at the University of Wisconsin. Isaiah Turnbull, MD, PhD, earned a medical degree and completed a general surgery residency at Washington University.
THE FIRST colorectal surgeons at Washington University School of Medicine played a key role in the local, national and international development of their specialty — a tradition of leadership that continues today in the Section of Colon and Rectal Surgery.

Ira Kodner, MD, who established the section and served as its first chief, was introduced to his future specialty when he began a general surgery residency in the early 1970s at Jewish Hospital, one of the Washington University-affiliated institutions. A Jewish Hospital surgeon, Sam Schneider, MD, invited him to a meeting of the St. Louis Ostomy Association, where he learned that surgeons created intestinal stomas (colostomies, urinary conduits and ileostomies) for patients undergoing intestinal surgery, but there was little follow-up care.

Kodner saw a need in this patient population, started a stoma care clinic at Jewish Hospital with an enterostomal therapy nurse, and went on to receive fellowship training in colon and rectal surgery at the Cleveland Clinic.

Washington University recruited Kodner and colorectal surgeon Robert Fry, MD, to full-time academic practice in 1985. In the ensuing years, Kodner and fellow faculty members went on to distinguish themselves, representing their

Colorectal surgeons in the section have helped introduce laparoscopic and robotic techniques into the specialty. Above, Elisa Birnbaum, MD, performs a robotic procedure.
specialty as directors on the American Board of Surgery for 18 consecutive years. Other major accomplishments included pioneering the use of preoperative radiation therapy to nearly eliminate local rectal cancer recurrence and developing surgical techniques to eliminate the need for intestinal stomas. Also, James Fleshman Jr., MD, while chief, led a multicenter study showing that laparoscopic colon resection was a safe and acceptable alternative to open surgery.

Today, colorectal surgeons are working to reduce surgical site infections, promote earlier recovery and reduce readmissions at Barnes-Jewish Hospital. Their initiatives range from preoperative nutritional supplements to pre- and intraoperative steps to prevent infections and follow-up calls once a patient has been discharged.

“A huge part of it is education,” says surgeon Paul Wise, MD. “When patients receive the appropriate perioperative education from the clinic, office and hospital staff, outcomes are inevitably better. This is especially critical in our new ostomy patients.”

In research, the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine has served as a site for a trial comparing laparoscopic vs. open resection for rectal cancer and the RObotic Versus LAParoscopic Resection for Rectal Cancer (ROLARR) study for patients with rectal cancer. Matthew Mutch, MD, is the Siteman principal investigator.

Looking to the future, colorectal surgeons plan to take leadership roles in national efforts to create a colorectal surgery-focused outcomes database and centers of excellence for rectal cancer.

Helping patients manage their “new normal”

Active business owner Laura Kochan, 59, of South St. Louis County, underwent a colostomy in 2000, after Crohn’s disease and treatment for colorectal cancer damaged her colon. She credits her Washington University colorectal surgeon, Ira Kodner, MD, who is now retired, with saving her life. She credits ostomy nurses such as Bonnie Johnston, RN, colorectal surgery clinical nurse coordinator, for helping her to manage her “new normal” and regain confidence to get her lifestyle back.

“For the first time in all of these years, this past winter I developed a peristomal abscess, resulting from an improper appliance fitting,” says Kochan. “I was so fortunate that along with Dr. Matthew Mutch, Bonnie was able to monitor my condition over the four weeks it took to clear up. It gives me peace of mind knowing that Bonnie is there.”

Johnston brings both personal experience and specialized training to patients like Kochan. Johnston — who is certified in wound, ostomy and continence nursing — was diagnosed with ulcerative colitis at age 24 and successfully treated at Washington University. She plays a critical role in ostomy education by seeing patients in clinic and triaging calls from patients and home health nurses. Her work, intended in part to reduce readmissions, is supported by an award from The Foundation for Barnes-Jewish Hospital.

Highlights

- Sean Glasgow, MD, joined the section as an assistant professor in April 2014. Glasgow, also serving in the U.S. Air Force, earned his medical degree at Duke University. He completed a general surgery residency at Washington University and a colon and rectal surgery fellowship at the University of Minnesota. Glasgow treats the full range of benign and malignant colorectal disease.

- Colorectal surgeons and other team members on a workgroup to prevent surgical site infections at Barnes-Jewish Hospital and Barnes-Jewish West County Hospital have started an audit process to ensure that pre- and intraoperative interventions are taking place. The ultimate goal is to see whether interventions affect outcomes, as measured by the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP®) and the hospitals’ infection programs.

- In 1980, Ira Kodner, MD, and Robert Fry, MD, established the Washington University Colon and Rectal Surgery Fellowship, one of the earliest such programs in the Midwest. Colorectal surgery faculty members now train three clinical fellows each year; in addition, the Washington University General Surgery Residency has developed an early specialization program that allows residents to focus on colorectal surgery or other specialties in their last two years. This may allow residents to take their general surgery and specialty boards without having to complete a separate fellowship.

- The section has received a grant from the Colon Cancer Alliance to provide colon cancer screening and genetic testing to uninsured and underinsured persons in the St. Louis area. Faculty and staff helped raise money for the alliance by fielding a team in the St. Louis Undy 5000. Paul Wise, MD, is principal investigator of the grant.
THROUGHOUT ITS HISTORY, the Section of Endocrine and Oncologic Surgery has contributed major advancements at the institutional and national level. Today, members continue to explore multiple frontiers that may improve treatment for thyroid and breast cancer.

The section was formed in the early 1990s with Jeffrey Norton, MD, as the first chief. Around that time, Department of Surgery Chair Samuel Wells Jr., MD, and colleagues identified the gene mutations responsible for MEN 2A syndrome, a rare inherited condition that most often leads to an aggressive form of thyroid cancer. The researchers developed a genetic test for the mutations and MEN 2A; Wells and Jeffrey Moley, MD, the current section chief, then began performing surgical thyroid removal at St. Louis Children’s Hospital in children testing positive for the mutation — the first-ever surgical prevention of cancer as a result of gene testing.

Surgeons in the section also participated in the successful application for a National Institutes of Health (NIH)-funded Cancer Center Support Grant, High-tech glasses under development at Washington University help breast surgeon Julie Margenthaler, MD, visualize cancer cells.
General surgery resident Oluwadamilola (Lola) Fayanju, MD, MPHS, was the first author and breast surgeon Julie Margenthaler, MD, the senior author of a study that compared the experiences of women with breast cancer who were referred to Siteman Cancer Center from the St. Louis safety net system vs. those referred from non-safety net providers. The study found that safety net patients received compassionate care once connected with health services, but were first seen with higher-than-expected rates of late-stage disease. Psychological barriers, life stressors and systems delays affected access to and navigation of the health care system and were characterized as opportunities for intervention. The article appeared in the *Journal of Surgical Research*.

Margenthaler and Amy Cyr, MD, were co-authors of a study reviewing current practice patterns in follow-up care for women after breast cancer surgery. Their study, published in the *Annals of Surgical Oncology*, found that physical examination and mammography with additional testing performed only when clinically indicated is effective for the detection of a second primary breast cancer and local or regional recurrence. This spares unnecessary costs for the detection of incurable cancer that has spread but has not produced symptoms. They recommended that all oncologists accept the low-intensity approach.

The National Cancer Institute recently renewed the grant for the section’s T32 Surgical Oncology Research Training Program, which has been funded for 25 consecutive years. T32 awards provide residents and fellows from general surgery and other surgical specialties the opportunity to develop outstanding skills in basic science and translational research. Trainees have played an active role in the study of genetics in multiple endocrine neoplasia type 2A and 2B (MEN2A and 2B) syndromes, the immune response to mammaglobin-A in breast cancer patients and factors associated with late-stage breast cancer diagnosis in safety-net patients. Additionally, trainees can now take formal coursework and obtain a Master of Population Health Sciences or Master of Science in Clinical Investigation degree.

which led to the formation of the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine and to creation of the Joanne Knight Breast Health Center.

Moley continues today as a recognized world expert in the surgical treatment of MEN-2 syndrome. In 2004, Moley served as a principal investigator of a National Cancer Institute-funded clinical trial to evaluate an antitumor drug for treatment of medullary and differentiated thyroid cancer. The trial found that the drug, 17-AAG, may be useful in combination with other similar drugs in treating metastatic thyroid cancer. In separate work, laboratory research and clinical trials done with the involvement of Moley’s colleagues helped identify other new drugs that are effective in the treatment of medullary thyroid cancer.

