Healthy Response

thriving in changing times
A KEY COMPONENT of our mission is to provide patient care with the best possible outcome, the highest degree of safety, and as efficiently as possible.

We are working toward that end at both the national and institutional level through our leadership role in the National Surgical Quality Improvement Program (NSQIP) and through the use of specialty and national databases aimed at evaluating quality of care. In addition, our researchers in cancer prevention and many other disciplines collaborate within the department’s newly established Surgical Quality and Effectiveness Group.

Despite a challenging environment for research funding, our faculty continue their leadership in such areas as shaping prostate cancer treatment, endovascular valve repairs and training military surgeons to perform peripheral nerve surgery. Basic science research in cancer, transplant immunology, minimally invasive surgery and pediatric conditions will transform the way many patients are healed.

Surgical residency training has changed little over the last 100 years. Our department, with its commitment to innovative education programs, is poised to lead the change in surgical education. We have developed model programs in simulation and robotics and have developed the infrastructure to change the curriculum and focus on performance instead of time-based training. Our education directors and associate directors are defining these changes not only for our own trainees, but for similar programs nationwide through their involvement with their respective specialty organizations.

Finally, our department remains an influential voice nationally. Ralph Damiano, MD, just completed his presidency of the Society of Clinical Surgery and is president of the International Society for Minimally Invasive Cardiothoracic Surgery; James Fleshman, MD, and Alec Patterson, MD, just finished their terms as president of the American Society for Colon and Rectal Surgery and president of the American Association for Thoracic Surgery, respectively. I have recently been honored to be president-elect of the American Surgical Association.

Together, we look forward to overcoming the challenges of the future, all while strengthening our profession.

Timothy J. Eberlein, MD
William K. Bixby Professor of Surgery
Chairman, Department of Surgery
Director, Alvin J. Siteman Cancer Center
Healthy Response

Thriving in changing times

Introduction
TODAY, perhaps more than ever, the field of academic medicine faces challenges that are constantly growing and changing. Chief among them are federal health care reform, a serious economic downturn and tight government research budgets. At the same time, our society needs, values and demands exceptional health care.

Although daunting, these challenges also represent an opportunity to learn and grow in our roles as national leaders in health care, research and education. Toward that end, the Department of Surgery is redoubling its efforts to anticipate and respond to the challenges of the day as we continue to move medicine forward.

Our recent efforts include strengthening our department-wide focus on finding ways to increase patient safety and decrease costs; as part of that, we play a leadership role in a national database-driven patient-safety and outcomes study and have extended those efforts internally.

In addition, we remain dedicated to discovering solutions to health care’s most important problems through basic, clinical and translational research, turning ideas and knowledge into solutions that save lives.

In our role as educators, we continue to train physicians in an environment that is attuned to the challenges of the day and to equip our trainees with the skills to be not only adept but adaptable throughout their careers.

Lastly, we work to strengthen our clinical services through geographic expansion and through developing partnerships with our community — finding ways to address real-world problems and deliver care where it is needed most.

Although daunting, these challenges also represent an opportunity to learn and grow in our roles as national leaders.

Throughout all our efforts, we find that our historic strength in multidisciplinary collaboration is more valuable than ever. By bringing together the best minds from diverse fields, we gain fresh perspectives, work more efficiently, and generate a renewed sense of group purpose in solving the medical challenges of tomorrow.
THE DEPARTMENT of Surgery is playing a leading role in a major national program aimed at improving surgical patient safety and outcomes. The program, which involves large-scale collection and analysis of surgical clinical data, addresses the tremendous pressure faced in health care today to control costs while protecting quality of care and patient safety. It represents just the beginning of a trend toward closer scrutiny for the surgical profession, says program co-leader Bruce Hall, MD, PhD, MBA, Washington University endocrine surgeon at Barnes-Jewish Hospital.

The program, called the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP), began in 2001 with 14 participating hospitals, Barnes-Jewish Hospital among them. Now roughly 270 hospitals nationwide participate, reporting 160 pieces of data—medical history, diseases...
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The program, called the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP), began in 2001 with 14 participating hospitals, Barnes-Jewish Hospital among them. Now roughly 270 hospitals nationwide participate, reporting 160 pieces of data — medical history, diseases and conditions, type of surgery, complications or death after surgery and more — on randomly selected procedures across the surgical spectrum.

“The ultimate aim is to feed back information to help institutions and surgeons improve their quality,” Hall says.

Hall is director of measurement and evaluation for ACS NSQIP, overseeing monitoring of data collection, statistical model formation and exploration of research issues. He also leads Barnes-Jewish’s participation in the program.

Hall has seen a positive impact at both the national and institutional levels. A study published in the *Annals of Surgery* showed that surgical outcomes improved across all participating hospitals from 2005 to 2007. The program ranks Barnes-Jewish among the top 10 percent of those participating but also points to areas in which the hospital underperformed.

“We’re seeing that we’re good at some things, but perhaps more importantly, we are seeing there’s room for improvement,” Hall says.

In a spin-off effort, the department has formed its own Surgical Quality and Effectiveness Group to foster similar internal studies.

“Early on, I told surgeons they hadn’t seen the start of measuring and monitoring data and implementation of incentives by the government,” he says. “If we aren’t involved on those levels, someone else will be involved on our behalf.”


### Collaborative Extension

The Department of Surgery’s new special working group — the Surgical Quality and Effectiveness Group — fosters studies of quality improvement and related issues. Formed in September 2009, it joins surgeons across all divisions with researchers in cancer prevention and control, who are experts in epidemiology and biostatistics. More than 30 volunteer faculty members use ACS NSQIP or other data for collaborative research.

Key leaders are Bruce Hall, MD, PhD, MBA, and Graham Colditz, MD, DrPH, Niess-Gain Professor in the School of Medicine and associate director of prevention and control at the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine.

A few projects are in early stages: Kathleen Wolin, ScD, a behavioral epidemiologist, and bariatric surgeon Esteban Varela, MD, MPH, are measuring national referral patterns and outcomes for morbidly obese patients being considered for non-bariatric procedures. Health psychologist Mary Politi, PhD, plastic and reconstructive surgeon Ida Fox, MD, and social psychologist Aimee James, PhD, MPH, are examining the decision-making process and outcomes of women considering reconstructive breast procedures after mastectomy.

“We don’t know which study will be the first to translate into an example of what a group like this can do,” says Colditz. “But we are already feeling like there are some great combinations of people and issues.”

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Bruce Hall, MD, PhD, MBA, and Mitzi Hirbe, RHIA, CPHQ, are key players in a national program aimed at making the surgical experience safer and more effective.
DOUGLAS SCHUERER, MD, far left, finds that a major benefit of his patient-safety efforts is the ability to instill best practices in the next generation of physicians.

THROUGH HIS long-standing involvement in patient-safety issues, Douglas Schuerer, MD, is playing a key role in improving patient safety not only in surgical and trauma care, but throughout Barnes-Jewish Hospital.

As director of the Barnes-Jewish Trauma Center, Schuerer is frequently involved in patient safety as part of his daily routine; when a Level 1 trauma patient is admitted, Schuerer evaluates the patient immediately and makes far-reaching decisions on care and treatment. On an administrative level, he is active on many hospital committees overseeing patient safety and seeking to improve outcomes.