In breast cancer research, William Gillanders, MD, was principal investigator of a recently completed phase I clinical trial of a vaccine targeting mammaglobin A, a protein identified at Washington University that is overabundant in breast tumors. The trial, the first to target this protein with a vaccine, determined that the vaccine was safe and induced a significant anti-tumor response. “It was more successful than we had hoped,” says Gillanders. “We already have funding for a phase IB trial to measure the effectiveness of the vaccine in combination with preoperative endocrine therapy.”

Advancements in cancer treatment also involve developing new technologies. Cancer cells are notoriously difficult to see, even under high-powered magnification. Breast surgeon Julie Margenthaler, MD, and hepatobiliary-pancreatic surgeon Ryan Fields, MD, recently tested glasses designed to make it easier for surgeons to distinguish cancer cells from healthy cells, so stray tumor cells are not left behind during surgery.

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Above, Kerri Serecky, MD, performs her residency laboratory training in the lab of William Hawkins, MD.

THE SECTION of Hepatobiliary-Pancreatic and Gastrointestinal (HPB-GI) Surgery at Washington University and Barnes-Jewish Hospital has both mirrored and helped advance the field of liver and pancreas surgery. The section began in 1992, when Department of Surgery Chairman Samuel Wells Jr., MD, recruited Steven Strasberg, MD, a surgeon at the University of Toronto who researched and confined his practice to HPB disease. At the time, the new section also included minimally invasive GI surgery. Strasberg was named chief in 1992.

Long-term survival for patients with liver cancer and especially pancreas cancer continues to be a challenge. But in the 1970s and early 1980s, an important focus was making operations safer. Throughout his career, Strasberg has been an international leader in surgical safety, initially developing methods to reduce complications for the Whipple procedure — the major operation for pancreatic cancer — and more recently improving how complications are measured to address post-surgical problems.

With postoperative mortality of the Whipple procedure reduced from 31 percent in 1945 to about 1.5 percent today, the section has evolved in several ways. In the mid-2000s, an HPB fellowship was established, and minimally invasive GI surgeons left to form their own section. This period also saw HPB surgeons increase their focus
Cyclists raise money for research

The Section of Hepatobiliary-Pancreatic and Gastrointestinal (HPB-GI) Surgery sponsors the “Pancreas Cancer Road Warriors,” a team that raises money annually for Pedal the Cause, a major St. Louis bicycling event and cancer fundraiser. The team includes HPB-GI surgeons, physicians, researchers and staff, along with pancreas cancer survivors and families that have lost loved ones to the disease. Last year, 44 Warrior team members raised a total of $33,015. One hundred percent of St. Louis Pedal the Cause donations went to support Washington University cancer researchers, including HPB-GI surgeons, benefitting patients at Siteman Cancer Center and St. Louis Children’s Hospital.

In Focus

The HPB fellowship was established in 2006 when the clinical practice had grown large enough to provide trainees with ample clinical and operative experience. It has since become one of the most competitive of the 24 accredited HPB fellowships in North America, typically receiving 30 to 40 applications for one position. Fellows also gain experience in transplant surgery, as the HPB and transplant fellows spend a two-month rotation cross-training on the other service.

William Hawkins, MD, received a Bear Cub grant from Washington University to aid in the development and commercialization of a drug to serve as a platform for delivering chemotherapeutic drugs to pancreas cancer patients. (See feature article.)

In a research study, HPB-GI surgeons and co-authors concluded that cancer resection and regional lymphadenectomy should be offered to the majority of patients undergoing surgery for pancreatic neuroendocrine tumors (PNETs). PNETs account for about 1 percent to 2 percent of all pancreatic malignancies in the United States. The authors cited the lack of accurate preoperative methods to predict which tumors will or will not progress to regional or distant metastasis as a rationale for the more aggressive treatment. William Hawkins, MD, was senior author of the study, which appeared in the Annals of Surgery.

Highlights

- Our surgeons are now principal investigators in basic science research and clinical trials, which is unusual for surgeons in the field,” says David Linehan, MD, former chief who left recently to chair the Department of Surgery at the University of Rochester. “We are also leading National Institutes of Health studies, developing drugs and investigating tumor immunology.”

While Strasberg continues to focus on operative safety and technique, Linehan is a leader in studying the tumor microenvironment. Building on recent findings published in Clinical Cancer Research, Linehan is principal investigator of a clinical trial investigating a drug that affects the immune system’s activity in pancreas tumors and may improve the effectiveness of chemotherapy. William Hawkins, MD, is developing a drug as a new platform for delivering chemotherapeutic drugs, and Ryan Fields, MD, is working with physicians in the Mallinckrodt Institute of Radiology as principal investigator of a National Cancer Institute-funded study of the role of PET-MRI in staging and response to therapy in pancreas cancer patients.

“The future is customization — looking at patients and the genetic irregularities of their tumors to predict what therapy will work,” says Linehan.

Highlights

- Human pancreatic ductal adenocarcinoma tissue is stained to reveal the presence of tumor-infiltrating cells that suppress the immune system and play a key role in pancreatic cancer growth and metastasis.
AFTER PASSING SURGICAL instruments through a patient’s mouth and making a small incision in the lining of the esophagus, a Washington University minimally invasive surgeon and endoscopist corrected a problem that prevented a 54-year-old woman from easily swallowing food and liquids. The procedure, performed in 2013, was one of the first of its kind in the region performed through a natural opening in the body rather than an external incision.

“The ‘holy grail’ we’ve been striving for is the ability of a patient to have surgery for which they come to the hospital, go to sleep, have the procedure and wake up with no pain,” says minimally invasive surgeon Michael Awad, MD, PhD, who performed the operation with interventional endoscopist Faris Murad, MD, at Barnes-Jewish Hospital. “With this procedure, we’re getting close.”

The procedure, used to correct the swallowing disorder known as achalasia, is called peroral endoscopic myotomy (POEM) and is the latest example of leadership by Washington University surgeons in a history that goes back to the early days of minimally invasive surgery.

Nathaniel Soper, MD, a laparoscopy pioneer, performed the first laparoscopic gallbladder removal in Missouri in 1990.
He and Michael Brunt, MD, who performed the first laparoscopic adrenal gland removal in the state, were the early surgeons who performed an array of laparoscopic procedures and became the “GI” part of the Section of Hepatobiliary-Pancreatic and Gastrointestinal (HPB-GI) Surgery when it formed in the early 1990s.

“Today we still call it the laparoscopic revolution,” says Brunt, who stayed on, while Soper left for Northwestern University. “The goal wasn’t simply having a low complication rate. It was the benefits of less pain, faster recovery and return to full activity sooner.”

In 1993, surgeons joined with gastroenterologists to form the Washington University Institute for Minimally Invasive Surgery, the first multidisciplinary group in the country to advance research, education and patient care in minimally invasive surgery. Minimally invasive surgeons formed their own section in 2007 and by then had moved from an early emphasis on foregut and solid organ surgery to also offer bariatric surgery and repair of complex abdominal wall hernias. Biomaterials researcher Corey Deeken, PhD, joined the section to study the science behind abdominal wall hernias and their interactions with surgically placed meshes and to develop novel meshes for repair.

“From here we are going to increasingly focus on measuring outcomes and do more procedures — such as POEM — endoscopically,” says Brunt.
CONTRIBUTIONS TO THE FIELD

by Washington University abdominal transplant surgeons at the national, international and regional levels date to the 1960s. Their influence can be seen today in a research study that may lower the costs of organ retrieval.

Liver transplant surgeon M.B. Majella Doyle, MD, was the study’s first author in the American Journal of Transplantation, which found that retrieving organs from donors in a regional stand-alone facility specifically designed for and dedicated to that purpose is more efficient and considerably less costly than hospital-based retrieval. Results were compiled over 10 years at the nation’s first stand-alone organ retrieval facility, built by Mid-America Transplant Services in St. Louis.

“Organ donors often are given low priority in hospitals because of scheduled surgeries or emergency cases,” says the study’s senior author, William Chapman, MD, the Eugene M. Bricker Chair of Surgery and chief of the Section of Transplant Surgery. “With this new dedicated facility, in addition to the cost savings, we rarely encounter delays anymore, making organ donation easier on families who have lost loved ones and on transplant teams because we
Surendra Shenoy, MD, PhD, is co-chair of “Clinical trial endpoints for dialysis vascular access,” a project supported by the Kidney Health Initiative of the American Society of Nephrology. Its purpose is to clarify appropriate trial endpoints for all future vascular access research to inform clinical, regulatory and coverage decisions. Dialysis vascular access is considered both the lifeline and Achilles’ heel for hemodialysis patients, who receive the treatment for end-stage renal disease and nationally suffer from a high rate of vascular access failure. The group’s ultimate goal is to enhance the development of safe and effective therapies. Shenoy is also president of the Vascular Access Society of the Americas, dedicated to the advancement of the field of dialysis access.

Jeffrey Lowell, MD, spent most of 2014 deployed as a commander in the U.S. Navy, and the only U.S. surgeon at Camp Lemonnier in the Horn of Africa (Djibouti), the only U.S. military base on the continent. Lowell’s deployment follows service as a trauma surgeon at Landstuhl Regional Medical Center in Germany in 2011 and public service in emergency preparedness for the St. Louis region and in the U.S. Department of Homeland Security. In 2013, he received the Distinguished Community Service Award from Washington University School of Medicine.

Transplant surgeons are working with Mid-America Transplant Services to store donor livers in a normothermic liver perfusion system that keeps the organ at a normal temperature and metabolic rate, rather than in cold storage. The method may expand available organs to include livers with fatty liver disease and those that came from donation after cardiac death.

John D’Angelo and daughter, Andrea

Stage 5, or end-stage renal disease, is the most severe and typically requires a kidney transplant.

“They told me if I had a transplant, I’d feel completely different,” D’Angelo says.

The D’Angelo children volunteered to be tested as potential matches. Andrea D’Angelo, 29, was a good match and was determined to help her father.

Surendra Shenoy, MD, PhD, performed donor surgery on Andrea. Meanwhile, M.B. Majella Doyle, MD, performed John’s surgery.

“I really don’t feel sick anymore,” John says. “I’m so grateful to my daughter.”

Doctors also found a noncancerous tumor on Andrea’s pancreas, which she is now having checked annually.

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Daughter donates kidney to dad

When John D’Angelo learned he needed a kidney transplant, he planned to put his name on the national donor list. But a donor kidney turned up much closer to home — as a gift from one of his seven children.

D’Angelo, 58, lives in Florissant and owns an auto repair shop. A few years ago, he had a healthy lifestyle but started getting headaches and noticed his blood pressure creeping higher. He thought the aches and pains he felt each day were just part of life, but when his symptoms persisted, his family practitioner referred him to a Washington University kidney specialist at Barnes-Jewish Hospital.

“They said I had stage 4, almost stage 5, renal failure,” he says. “I had no idea what that meant, but it didn’t sound good.”

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Doctors also found a noncancerous tumor on Andrea’s pancreas, which she is now having checked annually.

“Without this transplant, we probably wouldn’t be as happy and healthy as we are today,” she says.
WASHINGTON UNIVERSITY and Barnes-Jewish Hospital emerged as international leaders in open and endovascular aortic surgery under the guidance of Gregorio Sicard, MD, the first chief of the Section of Vascular Surgery. Sicard was fellowship-trained in renal transplant surgery and also performed general surgery in the late 1970s and early 1980s. In 1983, he began to focus on vascular surgery and would pioneer the retroperitoneal approach to abdominal aortic surgery.

In the 1990s, the section was at the center of a new transformation— the development of minimally invasive techniques to insert supportive metal tubes called stents inside arteries with aneurysms. The section participated in the first clinical trials of stents and, to date, has taken part in numerous trials of endovascular devices — for both abdominal aortic and thoracic aortic aneurysms — that are commercially available.

Vascular surgeons today, under the leadership of Section Chief Luis Sanchez, MD, the Gregorio A. Sicard Distinguished Professor of Vascular Surgery, are moving ahead with trials that test the use of stents for new regions of aortic disease and new methods of insertion. In recent years, the section has participated in three multicenter
Patrick Geraghty, MD, has been appointed chair of the Society for Vascular Surgery Outcomes and Technology Assessment Committee, which focuses on evaluation of new medical technology in collaboration with the Federal Drug Administration. He has previously led multicenter trials for lower extremity endovascular devices. Former chief Gregorio Sicard, MD, also has served as committee chair.

The section welcomes Mohamed Zayed, MD, PhD, and Nanette Reed, MD, as assistant professors of surgery. Zayed, who received medical and doctoral degrees from the University of North Carolina at Chapel Hill, completed a vascular surgery residency at Stanford University. Reed earned a medical degree at Baylor University and a master of clinical research degree at Mayo Graduate School in Rochester, Minn. She completed a general surgery residency and vascular surgery fellowship at Mayo Clinic. Her research focus will be clinical vascular surgical outcomes.

A department-wide initiative aimed at reducing the incidence of venous thromboembolisms (VTEs) — potentially life-threatening blood clots in veins that can occur as a complication after surgery — made important inroads at Barnes-Jewish Hospital last year. Frequently, pre-existing deep venous thromboses were not adequately documented before surgery and instead were inaccurately recorded after surgery as new VTE incidents. Jeffrey Jim, MD, who led the initiative, is following up by reviewing charts to characterize VTEs as they are input into the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP®) database. Efforts to promote awareness continue, and a hospital VTE Steering Committee is looking at ways to reduce VTEs.

**Highlights**

- In Focus

**Multidisciplinary care for critical limb ischemia**

Patrick Geraghty, MD, has been a leader in developing a multidisciplinary clinic that addresses the full range of needs for patients with critical limb ischemia, or severely reduced arterial flow to the leg.

The clinic, housed in the Center for Outpatient Health, is a collaborative effort of John Kirby, MD, director of the Surgical Care Center at Barnes-Jewish Hospital, who treats wounds and provides hyperbaric oxygen therapy; podiatrist Michael Weiss, DPM, who focuses on diabetic wounds, infections and limb salvage; and Geraghty, who offers non-invasive imaging and procedures to re-open narrowed or blocked arteries.

“Rather than having a patient make four or five separate appointments, we want to make the visit multidisciplinary, similar to the way a breast cancer patient might be able to see a breast surgeon, a radiation oncologist and a medical oncologist all in one day,” says Geraghty. “We want to minimize the time it takes to develop a definitive solution for each patient.”

In addition to providing care, Geraghty and Kirby also have a scientific interest. Geraghty serves as a global principal investigator for an international trial of balloons coated with a restenosis-inhibiting drug for critical limb ischemia, and Kirby promotes a database at academic medical centers to improve clinical understanding of wounds.

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INNOVATION and the introduction of new technology and techniques have played an essential role in the efforts of Washington University heart surgeons at Barnes-Jewish Hospital to advance the field.

In the late 1950s, surgeon Thomas Ferguson, MD, helped bring the heart-lung machine to St. Louis, and he and colleagues performed the first open-heart surgeries to take place at St. Louis Children’s Hospital and Barnes Hospital. Heart surgery was first performed in children, and the development of coronary artery bypass surgery in the 1960s enabled Ferguson, Clarence Weldon, MD, and successors to treat a high volume of adult patients in the ensuing decades.

In the early 1980s, Washington University became a leading center in arrhythmia treatment with the arrival of surgeon James Cox, MD, and researchers John Boineau, MD, and Richard Schuessler, PhD. With laboratory research providing the foundation, Cox developed the Maze procedure for atrial fibrillation (AF), a common irregular heart rhythm that can cause stroke and debilitating symptoms. Cox’s procedure — first performed in 1987 — used precisely placed incisions in the heart muscle to create a “maze” to redirect errant electrical impulses.

Ralph Damiano Jr., MD, above left, is a pioneer in minimally invasive heart surgery. In mid March 2014, Damiano performed a minimally invasive mitral valve repair on Jeff Stottler — at left with wife, Stacey, and children — through a 2½-inch incision in the right side of the chest. Stottler, an instrument electrician from Chatham, Ill., was home four days later, walking around the block two weeks after that, and back to work at a central Illinois power plant by mid April.
The Section of Cardiac Surgery welcomes Keki Balsara, MD, and Spencer Melby, MD, as assistant professors of surgery. Balsara joins the section after completing a residency in cardiothoracic surgery at The Johns Hopkins Hospital and a surgical residency and surgical critical care fellowship at Duke University. Melby previously served as an assistant professor of surgery at the University of Alabama. He completed a general surgery residency and cardiothoracic surgery fellowship at Washington University.

Jennifer Lawton, MD, was co-author of a historical perspective on heart surgeon James Cox, MD, in the Journal of Thoracic and Cardiovascular Surgery. While at Washington University, Cox, the Emeritus Evarts A. Graham Professor of Surgery, pioneered the Cox-Maze procedure, which remains the reference standard for the surgical treatment of atrial fibrillation. He was also the 81st president of The American Association for Thoracic Surgery and later served as chair of the Department of Thoracic and Cardiothoracic Surgery at Georgetown University. Thomas D’Amico, MD, of Duke University co-wrote the article.