His experiences made him a natural candidate for the Goldfarb Patient Safety and Quality Fellowship, sponsored by Washington University School of Medicine and Barnes-Jewish Hospital to provide advanced clinical research training that can be applied to practical situations. A year

Douglas Schuerer, MD, far left, finds that a major benefit of his patient-safety efforts is the ability to instill best practices in the next generation of physicians.
“As we improve care of the trauma population, we improve safety for the entire hospital.”
— Douglas Schuerer, MD

John Mazuski, MD, PhD, was co-chair of an expert panel of the Surgical Infection Society and the Infectious Diseases Society of America that published updated guidelines for the management of intra-abdominal infections in adults and children. He co-chaired the panel on behalf of the Surgical Infection Society. The guidelines were published in Clinical Infectious Diseases and Surgical Infections.

In their first year, faculty members Robert Southard, MD, and Alicia Kieninger, MD, established areas of interest outside of their clinical practice. Southard works with Richard Hotchkiss, MD, on basic science investigations of lung injury and sepsis. Kieninger was appointed associate program director of the general surgery residency and has initiated an education-focused research program. (See story on page 32.)

Steven Schwulst, MD, and Kevin McConnell, MD, were selected as surgical critical care fellows for 2010-11 after completing the general surgery residency at Washington University. They will be joined by Michael Charles, MD, who comes from private practice in Hillsboro, Texas.

The Acute and Critical Care Surgery Section welcomed Kareem Husain, MD, as an instructor in surgery. Husain completed the surgical critical care fellowship at Washington University.

General surgery resident Enjae Jung, MD, is participating in a National Research Service Award Institutional Research Training Grant under the direction of Hotchkiss. She helped develop a mouse model receiving whole body irradiation combined with methicillin-resistant Staphylococcus aureus pneumonia and is studying the effects of this combined injury in several organs to determine the cause of the synergistic mortality seen with the model. The researchers hope to identify potential therapies for sepsis in irradiated patients.

Schuerer, who is director of the Surgical Critical Care Fellowship, believes his experience has made him more effective in teaching trauma fellows and general surgery residents about safety and quality improvement issues. The topic is crucial at a time when resident and fellowship training programs are facing more rigorous requirements from the Accreditation Council for Graduate Medical Education in patient safety and quality improvement education.

From experience, Schuerer also knows that contributions to patient safety in the trauma center and ICU often have an impact on other hospital patients. “We follow our patients in all the different locations they may go — interventional radiology, CT scan, OR, emergency room,” he says. “As we improve care of the trauma population in these areas, we improve safety for the entire hospital.”

Anesthesiologist Isaac Lynch, MD, documents compliance with SICU protocols.
Oscar Wolff and Anne Lin, MD, review data from the Washington University Inherited Colon Cancer Registry.

Registry Revitalized

Effort supports colorectal cancer research, patient care

WASHINGTON UNIVERSITY colorectal surgeons have some good news for patients with inherited colon cancer syndromes: despite their condition, advanced cancer is preventable. To bolster prevention, the surgeons have expanded their efforts on a cancer registry that began more than 30 years ago.

With more than 50,000 deaths per year, colorectal cancer is the second-leading cause of cancer-related deaths in the United States. Up to 5 percent to 6 percent of colon cancers result from inherited syndromes, the most common of which are familial adenomatous polyposis (FAP) and hereditary nonpolyposis colon cancer (HNPCC).

In classic FAP, patients develop benign polyps as early as their teenage years; if left untreated, these polyps turn cancerous at about the age of 40. Those with HNPCC are at higher risk for colon
“Through the registry, a lot of families were able to share their experiences.”
— Ira Kodner, MD

cancer and for endometrial cancer (in women) and other malignancies.

“Patients with FAP will inevitably develop colorectal cancer if the colon is not removed,” says colorectal surgeon Anne Lin, MD. “The cancer can be prevented by removing the entire colon and rectum — with connection of the small intestine to the anus via construction of a new rectal pouch. In HNPCC, vigilant cancer screening is essential to avoid occurrence of aggressive cancer.”

In the past year, Lin and coordinator Oscar Wolff have worked to expand the efforts of the Washington University Inherited Colon Cancer Registry to enroll patients and family members with the syndromes, set up regular screenings, offer educational events and collect research samples.

A high-risk colorectal cancer registry was initially established by Ira Kodner, MD, the Solon and Bettie Gershman Chair in Colon and Rectal Surgery, in the 1970s with the support of the Rotskoff and Quicksilver families, which were both affected by colon cancer. Kodner admires the Rotskoffs — with members of three generations undergoing monitoring and surgical treatment for FAP — as a family that did not let the disease curtail their lives.

Kodner believes the registry is poised to provide a great service to the 250 patients with FAP and HNPCC and their family members and to others who join.

“In a recent meeting organized through the registry, a lot of families were able to share their experiences,” says Kodner. “The registry is also a great resource for helping us inform patients should new treatments or medications come along.”

The Annual Meeting of the American Society of Colon and Rectal Surgeons (ASCRS) May 15-19 in Minneapolis marked the end of a busy year for Section Chief James Fleshman Jr., MD, who completed his term as ASCRS president.

Matthew Mutch, MD, served as program chair and Steven Hunt, MD, as vice chair of the ASCRS annual meeting. They also presented a video of a total protocolectomy performed as a Natural Orifice Transluminal Endoscopic Surgery (NOTES) procedure. The protocolectomy — total removal of the colon and rectum — was performed on a cadaver through the anus and was among the first to be done using this method. Eventually, after the technique is thoroughly tested, it may be performed in patients.

Washington University colorectal surgeons are now performing pelvic resection for rectal cancer as a robotic procedure. Robotic surgical equipment provides surgeons a better view and angle of approach for the operation, which is minimally invasive.

“Through the registry, a lot of families were able to share their experiences.”
— Ira Kodner, MD
As a breast disease fellow, Amy Cyr, MD, shown here at left with fellowship director Julie Margenthaler, MD, gained a broad perspective on the synergy among breast disease care, clinical research and community outreach.

**Seeing the Big Picture**

**Fellowship explores all aspects of breast disease care**

**TWO YEARS** of seeing breast cancer patients as a general surgeon in Bellingham, Wash., led Amy Cyr, MD, to enter training as a breast diseases fellow at Washington University School of Medicine. “Patients have all of these questions about radiation and chemotherapy, and I realized I couldn’t answer a lot of them,” says Cyr. “I wanted specific training so I could direct their care and help them understand every aspect of treatment.”

The Breast Diseases Fellowship, which began in 2005, is part of a recent trend to provide more specialized training to surgeons who care for women with breast disease. As a fellow in 2009-2010, Cyr learned techniques such as oncoplastic surgery and duct excision. Perhaps more importantly, she underwent intensive training in medical oncology, radiation oncology,
“I wanted specific training so I could understand every aspect of their treatment.”
— Amy Cyr, MD

William Gillanders, MD, is principal investigator of a Phase I clinical trial of a mammaglobin-A, DNA breast cancer vaccine.

Section Chief Jeffrey Moley, MD, was co-author of a study in the *Journal of Clinical Oncology* reporting that the drug vandetanib showed partial responses and disease control in patients with advanced hereditary medullary thyroid cancer.

Fellowship Director Julie Margenthaler, MD, says the training addresses many of the issues Cyr encountered as a general surgeon.

“Surgeons are the gatekeepers for breast cancer patients getting into the medical system,” Margenthaler says. “If you understand all of the things that are going to happen downstream, you will be able to provide your patient with the best surgical care and an understanding of what she can expect.”

Along with providing care for all types of breast diseases, the fellows are exposed to clinical trials and outcomes research. They also participate in community outreach efforts such as speaking to participants in the Young Women’s Breast Cancer Program at the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine.

The fellowship provided Cyr with all the tools she needs in her current position. After graduating, she joined the faculty in August 2010 as a breast surgeon at Barnes-Jewish St. Peters Hospital, which operates a satellite location of Siteman Cancer Center about 30 miles west of St. Louis.

“Our goal is to train breast surgeons who want to stay in academic medicine, provide surgical care and contribute to clinical trials and translational research,” says Margenthaler.

“Having Amy out in the community, where she can tell patients about clinical trials, is a huge benefit to those patients.”

Now a faculty member, former fellow Amy Cyr, MD, practices at a satellite location, supporting the department’s efforts to expand its patient base.

**Highlights**

- William Gillanders, MD, is principal investigator of a Phase I clinical trial of a mammaglobin-A, DNA breast cancer vaccine.
- Section Chief Jeffrey Moley, MD, was co-author of a study in the *Journal of Clinical Oncology* reporting that the drug vandetanib showed partial responses and disease control in patients with advanced hereditary medullary thyroid cancer.
- A study in *The Lancet Oncology* by Rebecca Aft, MD, PhD, and coworkers found that fewer women with Stage II and III breast cancer had disseminated tumor cells (DTC) in their bone marrow at surgery and at one year after receiving chemotherapy and zoledronic acid than those who received chemotherapy alone.
- Gillanders and Kenneth Murphy, MD, PhD, a Howard Hughes Investigator, received a Synergistic Idea Award from the Department of Defense Breast Cancer Research Program to study the role of BTLA in breast cancer immunosurveillance.
- Moley collaborated with Farrokh Dehdashti, MD, in nuclear medicine on a study showing that positron emission tomography (PET) with 18F-fluorodeoxyglucose may be able to determine whether thyroid nodules collected through fine-needle aspiration are benign or malignant, thus preventing unnecessary surgeries. The study was published in the *World Journal of Surgery*.
- The Genome Center at Washington University mapped the whole DNA genome sequence of breast cancer and brain metastasis in one of Aft’s patients. The sequence — published in *Nature* — could eventually serve as a tool for determining the best treatment for patients with these diseases.
Genetic screening and prophylactic surgery spared Barbara McCalebb from pancreatic cancer, which runs in her family.

BARBARA MCCALEBB had two older sisters who died of pancreatic cancer. So when endoscopic ultrasound detected a precancerous abnormality in her own pancreas, she did not hesitate to act on the advice of her physicians; McCalebb had part of her pancreas and spleen removed as a preventive measure.

McCalebb, 69, was the first patient in a pancreatic cancer familial high-risk screening program at the Siteman Cancer Center to have a prophylactic operation. The screening program was set up by Washington University surgeon David Linehan, MD, who performed McCalebb’s surgery, and gastroenterologist Dayna Early, MD. It represents just a part of Siteman’s strong institutional commitment to cancer prevention.

“Most pancreatic cancer is not familial, but we have identified several families with multiple affected members,
Steven Strasberg, MD, the Pruett Family Professor of Surgery, published a study on radiofrequency ablation of metastatic colorectal cancer on the surface of the liver. The novel technique was found to be a safe and effective tool for extending resection margins and ablating superficial small tumors. He also published a study on bile duct injury repair in which a “side-to-side” surgical approach showed the best results ever for series of more than 100 patients. Strasberg also was senior author of an article looking at severity grading and providing the first quantitative analysis of postoperative complications.

Strasberg was the British Journal of Surgery Lecturer at a meeting of the Association of Upper GI Surgeons in Nottingham, England, in September 2009.

William Hawkins, MD, is principal investigator of a clinical trial of mesh reinforcement to reduce leakage after pancreatic surgery. One of the biggest complications of removing the tail of the pancreas is pancreatic leak, which occurs about 20 percent of the time. An earlier trial showed a good patient response to mesh after pancreatic surgery.

At Siteman Cancer Center, Hawkins is principal investigator of a Phase III clinical trial of a pancreas cancer vaccine made from patients’ altered pancreas cancer cells. Section Chief David Linehan, MD, is leading a clinical trial to see if the drug Zometa can reverse immune suppression in cancer cells that travel from the bone marrow to the tumor.

“Screening to try to detect precancerous changes makes sense.”
— David Linehan, MD

and unaffected first-degree relatives have a much higher chance of developing pancreatic cancer when compared to the general population,” says Linehan, chief of the Section of Hepatobiliary-Pancreatic and GI Surgery. “For this reason, screening these relatives to try to detect precancerous changes makes sense.”

For McCalebb, after watching her two sisters die from the disease, the genetic screening and identification of a precancerous condition comes as a welcome development. The resulting surgery ensured she could return to her normal life, which includes her work at the Human Development Corporation, where she assists people who need funds to pay utility bills. Away from work, she reads mystery books, belongs to a book club, walks and enjoys other activities.

“There was somebody with me every step of the way during the surgery,” she says. “I never, at any time, thought that I would not come out on the good side.”

Linehan believes screening and prophylactic surgery, if needed, represents the future for families with a history of pancreatic cancer. By banking tissues from patients, the screening program may also help researchers gain insights into the genes that drive the disease in both familial and sporadic cases. Linehan plans to work with the Genome Center at Washington University to try to find germ-line mutations inherited by families that result in pancreatic cancer.

“By collecting specimens from patients on whom we perform prophylactic surgery, we are going to learn a lot about the biology of how this cancer happens,” says Linehan.

Nurse coordinator Phyllis Stadler, BSN, conducts an interview to gather detailed family history. The process is an important component of the pancreas cancer high-risk screening program.
Sleeve gastrectomy (SG) is a surgical weight-loss procedure in which surgeons remove a large portion of the stomach in a vertical fashion, leaving the organ about the size and shape of a banana or sleeve. SG historically was part of a two-staged operation but has been shown to be effective as a primary or lone procedure.

AS A BARIATRIC surgery Center of Excellence, Washington University’s Weight Loss Surgery Program emphasizes quality of care and provides the most advanced surgical treatment. To strengthen its clinical practice and address a national health crisis, the program is now serving a new group of patients — adolescents with surgical obesity.

The program’s recent history is closely aligned with the practice of Christopher Eagon, MD, who began performing bariatric surgery at Barnes-Jewish Hospital in 1997, attending to the unique needs of obese patients.

In recent years, minimally invasive approaches in weight loss surgery have become the norm. Options include laparoscopic gastric bypass, banding surgery and sleeve gastrectomy, which surgeons recently began offering. The program also achieved Center of Excellence certification from

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“We track the outcome of every patient who undergoes surgery.”
— Christopher Eagon, MD

The American Society for Metabolic and Bariatric Surgery (ASMBS). “When patients have these operations, there’s a significant change in their eating behavior, with both nutritional and psychological consequences,” says Eagon. “As a Center of Excellence, we must have nurses and office staff who successfully manage follow-up. We also track the outcome of every patient who undergoes surgery.”

Today, the program is in the process of recertification and is extending the option of bariatric surgery to morbidly obese adolescents.

Statistics in the Journal of the American Medical Association show that since 1980, obesity has tripled among school-age children and adolescents, and it remains high at approximately 17 percent. To address this trend and help obese adolescents seeking treatment at St. Louis Children’s Hospital, Esteban Varela, MD, MPH, is developing a bariatric surgical center for teenagers age 15 to 19.