Washington University heart surgeons at Barnes-Jewish Hospital have performed transplants in more than 730 patients since the program began in 1985. In 2013, for the first time, surgeons performed 40 heart transplants, as they are continually able to offer patients better support for the heart before transplant. As part of this support, surgeons implanted 122 ventricular assist devices and performed 87 cannulation procedures for ECMO in 2013. The mechanical support program is among the busiest in the country.

Under Ralph Damiano Jr., MD, now chief of the Division of Cardiothoracic Surgery and the Evarts A. Graham Professor of Surgery, the cardiac surgery section has continued as a world leader, particularly in AF treatment and in minimally invasive heart surgery.

Damiano and his group introduced a modified Cox-Maze IV procedure — using ablation rather than surgical incisions in heart tissue. The modified procedure is much more easily performed and has been adopted worldwide. He and colleagues are now among a handful worldwide testing a hybrid minimally invasive procedure that combines surgical and catheter-based ablation to ablate from both outside and within the heart.

In 2002, Damiano and colleagues became among the earliest nationwide to employ minimally invasive approaches for heart valve disease. Studies of these patients show excellent outcomes with fewer side effects. More recently, Hersh Maniar, MD, and Damiano have been co-investigators at Barnes-Jewish for multi-institutional trials of a catheter-based approach to place new aortic valves, called transcatheter aortic valve replacement (TAVR). The first trial led to FDA approval of the technique for otherwise inoperable patients with severe aortic stenosis. Additional trials in high- and moderate-risk patients are under way at Barnes-Jewish and other centers.

Ralph Damiano Jr., MD, an internationally known cardiac surgeon, has been named chief of the Division of Cardiothoracic Surgery. With this appointment, he becomes the Evarts Ambrose Graham Professor of Surgery and succeeds G. Alexander Patterson, MD, who had served as chief since 2005. (See story, page 27.)

Damiano, who previously served as chief of the Section of Cardiac Surgery, is a leader in the field of minimally invasive cardiac surgery and a former president of the International Society for Minimally Invasive Cardiothoracic Surgery. He has also led National Institutes of Health (NIH)-funded research of atrial fibrillation, and his group has introduced less invasive surgical treatments that are now used worldwide for the disease.

Marc Moon, MD, succeeds Damiano as chief of the Section of Cardiac Surgery and the John M. Shoenberg Professor of Surgery. Moon is very active as a surgeon, educator and researcher. He directs the Center for Diseases of the Thoracic Aorta and also specializes in endocarditis, heart valve repair and replacement, and coronary artery bypass surgery. He directs the cardiothoracic surgery fellowship program and is co-principal investigator of an NIH grant to investigate surgical treatments for cardiac arrhythmias. Moon also serves as secretary of the American Association for Thoracic Surgery.
IN 1933, Department of Surgery Chair Evarts Graham, MD, performed the first surgical removal of a lung, in Dr. James Gilmore, a 49-year-old obstetrician from Pittsburgh. The surgery is notable not only as a medical milestone, but for the long life it afforded Gilmore; he outlived Graham, who died of lung cancer in 1957.

Washington University thoracic surgeons have made many other contributions advancing clinical care. Among them, Thomas Burford, MD, who took over the Barnes Hospital thoracic surgery service in 1951, helped develop protocols for hemothorax, or blood in the chest, that were used in World War II and are still used in trauma centers. Thoracic surgeons at Barnes-Jewish Hospital established one of the country’s earliest lung transplantation programs in 1988 and performed the first lung volume reduction surgery in the world to improve breathing in emphysema patients in 1993.

In research today, the National Institutes of Health (NIH)-funded Thoracic Immunobiology Lab has made key discoveries in the causes of lung transplant rejection. Additionally, thoracic surgeons have collaborated...
Alexander Krupnick, MD, Andrew Gelman, PhD, and Daniel Kreisel, MD, PhD, in the Washington University Thoracic Immunobiology Lab found that newly transplanted lungs in mice were more likely to be rejected if key immune cells were missing, a situation that simulates what happens when patients take immunosuppressive drugs. These long-lived memory T cells are primed to “remember” pathogens that infiltrate the body and quickly trigger an immune response during subsequent encounters. In heart, liver and kidney transplants, knocking down memory T cells with immunosuppressive drugs helps to ensure that the immune system recognizes a new organ as the body’s own. But, in mice, these cells are critical for a lung transplant to have a good outcome. In light of the new findings, the researchers think current immune-suppression strategies should be re-evaluated in lung transplantation. The findings were published in the *Journal of Clinical Investigation*.

Jessica Spahn, PhD, a postdoctoral research fellow working in the Washington University Thoracic Immunobiology Lab, won the Phillip K. Caves Award from the International Society for Heart and Lung Transplantation. The award, previously given to two Washington University thoracic surgery fellows, was established in 1982 to encourage and reward original research in transplantation performed by residents, fellows and graduate students.

The lung transplant program will be involved in a clinical trial of lung perfusion of donor lungs before transplant. The trial’s purpose is to recondition lungs that would otherwise be unsuitable for transplant, but it will also give researchers a view into what happens to the lung early after transplantation.

### In Focus

G. Alexander Patterson, MD, who had served as the chief of the Division of Cardiothoracic Surgery and the Evarts Ambrose Graham Professor of Surgery since 2005, has stepped down to devote more time to editing the *Annals of Thoracic Surgery*, the journal of the Society of Thoracic Surgeons. He is editor-elect and will become editor-in-chief early next year.

Patterson came to Washington University in 1991 from the University of Toronto. He served as the Joseph C. Bancroft Professor of Surgery and chief of the Section of Thoracic Surgery 1997-2004. Since 1992, he has directed the Lung Transplant Program at Washington University School of Medicine and Barnes-Jewish Hospital, one of the largest programs of its kind in the world. He will continue his clinical practice while Ralph Damiano Jr., MD, former chief of cardiac surgery, takes over as division chief.

Patterson is also an international leader in the fields of thoracic surgery and lung transplants. He is past president of the International Society for Heart and Lung Transplantation and the American Association for Thoracic Surgery and recently received the 2014 Earl Bakken Scientific Achievement Award from the Society of Thoracic Surgeons. (See Leadership section on page 43.)

Patterson will be the division’s second editor-in-chief of *Annals*; the late Thomas Ferguson, MD, a distinguished cardiothoracic surgeon, served in the position for 17 years.

### Highlights

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THE FIRST open-heart surgeries were performed in children with congenital heart defects after John Gibbon Jr., MD, introduced the use of the heart-lung pump in Philadelphia in 1953. In 1958, Washington University surgeon Thomas Ferguson, MD, and colleagues performed St. Louis Children’s Hospital’s first open-heart procedure in an 18-month-old girl. The operation was made possible by a fundraising effort to bring the Gibbon-Mayo heart-lung pump to St. Louis.

The pediatric cardiothoracic surgery service began under Charles Weldon, MD, who served as chief from 1968-1983. Weldon and his successors have gone on to establish leading programs in the treatment of congenital conditions, including heart and lung transplant centers that are among the most active in the country.

“There is a long tradition of distinguished surgeons who trained or practiced here,” says Pirooz Eghtesady, MD, PhD, Emerson Chair and chief of the Section of Pediatric Cardiothoracic Surgery. “In recent years, we have had a number of firsts at St. Louis Children’s Hospital that have enabled us to build on our successful track record.”

One of the section’s other surgeons, Peter Manning, MD, is an internationally recognized expert in tracheal reconstruction who recently established a program at St. Louis Children’s Hospital to treat patients with this condition.

The section performs roughly 550 surgical procedures each year.
Pirooz Eghtesady, MD, PhD, chief of the Section of Pediatric Cardiothoracic Surgery, was installed as the Emerson Chair in Pediatric Cardiothoracic Surgery at St. Louis Children’s Hospital in June 2014. (See page 42.)

Pirooz Eghtesady, MD, PhD, is on the Executive Board of PediMACS, the pediatric component of the Interagency Registry for Mechanically Assisted Circulatory Support (INTERMACS). PediMACS and INTERMACS collect and analyze data on patients with continuous flow pumps, including risk factors. The Section of Pediatric Cardiothoracic Surgery also participates in the National Institutes of Health (NIH) Pumps for Kids, Infants, and Neonates (PumpKIN) Clinical Trial, which explores the potential benefit of using novel pediatric circulatory support devices in infants, neonates, and young children who weigh less than 25 kg and have cardiovascular disease and experience cardiopulmonary failure and circulatory collapse.