Varela was the lead author in a study that showed bariatric surgery in adolescents appears to be as safe as in adults. In addition, he says, obese teens often are unable to lose weight without surgery.

“A study in the New England Journal of Medicine offered very good scientific proof that obese kids die early, so we need to do some sort of intervention to increase their chances of survival,” says Varela.

● Washington University minimally invasive surgeons were the first in the region to offer transoral incisionless fundoplication (TIF), which treats the underlying cause of gastroesophageal reflux disease without incisions. The procedure causes no scarring and typically results in fewer complications and a more rapid recovery.

● L. Michael Brunt, MD, was elected to the Executive Committee of the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES), a 6,000-member community of surgeons dedicated to advancing laparoscopic, endoscopic and emerging minimal-access surgical methods worldwide. He also will serve as treasurer of SAGES for the next three years.

● Esteban Varela, MD, MPH — a minimally invasive surgeon who specializes in bariatric, foregut and solid organ surgery — joined the faculty in January 2010. In addition to overseeing the adolescent bariatric program, he will be the principal investigator of a study evaluating the stability of glucose after bariatric surgery and of a single-site laparoscopy multicenter study. He also evaluates new mechanical staplers for sleeve gastrectomy.

● Biomedical engineer Corey Deeken, PhD, received a SAGES research grant to evaluate the effects of fibrin sealants on biologic mesh for laparoscopic paraesophageal hernia repair.

● For the second year, Minimally Invasive Surgery (MIS) Chief Brent Matthews, MD, and MIS Lab Administrator Peggy Frisella, RN, led a team of health care providers, all of whom work closely with the MIS section, on a surgical mission trip to the Dominican Republic. The team performed mostly hernia repairs.


The outlook for college student Danielle Scheetz is bright after receiving a kidney-pancreas transplant to combat complications of type 1 diabetes.

**Kidney-Pancreas Transplantation**

**Uncommon expertise, outstanding success**

*AT THE AGE OF 18, Danielle Scheetz faced a medical crossroads: Her type 1 diabetes was crippling her kidneys, and she was just months away from renal failure.*

Scheetz, who had been on the dance team in high school, had trouble walking up a flight of stairs and was forced to take a medical leave from college. Her blood sugars were consistently in the 300s, and her kidneys were functioning at less than 20 percent. But her doctor, a kidney specialist, offered hope: A kidney-pancreas transplant could not only provide normal kidney function, but also cure her diabetes.

A search by Scheetz and her family led her to Washington University transplant surgeon Jason Wellen, MD, director of kidney and pancreatic transplantation at Barnes-Jewish Hospital. On Oct, 18, 2009, Wellen transplanted her with a kidney and pancreas. Since the operation, Scheetz has not required a
Thalachallour Mohanakumar, PhD, Honored

Thalachallour Mohanakumar, PhD, the Jacqueline G. and William E. Maritz Chair in Immunology and Oncology and professor of pathology and immunology, was awarded the Daniel P. Schuster Award for distinguished work in Clinical and Translational Science from Washington University School of Medicine in February 2010. In addition to his responsibilities as the director of the Barnes-Jewish Hospital HLA Laboratory, Mohanakumar, who joined the Washington University faculty in 1987, continues his research in transplantation and tumor immunology, focusing on:

1) defining the role of antibodies in allograft rejection following human lung transplantation,
2) assessing the role of immune responses to self antigens in chronic rejection,
3) determining cellular and humoral responses in human anti-porcine xenograft interactions, and
4) identifying mamma-globin-A CD8 epitopes to develop vaccination strategies for breast cancer patients. Mohanakumar is a past recipient of national awards from the American Society of Transplantation, the American Society of Histocompatibility and Immunogenetics, and the Juvenile Diabetes Research Foundation.

As a top U.S. solid organ transplant center, Barnes-Jewish Hospital continues to see growth in its transplant volume. Last year, surgeons performed 199 kidney, 100 liver and 9 kidney-pancreas transplants. Liver transplant surgeons have developed nationally recognized programs for patients with specialized conditions, including those with advanced-stage hepatocellular carcinoma and unresectable cholangiocarcinoma. Kidney transplant surgeons have established programs for highly sensitized and ABO-incompatible recipients and recently developed kidney “swap” programs with other U.S. centers. All these strategies help patients with end-stage organ failure in great need for transplantation.

Along with their basic science investigations, transplant researchers are leading about 25 clinical trials in areas such as novel immunosuppressive strategies for liver transplant recipients, image planning and image guidance in liver resectional surgery, new molecular therapeutic targets in HCC, and use of biomaterials for hernia repair and wound closure in transplant recipients, among others.

Postdoctoral Research Scholar Nataraju Angaswamy, PhD, won a young investigator award for an oral presentation at the American Transplant Congress Meeting in May 2010. Altogether, transplant researchers gave eight presentations at the meeting.

Transplant surgeons and other physicians are working with Barnes-Jewish Hospital to establish a solid organ transplant center that will encompass heart, lung, liver, kidney and kidney-pancreas transplantation. The multidisciplinary program will provide comprehensive services and take advantage of mutual interests of all programs.

“**They were right when they said I would feel 100 times better.”**

— Danielle Scheetz

single unit of insulin and has returned to St. Louis Community College, where she is studying to be a nurse. “I feel good every day,” she says.

Wellen says the combination of type 1 diabetes, an autoimmune condition in which the pancreas makes no insulin, and kidney failure has a poor prognosis: about a 30 percent five-year survival rate. But five-year survival jumps to 87 percent after a successful kidney-pancreas transplant.*

“Patients often don’t know what to do with themselves now that they have normal blood sugar levels,” says Wellen.

Barnes-Jewish Hospital operates one of the nation’s premier transplant programs. “Our kidney and pancreas programs have excellent results due to the multidisciplinary team approach that we take to manage each and every patient,” says Wellen. “Our kidney program is one of the largest in the nation, having performed 199 kidney transplants in 2009. But more importantly, our graft survivals remain one of the best in the nation.”

Candidates for pancreas transplant have type 1 diabetes and are usually younger than 50 years old. Ninety-five percent of transplant recipients have renal disease. The remaining 5 percent have normal renal function but suffer from hypoglycemic unawareness.

Wellen notes that transplant recipients trade insulin for immunosuppressive drugs. But for Scheetz, the trade was worth it. “They were right when they said I would feel 100 times better,” she says.

*Organ Procurement and Transplantation Network (OPTN) 2008 report
Shaping national guidelines for care

Since the early 1990s, minimally invasive techniques and other advancements have improved the safety and effectiveness of surgical treatment for vascular disease. Washington University vascular surgeons — who played a role in many of these changes — are now helping to shape guidelines and measure patient outcomes in this evolving field.

For two years, Gregorio Sicard, MD, chief of vascular surgery and the Eugene M. Bricker Professor of Vascular Surgery at Barnes-Jewish Hospital, worked on a Society for Vascular Surgery (SVS) committee to write practice guidelines for treating abdominal aortic aneurysms. Aneurysm treatment changed in the early 1990s with the introduction of stents that are inserted in the artery as an alternative to open surgery. The SVS first issued guidelines in 1992 and updated them in 2003.

To shape the new guidelines — published in October 2009 by the Journal of Vascular Surgery* — Sicard helped review the literature and make recommendations in surveillance,
Gregorio Sicard, MD, chief of vascular surgery, received the 2010 “Hero with a Heart” Award from the National Marfan Foundation (NMF). Sicard was recognized for his dedication to patients with Marfan Syndrome, including surgical treatment and the pioneering of life-saving techniques.

Sicard and Brian Rubin, MD, wrote a chapter on aneurysms for Rutherford’s Vascular Surgery, considered the bible of vascular surgery.

Patrick Geraghty, MD, contributed to the FDA review process for devices to treat critical limb ischemia as part of a Society for Vascular Surgery work group. Currently, these devices must be compared in a randomized, controlled trial to either a surgery or a balloon angioplasty control group. This process is costly and delays approval of some minimally invasive devices useful for patients who are not good candidates for open surgery. To streamline approvals, the group is developing methods of using high-quality data from previously conducted trials to evaluate the devices. The group’s recommendations were published in the Journal of Vascular Surgery.

The faculty welcomed Jeffrey Jim, MD, who completed his vascular surgery fellowship at Washington University. Jim is developing a practice offering comprehensive vascular treatment at Christian Northeast Hospital in north St. Louis County.

The Washington University Vascular Surgery Section completed recruitment for a clinical trial of fenestrated stents, which provide a surgical option for patients whose aneurysms are too close to the arteries that feed the kidneys. FDA review is the next step for the stent technology.

“Complications and cost effectiveness for stent devices.

“A lot has changed overall,” he says. “We have better medical therapies. Clinical trials have demonstrated the best care before, during and after the operation.”

In a separate effort, Patrick Geraghty, MD, Washington University vascular surgeon at Barnes-Jewish Hospital, belongs to an SVS committee working with the American College of Surgeons’ National Surgical Quality Improvement Program to determine the best data for measuring vascular surgery outcomes. The aim is to provide good benchmarks and ultimately improve outcomes.

“It’s very important this gets done right,” says Geraghty. “We have to look at the correct variables so we can measure outcomes in a meaningful way for our patients.”

In addition, new faculty member Jeffrey Jim, MD, has been working with the Department of Surgery’s Surgical Quality and Effectiveness Group to provide a comprehensive evaluation of overall outcomes nationally in patients who undergo thoracic aneurysm repair.

“It’s important to know what the results are outside of a clinical trial,” he says. “We need to understand whether we are able to translate the effectiveness of surgical treatments to everyday practice when they are not done in the same controlled setting.”

“We have to look at the correct variables so we can measure outcomes in a meaningful way for our patients.”

— Patrick Geraghty, MD

Over the past 25 years, Washington University surgeons and researchers have been instrumental in developing surgical treatments for atrial fibrillation (AF). They introduced the first surgical cure for AF — the Cox-Maze procedure — and ever since have continued to forge new frontiers to make the procedure safer and more effective.

AF is the most common form of irregular heart rhythm, affecting between 2 and 3 million Americans. Although episodes may be intermittent at first, they can become constant, increasing the risk of stroke and heart failure.

“We are a pioneering center for the treatment of atrial fibrillation,” says Ralph Damiano Jr., MD, chief of cardiac surgery at Washington University and Barnes-Jewish Hospital and the John M. Shoenberg Chair in Cardiovascular Disease. “This began with our work in the basic science laboratory and continues with our translational clinical...
Ralph Damiano Jr., MD, was elected president of the International Society for Minimally Invasive Cardiothoracic Surgery. The society is the largest in the world dedicated to minimally invasive techniques in cardiothoracic and vascular surgery. The honor recognizes Damiano’s many contributions in this area, including the introduction of robotic surgery in North America, the development of minimally invasive arrhythmia procedures and the refinement of minimal access valve surgery.

In the OR, Damiano and surgeon Hersh Maniar, MD, perform minimally invasive procedures that either do not require cardiopulmonary bypass or can be done through small incisions or ports — approaches undertaken at only a few centers nationwide. The surgeons and electrophysiologists plan to lead a clinical trial of a hybrid procedure combining surgical and catheter ablation to further decrease operative morbidity.

Sophisticated imaging techniques provide precise evaluation of patients’ arrhythmias, allowing for tailored ablation strategies that are safer and more effective.

Jennifer Lawton, MD, received an R01 grant from the National Heart, Lung, and Blood Institute to study whether use of the drug diazoxide during heart surgery can prevent post-surgical changes in heart cell volume and contractility — the ability of heart cells to beat.

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Washington University was the lead enrolling site in the CURE-AF clinical trial to evaluate the efficacy of a bipolar radiofrequency device for the treatment of permanent atrial fibrillation.

In 2009, the volume of heart failure patients implanted with left-ventricular assist devices (LVADs) continued to grow as both a bridge to transplant and destination therapy. Surgeons implanted 52 LVADs and one total artificial heart, increased from 36 LVADs in 2008. A total of 23 heart transplants were performed in 2009.

The heart failure program began enrolling patients in a trial of the HeartWare® LVAD as a bridge to transplant and will participate in a destination therapy study once the protocol is FDA approved. The program will also participate in a study to evaluate a portable driver allowing patients on an artificial heart to be discharged home to await transplant; another trial will evaluate a donor heart transport and preservation system in which the donor heart is perfused and beating at normal body temperature during transport.

Hersh Maniar, MD, joined the cardiac surgery team in November 2009 after serving as a cardiac surgeon for the Christiana Care Health System in Newark, Del. He completed his cardiothoracic surgery fellowship at Washington University.

Research and leading role in developing new therapies.”

Cardiothoracic surgery lab Director Richard Schuessler, PhD, worked with James Cox, MD, and John Boineau, MD, on an animal model of AF in the mid-1980s. In developing the Cox-Maze procedure, they made small, strategically placed incisions in the atria, creating scar tissue that served as a “maze” of barriers guiding abnormal electric signals to their correct destination.

The procedure proved highly effective in patients but was difficult to perform. Damiano and Schuessler began working 10 years ago to develop devices to replace the “cut and sew” approach with radiofrequency tissue ablation. Their work resulted in the simplified Cox-Maze IV procedure; Damiano reported successful early clinical results in 2006, and the procedure is now in widespread use.

Significant refinements continue. The research group is working with Washington University biomedical engineer Yoram Rudy, PhD, to develop a technique called electrocardiographic imaging to analyze a patient’s AF by recording signals from the chest without an invasive electrophysiology study. “The goal is to customize the operation by placing lesions appropriate to the individual patient,” says Schuessler, rather than the standardized placement currently in use.

In the OR, Damiano and surgeon Hersh Maniar, MD, perform minimally invasive procedures that either do not require cardiopulmonary bypass or can be done through small incisions or ports — approaches undertaken at only a few centers nationwide. The surgeons and electrophysiologists plan to lead a clinical trial of a hybrid procedure combining surgical and catheter ablation to further decrease operative morbidity.

They also perform a surgical pulmonary vein isolation — which restores a normal heart rhythm for many patients with intermittent AF — through small ports in the chest wall.

“Highlights”

- Ralph Damiano Jr., MD, was elected president of the International Society for Minimally Invasive Cardiothoracic Surgery. The society is the largest in the world dedicated to minimally invasive techniques in cardiothoracic and vascular surgery. The honor recognizes Damiano’s many contributions in this area, including the introduction of robotic surgery in North America, the development of minimally invasive arrhythmia procedures and the refinement of minimal access valve surgery.

- Damiano also was elected president of the Society of Clinical Surgery — the oldest travelling society in surgery — and appointed to serve as a permanent member on the Bioengineering, Technology, and Surgical Sciences (BTSS) study section at the National Institutes of Health.