Washington University pediatric cardiothoracic surgeons have extensive experience with two circulatory support devices in children of various ages: the Berlin Heart EXCOR® and Heartware® (in children 12 to 15) ventricular assist devices.

Pediatric patients have benefited from a comprehensive program across the St. Louis Children's and Washington University Heart Center to enhance communications on their status, first introduced and promoted by the Section of Pediatric Cardiothoracic Surgery. The program includes electronic pre-briefs and post-briefs involving all 140 key Heart Center care providers; ad hoc, real-time multidisciplinary case conferences reviewing all patient care plans; and weekly review of outcomes by a multidisciplinary team. Referring physicians and providers are engaged in patient care plans and updated daily.

(See In Focus.) His other interests include cardiac surgery in infants and methods to minimize the need for blood-product transfusion during open-heart surgery in children. Other section accomplishments include:

- The first three Potts Shunt palliations performed in pediatric patients in North America for pulmonary hypertension (PH) and associated severe right heart failure.
- New technique for mechanical circulatory support of newborns with single ventricle physiology.
- Selected as Vanguard Center for the Pumps for Kids, Infants, and Neonates (PumpKIN) NIH Clinical Trial to explore the potential benefit of therapy offered by a novel pediatric circulatory support device for infants.

Future improvements also may come from a concerted effort to identify factors that lead to the best outcomes. With the Washington University Department of Computer Science and Engineering, within the School of Engineering and Applied Science, a new funded research program explores applications of machine learning algorithms to large data sets from children who have undergone heart surgery.

“Already we have found that among millions of different care decisions made following performance of a rather common neonatal procedure — the systemic to pulmonary artery shunting procedure — early initiation of aspirin is most critical,” says Eghtesday. “Also, early initiation of diuretics, previously not appreciated in any study, is vital in ensuring the best outcomes.”

In Focus

Tracheal reconstruction

Jack Lovejoy was born on April 16, 2013, with complete tracheal rings, a rare congenital defect in the cartilage rings that results in narrowing of the trachea. Jack’s parents, Bennett and Sarah, of Kansas City, learned of the defect and the need for surgical correction when he was about five months old.

Another family suggested they contact Peter Manning, MD, a Washington University pediatric cardiothoracic surgeon who trained at Children’s Mercy Hospital in Kansas City and is a leading international expert in tracheal reconstruction in children. Jack’s parents got a call from Manning just a couple of hours after he received Jack’s medical records.

Manning had performed 135 tracheal reconstructions over a 12-year period while at Cincinnati Children’s Hospital Medical Center and set up a team of specialists after joining St. Louis Children’s Hospital in 2013. Jack was mildly symptomatic, but presented another challenge: His parents requested Jack not be given any transfusions because of their faith as Jehovah’s Witnesses.

Manning performed the surgery in November 2013.

“Things went very smoothly,” says Manning. “We were able to complete the operation without any transfusions, which was a testament to multidisciplinary cooperation.”

“Jack is doing great,” says Bennett Lovejoy. “We couldn’t have asked for a better outcome.”

Highlights

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- Pirooz Eghtesady, MD, PhD, is on the Executive Board of PediMACS, the pediatric component of the Interagency Registry for Mechanically Assisted Circulatory Support (INTERMACS). PediMACS and INTERMACS collect and analyze data on patients with continuous flow pumps, including risk factors. The Section of Pediatric Cardiothoracic Surgery also participates in the National Institutes of Health (NIH) Pumps for Kids, Infants, and Neonates (PumpKIN) Clinical Trial, which explores the potential benefit of using novel pediatric circulatory support devices in infants, neonates, and young children who weigh less than 25 kg and have cardiovascular disease and experience cardiopulmonary failure and circulatory collapse.

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WHEN JESSIE TERNBERG, MD, PhD, completed her surgical residency at Barnes Hospital in 1959 and joined the Department of Surgery, she was among very few women in the field. In the decades to follow, she became a valued mentor and national trailblazer.

During a long career at St. Louis Children’s Hospital, Ternberg was known as a courageous patient advocate by families and an outstanding surgeon by colleagues. For 13 years, she was the only full-time general surgeon at St. Louis Children’s Hospital; from 1972 to 1990, she was pediatric surgeon-in-chief and chief of the Division of Pediatric Surgery. She routinely performed more than 500 operations a year. Nationally, she was in the vanguard of surgeons who recognized that children have surgical problems distinct from those seen in adults, a philosophy she emphasized in her 1980 book, “A Handbook for Pediatric Surgery.”

Today, Ternberg is a professor emeritus. The division has six surgeons, the most in its history, with clinical interests ranging from wound care to congenital diaphragmatic hernias. Faculty participate in a number of clinical
Jacqueline Saito, MD, MSCI, was first author in an article in *Pediatrics* evaluating outcomes after children’s surgical procedures as measured by the American College of Surgeons National Surgical Quality Improvement Program-Pediatric (ACS NSQIP Peds). The authors found that the program has yielded risk-adjusted models to differentiate hospital performance in post-surgical complications but not in mortality. Bruce Hall, MD, PhD, MBA, was a co-author. Saito is on the national ACS NSQIP Peds Steering Committee, chairs its Data Definitions Committee, and coordinates the initiative at St. Louis Children’s Hospital as surgeon champion.

Pediatric surgeons have formed a clinical outcomes research group called the Program for Optimal Outcomes in Pediatric Surgery. It meets monthly and is participating in a number of clinical trials. Topics include the genetics of diaphragmatic hernias, treating appendicitis with antibiotics alone and treating spontaneous pneumothorax — which occurs when air leaks into the space between the lungs and chest wall — with needle aspiration.

The division continues to develop relationships with regional hospitals. In December 2013, surgeons began providing coverage at University Hospital in Columbia, Mo., on weekends and holidays for the lone surgeon based at the hospital. The long-term goal is to offer complex and quaternary care for children in central Missouri.

Pediatric surgeons will partner with other Washington University specialists to establish an outpatient pediatric ambulatory center in West St. Louis County. The center, scheduled to open in the summer of 2015, will make services more accessible to suburban families. Other pediatric specialties include urology, plastic surgery, ophthalmology, otolaryngology, and oncology.

In Focus

**Test prevents unwanted bleeding in trauma patients**

Washington University pediatric surgeons at St. Louis Children’s Hospital use an advanced blood test called thromboelastography (TEG) to assess the ability of trauma patients’ blood to clot appropriately and prevent excessive bleeding. They also have begun using TEG in children undergoing extracorporeal membrane oxygenation (ECMO) for heart and/or lung conditions.

“The more severely injured you are, the more likely you are to have problems with blood clotting,” says pediatric surgeon Adam Vogel, MD. “There are certain assays that you can do within TEG that give you results quite rapidly, making it almost a real-time assessment of patients’ potential to clot. In 10-15 minutes, you have an assessment that can direct your transfusion therapy toward addressing any issues.”

Nationally and internationally, TEG is being used more frequently, although ECMO programs still use a wide variety of methods to monitor anticoagulation in patients. At Children’s, TEG has been introduced to improve care in ECMO patients.

“TEG is a global measure of visco-elastic function of the blood and has a wide variety of applications in any critically ill patient population at risk for coagulopathy,” says Vogel. “ECMO patients fit that bill to a ‘T’.”

Highlights

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ADVANCING CLINICAL PRACTICE AND POSTGRADUATE EDUCATION

DATING FROM the early 20th century, Washington University plastic and reconstructive surgeons have played a leading role in the development and advancement of their specialty.

Vilray Blair, MD — division chief from 1925-1955 — is recognized as one of the most prominent pioneers of the field. His excellence as a surgeon enabled him to build one of the largest plastic surgery centers in the country and to train top young American surgeons who went on to become leaders in the field. Along with many clinical contributions, he led the section of head and neck trauma in World War I and proposed the development of a national plastic surgery board that would oversee postgraduate training.

One of Blair’s brightest pupils was James Barrett Brown, MD, who became division chief in 1955. Together, they reported the first reproducible cleft lip repair in 1929. Blair went on to lead the treatment of wounded veterans returning from World War II, giving rise to new techniques, and trained a number of plastic surgeons who went on to notable accomplishments. Paul Weeks, from 1970 to 1996, carried on the tradition of innovation, pioneering critical procedures for complicated hand and wrist problems.
Today, the division’s surgeons remain leaders in clinical innovation and excellence at Barnes-Jewish Hospital and St. Louis Children’s Hospital. Division Chief Susan Mackinnon, MD, the Shoenberg Professor of Plastic and Reconstructive Surgery, continues to develop new nerve transfer techniques, which have restored hand, arm and leg function in many patients with injured limbs and even spinal cord injuries. Other areas of strength in the division include hand and wrist surgery, craniofacial surgery for children and adults, and treatment of facial paralysis.