- Jennifer Lawton, MD, received an R01 grant from the National Heart, Lung, and Blood Institute to study whether use of the drug diazoxide during heart surgery can prevent post-surgical changes in heart cell volume and contractility — the ability of heart cells to beat.

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Synergistic Success

Advancing the understanding of lung immunology

THREE YOUNG Washington University researchers who make collaboration a focal point in their work developed the first mouse model of lung transplantation in 2007 and have since added to the scientific understanding of lung immunology and lung cancer.

Surgeon-scientists Daniel Kreisel, MD, PhD, and Alexander Krupnick, MD, began working in the lab together when both were residents at the University of Pennsylvania in the mid-1990s. They were joined there by Andrew Gelman, PhD, who earned his doctorate in immunology at the university.

Reunited at Washington University, the three formed the Thoracic Immunology Lab, which seeks to address a major problem in lung transplantation: low survival in recipients (about 45 percent after five years) when compared to survival in patients who receive other organs (70 percent).
G. Alexander Patterson, MD, the Evarts Ambrose Graham Professor of Surgery and chief of the Division of Cardiothoracic Surgery, spoke on "collegial, cooperative groups with clear goals and commitment" as the most productive model.

Varun Puri, MD, who joined the faculty after completing a fellowship in cardiothoracic surgery at Washington University, is establishing a vibrant clinical practice at Barnes-Jewish St. Peters Hospital, located 30 miles west of St. Louis.

Traves Crabtree, MD, was lead author in an article comparing surgical resection and stereotactic body radiation therapy in high-risk patients with stage I, non-small cell lung cancer. The article was published just as the American College of Surgeons Oncology Group planned a national study to explore both surgery and radiation therapy as alternatives for such patients. Section Chief Bryan Meyers, MD, and Washington University radiation oncologist Jeffrey Bradley, MD, will help steer the effort at a national level.

The section welcomed Italian thoracic surgeon Mohsen Ibrahim, MD, PhD, as the AATS Evarts A. Graham traveling fellow. He is the fourth traveling fellow to choose Washington University in 15 years — a great honor given the complete freedom of the fellows to study anywhere in North America.

percent for heart and liver transplants and about 80 percent for kidney transplants at five years).

“We developed the mouse model to mirror events seen in humans — acute rejection and ischemia reperfusion injury — which are important risk factors for chronic rejection,” says Kreisel. “The hope is that research into these mechanisms will eventually translate into therapeutics for human lung recipients.”

The lab has since developed a mouse model for right lung transplant, using the skills of microsurgeon Wenjun Li, MD, to go with the original left lung transplant model. Because the right lung is the primary lung in the mouse, the new model allows the lab to more easily follow the consequences of lung rejection in an animal model.

In addition, Kreisel has continued exploring mechanisms of acute rejection and ischemia reperfusion injury; Gelman is spearheading research into genes as predictors of acute lung injury or primary graft dysfunction; and Krupnick is looking at the opposite end of lung immunology — how blood vessels can inhibit the immune response to lung cancer and other aspects of tumor immunology.

“We think of it as one lab,” says Krupnick. “Somebody comes up with an idea and someone spearheads it. A lot of times, who gets credit in science builds walls and prevents ideas from advancing.”

The Thoracic Immunology Lab's collaborative approach creates an intellectual synergy.

“We think of it as one lab. Somebody comes up with an idea and someone spearheads it.”

— Alexander Krupnick, MD
Young patients such as Bobby McIntosh, shown here with ECMO coordinator Mary Mehegan, RN, (left) and his mother, Sandy McKim, benefit from the ever-evolving application of ECMO therapy.

EMCO Evolves
Tried-and-true technology remains a lifesaver

WHEN TEENAGER Bobby McIntosh developed severe breathing problems at St. Louis Children’s Hospital last year, he was rescued by a medical technology called extracorporeal membrane oxygenation (ECMO) — a treatment that was introduced decades ago but continues to evolve in use and sophistication.

The underlying cause of McIntosh’s breathing problems was Wegener’s granulomatosis, an autoimmune disease that affects many organs — in his case, the lungs. He was hospitalized for seven weeks in the summer of 2009, but his recovery was strong enough that he played baseball his senior year of high school. Now 18, he is doing well as a freshman at Three Rivers Community College in Poplar Bluff, Mo.

McIntosh’s mother, Sandy McKim, is especially grateful for the care provided by Pediatric Cardiothoracic Surgery Chief Charles Huddleston, MD, Mary Mehegan, RN, and others who administered ECMO to
“Our patients are helped by the dedication of all who provide ECMO care.”
— Mary Mehegan, RN

her son. Within days of admission to the intensive care unit, McIntosh had gone into complete respiratory failure, and ECMO provided oxygenation while medication helped to heal his lungs.

“ECMO saved his life,” says McKim.

ECMO is a machine that supports ventilation and circulation while the heart or lungs recover after surgery or serious illness. The machine is especially successful in treating newborns with respiratory problems but can be used in older children with heart or lung conditions.

St. Louis Children’s Hospital celebrated 25 years of ECMO therapy in July 2010. During that period, its use has changed significantly.

“More advanced medical therapies such as high frequency ventilation and nitric oxide therapy now support children well enough to keep them from needing ECMO,” says Mehegan, who coordinates the ECMO program. “Many times now, the children on ECMO are more critically ill than in years past.”

Huddleston adds that use of the technology has shifted toward cardiac support. “When I first came here, easily 80 percent of the patients we put on ECMO received respiratory support, mostly newborns,” he says. “Now it’s probably 30 to 40 percent cardiac and the rest split evenly between older children and neonates with respiratory problems.”

The hospital has also implemented technological and process-improvement changes, including transport of the machine to its neonatal, pediatric and cardiac ICUs rather than housing it in just the pediatric ICU.

“Our patients are helped through the dedication of all who provide ECMO care,” says Mehegan.
Bright Future

Multidisciplinary care improves outcomes for often-fatal birth defect

WHEN BENJAMIN HUBBLE was born with a congenital diaphragmatic hernia (CDH) — an often fatal birth defect that inhibits lung growth — he benefited from highly specialized care, teamwork and efforts to improve outcomes at St. Louis Children’s Hospital.

CDH occurs when the diaphragm does not fully form and allows abdominal organs to enter the chest cavity. The failure of the lungs to develop and pulmonary hypertension — high blood pressure in the arteries that supply the lungs — are primary complications. One in every 2,000 to 5,000 babies born in the United States has CDH, and about one-third do not survive to their first birthday.

Born in September 2009, Benjamin had a large hole in his diaphragm and significant pulmonary hypertension. He spent three weeks on a heart-lung bypass machine before Jacqueline Saito, MD, Washington University pediatric surgeon at St. Louis Children’s Hospital, could repair the defect. Saito performed three follow-up surgeries,
“They answered every one of our questions thoroughly.”
— Kelly Hubble

and Benjamin was in the neonatal intensive care unit (NICU) for four months, where his mother, Kelly, says he was known as the “sickest kid” for most of his stay.

At home with a thriving son, Kelly and her husband, David, are grateful not only for the surgical and intensive care Benjamin received, but for the prenatal and bedside consultation provided by a team of pediatric surgeons, neonatologists and other caregivers. “They answered every one of our questions thoroughly,” says Kelly.

Benjamin’s care was enhanced by the formation of the Fetal Care Center at Washington University Medical Center, which offers advanced diagnostics, surgery and newborn medicine under one roof. Pediatric surgeons and other specialists have also worked together to improve treatment of CDH through multidisciplinary rounds and a team that looks at advancements in care.

Pediatric surgeon Kathryn Bernabe, MD, who participates in the rounds and CDH team, says healthy discussions play an essential role in both forums. “For example, we may be starting to use an alternative medication more often,” says Bernabe. “Should we start using it earlier? Is there strong literature to support its use?”

On a national level, Children’s Hospital is one of eight pediatric hospitals submitting DNA samples of patients and parents to Columbia University to determine whether genes play a role in CDH.

“The application would be in diagnosis and counseling,” says Brian Bucher, MD, a pediatric research fellow. “In addition, the study will look at development outcomes in children who survive.”

Kelly Hubble is thankful for the compassionate, skilled care that has allowed her son, Benjamin, to thrive.

Kathryn Bernabe, MD, who joined the faculty in September 2010, will oversee the new Pediatric Acute Wound Service (PAWS) Unit at Missouri Baptist Hospital and see patients at Progress West Health-Care Center in St. Charles County in addition to her practice at St. Louis Children’s Hospital.

Jacqueline Saito, MD, and Brad Segura, MD, expanded the types of operations being performed as minimally invasive procedures to include repairs of congenital diaphragmatic hernia and of duodenal atresia, a condition in which the first part of the small bowel has not developed properly.

By hiring additional staff members, the Children’s Hospital trauma team was able to improve its outreach and educational efforts with emergency medical technicians and non-pediatric hospitals.

Brad Warner, MD, the Jessie L. Ternberg, MD, PhD Distinguished Professor of Pediatric Surgery and chief of pediatric surgery, mentored several Washington University biomedical engineering students looking at noninvasive ways to accurately measure intestinal length using a mathematical algorithm based on MRI measurements.

General surgery resident Nick Hamilton, MD, served as the first pediatric trauma fellow at Children’s Hospital under the direction of Martin Keller, MD, during the 2009-2010 academic year. Brian Bucher, MD, another general surgery resident, served as a clinical research fellow studying congenital diaphragmatic hernia under the leadership of Saito and Warner.

Derek Wakeman, MD, a resident in Warner’s laboratory, won the basic science award at the Society for Surgery of the Alimentary Tract.

Hospital Enrolls in Pediatric NSQIP Initiative

St. Louis Children’s Hospital has enrolled in the American College of Surgeons Pediatric National Surgical Quality Improvement Program (ACS NSQIP Peds), the first multispecialty, outcomes-based program to measure the quality of children’s surgical care. Similar to the Adult ACS NSQIP (see article on page 4), the pediatric program will enable participating hospitals to collect highly reliable clinical data including 30-day outcomes.

Jacqueline Saito, MD, is coordinating the initiative at Children’s Hospital, which will include most pediatric surgical subspecialties. The goal of the program is to provide hospitals with high-quality surgical outcomes data and methods to improve care.
While Susan Mackinnon, MD, performs peripheral nerve surgery, senior research technician Andrew Yee documents the procedure for the website.

**The World at Our Fingertips**

**Website demonstrates latest nerve transfer techniques**

*IN LATE 2007, Walter Reed Army Medical Center neurologist William Campbell, MD, expressed his growing concern about the number of soldiers returning from Iraq and Afghanistan with nerve injuries impairing use of their arms, legs and hands. His request for proposals from leaders in peripheral nerve surgery resulted in the development of a website to guide military surgeons in using new techniques to treat soldiers with such injuries.*

For Washington University plastic and reconstructive surgeons at Barnes-Jewish Hospital, peripheral nerve injuries — injuries that affect movement in the upper and lower extremities — are part of a familiar terrain. Although soldiers’ peripheral nerves are injured mostly through improvised explosive devices (IEDs) and combat, their nerve injuries are similar to those in people who have motor vehicle accidents or suffer mishaps with power tools.

While Susan Mackinnon, MD, performs peripheral nerve surgery, senior research technician Andrew Yee documents the procedure for the website.
Plastic surgeons at Washington University have been leaders in developing and performing nerve transfers, in which a less essential nerve or nerve portion is transferred, bypassing the damaged site to restore function. When asked how they could help the injured soldiers, these surgeons came up with the idea of a “how-to” website describing such transfer procedures.

Ida Fox, MD, Washington University plastic surgeon at Barnes-Jewish Hospital, obtained funding from the Henry M. Jackson Foundation for the Advancement of Military Medicine and coordinated production of the website, which includes videotaped surgeries, graphic illustrations, photography and concise text. Senior research technician Andrew Yee served as videographer, and neurosurgeon Justin Brown, MD, also helped develop the plan for the site content.

“These nerves are the size of a strand of thin spaghetti, and if you’re not familiar with that anatomy, it can be very hard to find the nerve, let alone pick out the strands you need to do the transfer surgery,” says Fox. “So what we show are anatomic-dissection pictures and then a video of the surgery.”

The site also addresses details such as what incisions to make, how to position the patient, what type of anesthetics to use and tips to help make the surgery go smoothly.

“We hope the website will be helpful to all surgeons taking care of patients with peripheral nerve injuries,” says Fox.

Photography to be posted on the website captures each step of an examination performed by surgeon Ida Fox, MD, and physical therapist Lorna Kahn (far right).

Nerve compression in the back of the neck and forehead region can trigger chronic and debilitating headaches. Thomas Tung, MD, has begun performing surgical nerve decompression to treat this condition in selected patients in conjunction with neurologists.

Highlights

- Keith Brandt, MD, the William G. Hamm Professor of Plastic Surgery, is vice president, and will be president-elect, of the American Society for Reconstructive Microsurgery. He also chairs several committees of the American Society of Plastic Surgeons. He serves as a director of the American Board of Plastic Surgery and chair of its Maintenance of Certification Committee. He was named a Plastic Surgery Educational Foundation (PSEF) Visiting Professor for 2009-2010.

- A survey ranked Albert Woo, MD, among the top 10 percent in patient satisfaction among all Washington University School of Medicine faculty for the second consecutive year. Woo was rated highly in his efforts to include patients in treatment decisions; kindness and respect; clear communications; explaining tests, procedures and medications; and addressing the concerns of patients at their visits.

- Philip Johnson, PhD, joined the division as a research faculty member devoted to investigating the mechanisms of nerve injury and repair.
PROSTATE CANCER is the second leading cause of cancer death among American men, but many more men are diagnosed with the disease than die from it. The challenge for urologists has been to find the appropriate treatment for each patient, which until recently involved two ends of a spectrum: either watchful waiting in patients with a limited life expectancy or complete removal of the prostate gland.

Washington University urological surgeons have been leaders in developing a middle ground: destroying a tumor through focal ablation without affecting the whole prostate. Much of their efforts have centered on focal cryoablation — removal by freezing, paired with a novel 3-dimensional prostate ultrasound. The surgeons are now testing a new ablation technique, which employs laser technology; they are part of a clinical trial using MRI-guided insertion of laser fibers and injection of a sensitizing drug that targets blood vessels that feed
Surgeons at Barnes-Jewish Hospital performed their 1,000th robotic surgery using the da Vinci surgical system in January 2010. Prostate cancer is the primary use of da Vinci nationwide, but Washington University urologists along with other surgeons have expanded its use for removal of the gallbladder as well as kidney, bladder, colon and gynecologic cancers.