In addition to a flourishing cosmetic surgery practice, Terence Myckatyn, MD, is building a comprehensive breast plastic surgery program, encompassing both cosmetic and reconstructive surgery. “We’re trying to leverage our large patient volume to become known as a leading center in education, research and clinical care,” says Myckatyn.

A breast fellowship under his leadership, now in its second year, gives trainees exposure to both complex cosmetic surgery and microvascular breast reconstruction. Myckatyn is also heavily engaged in research. He is principal investigator of a multicenter trial analyzing the safety of fat grafting in breast reconstruction. Another trial is looking at how three-dimensional simulation of breast augmentation affects how patients view their outcomes.

In the future, advances in microvascular techniques will improve surgeons’ ability to transfer critical structures and tissues in reconstructive procedures, says Mackinnon.

In Focus

Advancing bilateral cleft lip repair

“Twice as hard and the results are half as good.” — Renowned Washington University plastic surgeon James Barrett Brown (1899-1971) on repair of a bilateral cleft lip

When Laken Queary of Springfield, Ill., was born with a bilateral cleft lip and palate, parents Michael and Brittany consulted Albert Woo, MD, chief of pediatric plastic surgery, and a team of specialists at St. Louis Children’s Hospital.

With a bilateral cleft, the lip is split on both sides. Laken’s medical team began the correction for this challenging defect by fitting him with nasoalveolar molding (NAM) — unavailable at other regional medical centers — which expands tissues before surgery and reduces the amount of surgical correction needed. He underwent surgery three months later and is recovering well.

“His outlook is outstanding. Over the long term, Laken will still need a cleft palate repair at approximately 1 year of age and later alveolar bone grafting to correct the gap in his teeth (around age 8 to 10). No further work on the cleft lip is anticipated,” Woo says.
INNOVATION IS A CENTRAL THEME

In the history of the Division of Urologic Surgery, John Caulk, MD, the first chief of urologic surgery from 1910 to 1938, developed transurethral prostatic resection and the "Caulk Punch" for trimming the prostate from the inside. Many of the chiefs and surgeons who followed also contributed urologic advancements: the first clinical cystometrogram, now called urodynamics (Dalton Rose, MD, chief, 1939-1953); urinary diversion (Justin Cordonnier, MD, chief, 1953-1970, with general surgeon Eugene Bricker, MD); one of the earliest scoring systems for benign prostatic hypertrophy (Saul Boyarsky, MD, chief, 1970-73); prostate-specific antigen (PSA) test for prostate cancer (William Catalona, MD, chief, 1984-1998); and the first laparoscopic nephrectomy (Ralph Clayman, MD, faculty member, 1984-2001).

From 1965-2012, the division also made its mark in the scientific literature, credited as the institution with the second-highest number of articles cited in the top 100 articles in the field of urology.* It currently has 13 former faculty members, residents and fellows who have gone on to lead U.S. urology programs.
Arnold Bullock, MD, was installed as the Alan A. and Edith L. Wolff Distinguished Professor of Urology in June 2014. (See page 42.)

Scott Manson, PhD, instructor in urology, won an award for best basic science research at the American Urologic Association’s annual meeting in May 2014 for research on the protein BMP7, which protects and repairs the kidney in pediatric urinary obstruction.

The division welcomed Gino Vricella, MD, as an assistant professor of surgery. Vricella completed a pediatric urology fellowship at St. Louis Children’s Hospital and a urology residency at the University Hospitals Case Medical Center in Cleveland, Ohio.

R. Sherburne Figenshau, MD, the Taylor Family and Ralph V. Clayman, MD Chair in Minimally Invasive Urology, is working with researchers Evan Kharasch, MD, PhD, and Jerry Morrissey, PhD, on research related to Kharasch’s and Morrissey’s earlier discovery that a pair of proteins excreted in the urine could lead to earlier and more accurate kidney cancer diagnosis. A study in Urology co-authored by Morrissey, Karasch, Figenshau and others found that urinary concentrations of these proteins were significantly increased in these patients and reflected tumor size.

Paul Austin, MD, is co-leader of a multidisciplinary team that treats patients with disorders of sexual development (DSD) at St. Louis Children’s Hospital. In the past year, Austin received a National Institutes of Health (NIH) grant to study family satisfaction on decisions made about the surgical treatment of DSD.

During the 2013-14 academic year, urology faculty received five NIH grants for basic science, clinical, translational and clinical effectiveness research in such areas as pain related to bladder dysfunction, lower urinary tract dysfunction, DSD, bladder cancer and benign prostate hyperplasia.

Under current Chief Gerald Andriole Jr., MD, the Robert K. Royce Distinguished Professor of Urologic Surgery, the division has played a leading role in shaping prostate cancer screening guidelines and remains a leading center in the diagnosis and treatment of the disease.

Andriole is chair of the prostate committee for the Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Trial, a major multicenter, multicomponent study. Most recently, it showed that routine PSA screening does not reduce prostate cancer deaths among men ages 55-74 followed for a minimum of 13 years.

In a recent study, Andriole and colleagues found that using MRI in addition to the standard of ultrasound to guide biopsies in men with elevated PSA may improve biopsy accuracy, reduce biopsy infection rates, and more accurately assess tumor aggressiveness. The technology shows promise for greatly improving the process of determining which men need a biopsy and which cancers require aggressive treatment as opposed to watchful waiting, Andriole says.

Washington University urologists are leaders in the use of focal ablation to remove portions of the prostate in men with small tumors and are working with various companies to develop blood, urine and DNA tests that more accurately characterize prostate cancer aggressiveness.

Gene therapy advancement

Urologic researcher Jeffrey Arbeit, MD, and David Curiel, MD, PhD, of the Department of Radiation Oncology, have developed a gene delivery method long sought in cancer gene therapy: a deactivated virus carrying a gene of interest that can be injected into the bloodstream and make its way to the right cells.

Early findings, reported in December 2013 in PLOS ONE, show they can target tumor blood vessels in mice without affecting healthy tissues; the viral vector turns on its gene payload only in the abnormal blood vessels that help fuel and nurture tumor growth. But the goal is not to destroy the cancer’s blood supply.

THE DEPARTMENT OF SURGERY was established during a time of significant transition for both Washington University School of Medicine and American medical education. In the early 1900s, educator Abraham Flexner wrote a scathing critique of the medical school in his now-famous Flexner Report, citing many deficiencies at schools across the United States and Canada. He also recognized the need for the “postgraduate school” to provide clinical experience while criticizing many of these schools as “weak concerns wearing a commercial hue.”

In 1919, as Washington University School of Medicine worked to implement the report’s suggested changes, Evarts Graham, MD, became the department’s first full-time chair and began charting a course that would shape postgraduate surgical education throughout the 20th century.

In his biography of the chair, C. Barber Mueller credits Graham with developing the model for surgical residencies, which included a laboratory year and four years of progressive training. Under Graham’s model, residents mainly learned through the method of “see one, do one, teach one” as they spent an allotted amount of time on rotations.

That approach has only recently begun to change, and Washington University Institute for Surgical Education provides trainees of all kinds an array of simulated training experiences matched by few educational centers in the country.
An article in the Journal of the American College of Surgeons reported that general surgery residency programs subscribing to the Surgical Council on Resident Education (SCORE) curriculum web portal had improved mean scores on the Surgery Qualifying Examination after SCORE was initiated. Residents from programs subscribing to SCORE also had a higher pass rate than non-subscribing residents.

Vice Chair for Education Mary Klingensmith, MD, was the first author and serves as surgeon lead for SCORE and chair of the SCORE Council.

General surgery lab resident Shuddhadeb Ray, MD, was selected as a fellow in the University of Chicago's MacLean Center for Clinical Medical Ethics program. Ray, who is in a lab year, is also pursuing a Master of Population Health Sciences degree and has an interest in ethics, health policy and health economics.

Third-year resident Ruben Nava, MD, won the Top Gun competition measuring laparoscopic skills at the 2014 Annual Meeting of the Society of American Gastrointestinal and Endoscopic Surgeons. Washington University surgery residents have been finalists in the competition for four straight years and have won three out of the four years.

The Department of Surgery will launch a seminar series on medical practice management for senior residents and fellows in the coming year. Topics will include health care financing, coding, contract negotiation, regulations and supervision. The series was initiated after graduates of the Plastic Surgery Residency and Cardiothoracic Surgery Fellowship reported a lack of preparedness for practice management on surveys conducted one and five years after graduation.

University’s general surgery residency at Barnes-Jewish Hospital has been at the forefront — implementing new ways to train and evaluate under the leadership of the Office of Surgical Education.

More than 10 years ago, the general surgery residency was among the earliest to introduce a skills lab to allow residents to practice surgical skills outside of the operating room. It has grown from providing basic skills and laparoscopic training modules to include a broader experience. In recent years, the residency introduced an Academy Model — with a more formal curriculum and closer evaluation — before the Accreditation Council for Graduate Medical Education went a similar direction by tracking residents’ progress in six core competencies. The program places sixth nationally in a ranking by U.S. News and World Report collaborator Doximity.

The residency is also part of a multicenter study to see whether residents benefit from a more concentrated exposure to the surgical specialty of their choice. Klingensmith, Mary Culver Distinguished Professor of Surgery and vice chair for education, leads the study.

Looking ahead, educational leaders predict that a shorter general surgery residency and earlier specialization will further change Graham’s model. “There will be many more formalized assessments, and residents will have to pass those assessments before they move on,” adds Klingensmith.

### In Focus

**Wise named general surgery residency program director**

Colorectal surgeon Paul Wise, MD, has been named program director of the General Surgery Residency Program. He succeeds Michael Awad, MD, PhD, who continues serving as associate dean for medical student education at the medical school.

Wise came to Washington University in 2012 after serving on the faculty of Vanderbilt University for eight years. He graduated from the Johns Hopkins School of Medicine and completed a general surgery residency at Vanderbilt University and a colorectal surgery fellowship at Washington University.

Wise has been associate program director of the Washington University Colorectal Surgery Fellowship for the past two years and has served on the General Surgery Residency’s Clinical Competency Committee, which is re-examining the resident evaluation process, and the Surgical Residency Committee, which reviews issues of concern to residents and faculty. Wise will maintain a clinical practice, in part to facilitate the residents’ clinical education.

Awad will continue in his role as director of the Washington University Institute for Surgical Education, which provides general surgery residents, other surgical trainees, medical students, nursing students, nurses and nurse practitioners an array of simulated training experiences. He will also serve as an associate program director for the residency, overseeing the surgical skills lab.

### Highlights

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HISTORIC STRENGTH FUELS SUCCESS, BENCH TO BEDSIDE

**BASIC RESEARCH**
Exploring fundamental biological processes in health and disease

**CLINICAL RESEARCH**
Investigating the cause, prevention, diagnosis or treatment of disease in human subjects

**TRANSLATIONAL RESEARCH**
Basic or clinical studies converting research findings into clinical solutions

**PUBLIC HEALTH SCIENCES**
Studying ways to prevent disease, improve access to care or promote health at the population level
THE DEPARTMENT of Surgery’s research landscape continues to shift as funding for basic science research becomes scarcer and more investigators focus on translational, clinical and public health sciences projects. “We are trying to maintain our core excellence in basic science research but at the same time expand other areas of research,” says William Gillanders, MD, vice chairman for research.

The department’s trademark strength in all areas of research has led to major medical advancements throughout its history. In basic science, former surgery chair Evarts Graham, MD, and researcher Adele Croninger worked with an animal model to establish a link between smoke, cigarette tar and lung cancer in 1953. Early translational research by Graham and Warren Cole, MD, led to the development of cholecystography to image the gallbladder. In the 1960s, former surgery chair Carl Moyer, MD, pioneered the use of silver nitrate in the treatment of burns. In 1984, surgeon James Cox, MD, and researchers Richard Schuessler, PhD, and John Boineau, MD, studied heart physiology, laying the groundwork for surgical treatment of heart arrhythmia; three years later, Cox developed and performed the first Cox Maze procedure for atrial fibrillation, the most common type of arrhythmia.

In recent decades, Washington University surgeons have pioneered new surgical procedures and taken the lead in major clinical trials including studies of lung volume reduction surgery for the treatment of emphysema and endograft devices to treat aortic and thoracic aneurysms. Today, every division and section is actively involved in clinical trials, including studies of cancer treatments and medical devices.

In public health research, early departmental researchers conducted one of the major epidemiologic studies of the 20th century. Under Graham, medical student Ernst Wynder interviewed lung cancer patients to establish a correlation between smoking and lung cancer. Now as a separate division, the department’s public health sciences researchers are major voices in cancer prevention, health literacy, addressing health disparities, outcomes research and epidemiology.

Among U.S. surgery departments, Washington University is a leading recipient of National Institutes of Health (NIH) funding for basic science and translational research. Promising translational research projects include whole exome sequencing of hepatocellular and other cancers in collaboration with Washington University’s Genome Institute.

“Once you sequence the tumor, you can design or identify appropriate strategies to treat it,” says Gillanders. “Outside of oncology, sequencing will help you to understand why people have predispositions to specific diseases and how they’ll respond to specific treatments.”

Building comprehensive strengths

The Department of Surgery is a leading center for basic science, translational, clinical and public health sciences research:

- Basic research labs advance scientific understanding in many surgical fields, including endocrine and oncologic, transplant, hepatobiliary-pancreatic, pediatric, heart, thoracic, urology, plastic, and acute and critical care surgery.
- Therapies targeting disseminated tumor cells in breast cancer, new drugs for pancreas cancer and breast cancer vaccines are among projects holding promise for cancer patients.
- The Division of Cardiothoracic Surgery’s Clinical Research and Data Management group developed a reporting database with lung transplant donor and recipient outcome information from multiple centers that was eventually taken over by the International Society of Heart and Lung Transplantation.
- Funding for clinical research has tripled over the last 15 years to more than $3.4 million.
- Disease prevention and access to care are becoming ever more important as medical centers are held accountable for the health of the populations they serve. The Division of Public Health Sciences has contributed in both areas, promoting “Eight Ways” to prevent cancer in collaboration with Siteman Cancer Center, and studying ways to improve access to breast cancer care and other health services.

The department’s research success is built on the strength of its parent institution; Washington University School of Medicine is one of the largest recipients of NIH funding; its BioMed 21 initiative dedicates considerable resources toward translating basic science discoveries into real-world clinical solutions and underscores the university’s historic commitment to multidisciplinary research. Washington University’s Genome Institute, a major player in the Human Genome Project, is today a world leader in genome sequencing and a key resource for the department. Visit biomed21.wustl.edu and genome.wustl.edu for more information.
IT IS HARD TO IMAGINE today, but throughout much of the 20th century the question of whether Department of Surgery faculty members should be full-time was a controversial one. In 1919, Chair Evarts Graham, MD, became the second surgeon nationally to serve as a full-time faculty member at a medical school, but he did not believe in creating a wholly full-time faculty. Up until the 1980s, most of the department’s faculty had private practices that included surgery at community hospitals as well as Barnes Hospital.

Chair Samuel Wells Jr., MD, ushered in a new era when he began in 1981, replacing private practice surgeons as they retired with full-time faculty and also centralizing business operations. By then, the health care business had become increasingly complex; fee for service and charity care were gradually supplemented by private insurance, then Medicare and Medicaid in the 1960s, and managed care in the 1980s.

Since the 1980s, Congress and private insurers have been looking at ways to cut health care costs, spurring a period of declining reimbursements. The 1990s also saw the mergers of St. Louis area hospitals — including Barnes Hospital and The Jewish Hospital of St. Louis — to achieve new efficiencies.
In Focus

Remembering Frank Richards, MD

Frank Richards, MD, an African-American surgeon who was appointed to the clinical faculty of the Department of Surgery in 1954 and helped break down the barriers of discrimination in the St. Louis medical community, died on Feb. 20, 2014. He was 90.

A graduate of Howard University School of Medicine, Richards completed a general surgery residency under the supervision of Washington University surgeons from 1947 to 1952 at Homer G. Phillips Hospital — which exclusively served African Americans until St. Louis city hospitals were integrated. He later served as supervisor of surgery and assistant director there.

In a St. Louis Beacon article, Richards credited the determination of African-American doctors, and also the forward thinking of white doctors such as Department of Surgery Chair Evarts Graham, MD, with opening up jobs and staff privileges at Washington University and Saint Louis University medical schools.

A highly regarded surgeon, Richards was the first African American to become a member of the St. Louis Surgical Society and eventually became the group’s first African-American president. Later in his career, he worked to make sure doctors who pioneered better health care and medical training for African Americans were remembered by penning a chapter, “The St. Louis Story,” in the book “A Century of Black Surgeons: The USA Experience.” He also helped establish the Homer G. Phillips Public Health Lecture Series at Washington University.

In Focus

Refining quality improvement

In the past year, Bruce Hall, MD, PhD, MBA, has been working on quality improvement efforts with three surgeon workgroups at Washington University and Barnes-Jewish Hospital. One of the groups has implemented interventions to help prevent surgical site infections and begun an auditing process to make sure the steps are being followed; the second group re-evaluated prevention measures for venous thromboembolisms (VTEs) and introduced a new level of auditing of VTE events. The third group worked to improve evaluation of patients at risk for cardiac events during and after surgery. New workgroups are being planned.

Their work is based on data from the National Surgical Quality Improvement Program of the American College of Surgeons (ACS NSQIP®), a national program launched in 2001 to measure and improve surgical outcomes and reduce costs. Hall, associate director of NSQIP and BJH HealthCare vice president for patient outcomes, worked with one of NSQIP’s founders, surgeon Shukri Khuri, MD, while completing his training at Harvard and helped to establish Barnes-Jewish as one of the effort’s 12 original private hospitals when he joined the Washington University faculty in 2000. NSQIP has since grown to include more than 500 hospitals.

Department of Surgery Clinical Activity

The current health care environment continues to pose challenges, with the prospect of further payment decreases, adjustments to the Affordable Care Act and regulatory changes, high malpractice insurance costs, and the trend toward pay for performance.

Despite uncertainties, the department’s clinical activity has grown during each of the past 10 years — the result of many initiatives at Barnes-Jewish Hospital and other BJC HealthCare and off-site locations. Growth areas include the Barnes-Jewish Heart Failure Program, which implanted 122 left ventricular assist devices during 2013, and the Surgical and Wound Care Clinic, which recently began treating wounds with hyperbaric oxygen. Following up on offsite-expansion success at Barnes-Jewish West County Hospital and other BJC centers, the department’s pediatric surgeons will be part of an outpatient surgery center in St. Louis County in summer 2015.

Under Chair Timothy Eberlein, MD, and surgeon Bruce Hall, MD, PhD, MBA, the department has played a major role in efforts to improve surgical outcomes at Barnes-Jewish, across BJC and nationally. The hospital was one of 12 original hospitals to participate in the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP®), and Hall is both a national and hospital leader in the program. Medicare is increasingly tying payment to outcomes and even patient satisfaction, and other payers may follow suit in coming years.
**GIVING**

**PHILANTHROPY SUPPORTS FUTURE SUCCESS**

**ARNOLD BULLOCK, MD**, was named the Alan A. and Edith L. Wolff Distinguished Professor of Urology. Bullock specializes in urologic oncology, male voiding dysfunction and erectile dysfunction. He is recognized for teaching excellence and for community outreach efforts. The professorship was established through the philanthropic legacy of the late Alan A. and Edith L. Wolff, who provided for 12 endowed and 6 distinguished endowed professorships.

**PIROOZ EGHTESADY, MD, PHD**, chief of the Section of Pediatric Cardiothoracic Surgery, was installed as the Emerson Chair in Pediatric Cardiothoracic Surgery. Eghtesady specializes in surgical management of complex congenital heart disease, cardiac and lung transplantation, and mechanical assist devices. He studies the pathogenesis of congenital heart defects. Emerson, which created the chair, was one of the largest donors of the building fund that helped construct the present-day St. Louis Children’s Hospital.

**DAVID LINEHAN, MD**, was named the Neidorff Family and Robert C. Packman Professor. Linehan is an expert in treatment of hepatobiliary and pancreatic malignancies. Robert Packman, MD, (LA ’53 and MD ’56) a former Barnes Hospital resident and Washington University faculty member, is a senior vice president at Centene Corporation. Michael Neidorff is chairman and CEO of Centene. Noémi Neidorff is active on numerous St. Louis boards. Linehan, the former chief of the Section of Hepatobiliary-Pancreatic and Gastrointestinal Surgery, recently left Washington University to become chair of the Department of Surgery at the University of Rochester School of Medicine and the Seymour Schwartz Professor and surgeon-in-chief at Strong Memorial Hospital.

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**Leadership**

**FACULTY CONTRIBUTE AT NATIONAL, GLOBAL LEVELS**

**National and International Organizations, 2014-2015**

- Kathryn Bernabe, MD  
  Assistant Professor of Surgery, Division of Pediatric Surgery  
  Elected, Executive Board and Counselors, International Society for Pediatric Wound Care

- L. Michael Brunt, MD  
  Chief, Section of Minimally Invasive Surgery  
  President, Society of American Gastrointestinal and Endoscopic Surgeons (SAGES)

- Jennifer Lawton, MD  
  Professor of Surgery, Section of Cardiac Surgery  
  President, Women in Thoracic Surgery  
  Elected, Fellow of the American Heart Association  
  Created Southern Thoracic Surgery Association Mentoring Committee  
  Created Women in Thoracic Surgery Scanlan/WTS Traveling Mentorship Award

- Luis Sanchez, MD  
  Gregorio A. Sicard Distinguished Professor of Vascular Surgery  
  Chief, Section of Vascular Surgery  
  President-Elect, Cirujanos Vasculares Speaking Vascular Surgeons  
  Created Southern Thoracic Surgery Association Mentoring Committee  
  Created Women in Thoracic Surgery Scanlan/WTS Traveling Mentorship Award

- Brad Warner, MD  
  Jessie L. Ternberg, MD PhD  
  Distinguished Professor of Pediatric Surgery  
  Chief, Division of Pediatric Surgery  
  Member, Board of Governors, American College of Surgeons

**National/Regional Quality Programs and Networks**

- Cassandra Arroyo-Johnson, PhD  
  Assistant Professor of Surgery, Division of Public Health Sciences  
  Chair, Healthy Eating and Active Living Partnership, City of St. Louis

- Jacqueline Saito, MD, MSCI  
  Assistant Professor of Surgery, Division of Pediatric Surgery  
  Member, Steering Committee  
  Chair, Pediatric Data Definitions Committee, American College of Surgeons  
  Pediatric National Surgical Quality Improvement Program

- Surendra Shenoy, MD, PhD  
  Professor of Surgery, Section of Transplant Surgery  
  Co-chair, Clinical Trial Endpoints for Dialysis Vascular Access, a project supported by the Kidney Health Initiative of the American Society of Nephrology

**National and International Awards**

- Graham Colditz, MD, DrPH  
  Niess-Gain Professor in the School of Medicine  
  Chief, Division of Public Health Sciences  
  American Society of Clinical Oncology (ASCO) — American Cancer Society Award and Lecture, 2014 ASCO Annual Meeting

- Timothy Eberlein, MD  
  William K. Bixby Professor of Surgery  
  Chairman, Department of Surgery  
  Honorary Fellow, Royal College of Surgeons of Edinburgh

- Nabil Munfakh, MD  
  Professor of Surgery, Division of Cardiothoracic Surgery  
  Laureate, American Board of Cardiology

- Gregorio Sicard, MD  
  Professor of Surgery, Section of Vascular Surgery  
  Luminary in Vascular Surgery  
  Society for Vascular Surgery

- Steven Strasberg, MD  
  Pruett Family Professor of Surgery, Section of Hepatobiliary-Pancreatic and Gastrointestinal Surgery  
  Distinguished Service Award, Americas Hepato-Pancreato-Biliary Association

**In Focus**

**Patterson receives 2014 Bakken Scientific Achievement Award**

The Society of Thoracic Surgeons awarded G. Alexander Patterson, MD, the 2014 Earl Bakken Scientific Achievement Award during the Society’s 50th Annual Meeting in January 2014.

Patterson, a Joseph C. Bancroft Professor of Cardiothoracic Surgery, has a long history of National Institutes of Health (NIH) funding that has aided in many scientific contributions to general thoracic surgery and lung transplantation. He served as the Evarts A. Graham Professor of Surgery and chief of the Division of Cardiothoracic Surgery from 2005-2014.

The Earl Bakken Scientific Achievement Award was established in 1999 through a grant from medical equipment company Medtronic, Inc., to honor individuals who have made outstanding scientific contributions that have enhanced the practice of cardiothoracic surgery and patients’ quality of life.
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*Joined faculty in fiscal year 2015

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Barnes-Jewish Hospital, a 1,315-bed facility, has been listed on the elite U.S. News & World Report Honor Roll of America's best hospitals for 22 consecutive years.

St. Louis Children's Hospital  
St. Louis Children's Hospital, with 264 beds, is recognized as one of America's top children's hospitals by U.S. News & World Report, which in 2014 ranked the hospital in all 10 specialties surveyed.

The Alvin J. Siteman Cancer Center  
The Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine is the only National Cancer Institute comprehensive cancer center within 240 miles.

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