Sam Bhayani, MD, with the help of Brian Benway, MD, is developing equipment to modify the da Vinci robot to better perform nephron-sparing removal of kidney cancers. This high-tech approach allows urologists to perform this surgery on more patients with kidney cancers.

Washington University urologists have been leaders in testing a 3-D laparoscopic system (laparoscopic camera, monitor and eyewear) and were the first group to test one of the most recent versions.

Steven Brandes, MD, won an American Urological Association (AUA) Excellence in Urology Health Reporting Award for informative reporting on health topics in urology.

Benway joined the faculty after completing a minimally invasive urology fellowship at Washington University.

Clinical fellow Alex Shteynshlyuger, MD, and Division Chief Gerald Andriole Jr., MD, won the AUA’s Ambrose Reed Socioeconomic Essay Contest with their paper “Cost-Effectiveness of PSA Screening in the U.S.”

Seth Strope, MD, MPH, received an American College of Surgeons Institutional Review Grant for his study “Increasing Efficiency of Surveillance for Bladder Cancer Survivors.” He was also selected as a clinical scholar in the Washington University KL2 Career Development Awards Program. Strope will receive two to three years of research support and training through the program.
Excellence Through Adaptability

Expanded leadership invigorates program

THE GENERAL SURGERY Residency Program prepares trainees for the challenges of today’s continually changing medical environment by approaching education with flexibility and exceptionally high standards. Under the leadership of Mary Klingensmith, MD, who became program director in 2001, the program has developed a proactive adaptation to the 80-hour work week, an outstanding skills training environment and national leadership in ethics training. Residents receive training at Barnes-Jewish Hospital and St. Louis Children’s Hospital, both nationally recognized for excellence in patient care.

Most recently, the program has reinvigorated itself once again through the addition of three associate program directors. Each director serves as primary mentor to one-third of the program’s 55 residents, providing a higher level of one-on-one attention to each trainee. Residents

Trauma surgeon and Associate Program Director Alicia Kieninger, MD, and Co-Administrative Chief Resident Fabian Johnston, MD, meet with patient Doyle Lane.
“Once you have that kind of energy, it becomes infectious.”
— Fabian Johnston, MD

meet with their team leaders formally twice a year and are encouraged to seek them out on an ongoing basis whenever issues arise. They also engage in social activities and participate in team-based competitions such as a version of Jeopardy to help prepare for the annual American Board of Surgery In Training Exam.

“The additional directors make residents feel as if they have more attending involvement,” says Co-Administrative Chief Resident Elizabeth Fialkowski, MD. “The teams have built resident spirit, too.”

In addition, Klingensmith says, each director specializes in a specific aspect of surgical education and trains all 55 residents in that area. Transplant surgeon Christopher Anderson, MD, has assumed the role of research director, in which he helps residents identify a mentor, design a research project and apply for funding. Trauma surgeon Alicia Kieninger, MD, is teaching residents billing and documentation for the first time. And minimally invasive surgeon Michael Awad, MD, PhD, develops curriculum and oversees the surgical skills labs — including training in robotics, an area in which he specializes.

Fabian Johnston, MD, co-administrative chief resident, says he learned a lot from a lecture and exercise in billing — in which most residents underbilled — and values the fresh perspective Awad brings to curriculum development.

“The associate program directors are very interested in surgical education and are eager to take our program to the next level,” Johnston says. “Once you have that kind of energy, it becomes infectious.”
Fundamental Answers

Basic science paves the way for better medicine

THE DEPARTMENT of Surgery places a high priority on basic science research as one of the most important ways to find the solutions to medicine’s toughest problems.

A prime example is the Division of Pediatric Surgery’s Intestinal Adaptation Laboratory. This basic science lab is one of a handful around the world to offer hope for patients with short bowel syndrome, a disorder that follows surgical removal of half or more of the small intestine. By studying the process of intestinal adaptation after bowel resection, the lab’s researchers work to identify possible treatment areas for this serious condition.

Short bowel syndrome may occur after surgery for intestinal diseases, injuries or defects present at birth. In infants, the root cause is typically a congenital condition such as necrotizing enterocolitis, in which intestinal tissue dies, or volvulus, a twisting of the intestine. Because the small intestine plays a major role in food absorption, patients with short bowel syndrome require nutritional support — intravenous feeding in severe cases.

(From left) Jun Guo, PhD, Christopher Erwin, PhD, and Brad Warner, MD, are just one of many research teams applying basic science to solve clinical problems.
“If we can decrease feeding by vein, it will be a big savings in both cost and lives.”
— Christopher Erwin, PhD

Brad Warner, MD, the Jessie L. Ternberg, MD, PhD Distinguished Professor of Pediatric Surgery and chief of the Division of Pediatric Surgery, and researchers Christopher Erwin, PhD, and Jun Guo, PhD, who jointly run the lab, are well aware of the human costs of the disease.

“The mortality after five years in patients with extreme short bowel syndrome is about 50 percent,” says Erwin. “This is caused primarily by complications from intravenous feeding. Even if we cannot cure the syndrome but can decrease the amount of feeding required by vein, it will be a big savings in both cost and lives.”

A number of natural adaptations occur in the remaining small intestine after bowel removal, including massive cell turnover, new blood vessel growth, and physiologic changes in certain cell types. These, along with the role of the muscle layer surrounding the intestine, are all important research areas in the laboratory. The lab also pioneered a mouse model to study genetics, protein expression, physiological characteristics and survival after surgery.

Recently, the lab worked with the Donald Danforth Plant Science Center to develop a soybean milk with epidermal growth factor (EGF), known to enhance adaptation. The researchers are currently working to secure funding to test EGF in infants.

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### Department of Surgery Research Awards

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End products) in the pathogenesis of aneurysm formation. RAGE is known to be an important mediator in inflammation and is upregulated in human aortic aneurysm tissue. Raman received an American Heart Association Scientist Development Grant and the Louis C. Argenta Faculty Research Fellowship from the American College of Surgeons.

- The Siteman Cancer Center’s Your Disease Risk website got a boost when behavioral epidemiologist Kathleen Wolin, ScD, appeared on the Dr. Oz show to discuss cancer prevention. When the show posted a link on its website, the typical 25,000 views per day went up to 125,000; the day Wolin appeared on the show, there were 225,000 views.

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**Highlights**

- Paul Goodfellow, PhD, was the first recipient of the $50,000 Gynecologic Cancer Foundation/Claudia Cohen Prize for Outstanding Gynecologic Cancer Researcher. Goodfellow is a co-leader — with

- Pancreatic tumors can be identified by a readily detectable marker that shows promise as a basis for immune therapy against the disease, according to research by pancreatic cancer surgeon William Hawkins, MD, and researcher Peter Goedegebuure, PhD. The findings could enable researchers to design a vaccine that boosts the immune response to mesothelin to target pancreatic cancer cells.

- A Cancer Prevention and Control study is investigating weight loss after breast cancer as a way to improve quality of life and reduce risk of recurrence. The study will include 200 randomized patients who will receive two-year weight loss intervention, including exercise and diet programs.

- Kathleen Raman, MD, MPH, is investigating the role of the RAGE receptor (Receptor for Advanced Glycation End products) in the pathogenesis of aneurysm formation. RAGE is known to be an important mediator in inflammation and is upregulated in human aortic aneurysm tissue. Raman received an American Heart Association Scientist Development Grant and the Louis C. Argenta Faculty Research Fellowship from the American College of Surgeons.
Patrick Dillon, MD, shown here with young patient Miles Baker and his father, Tim, is among some 50 department surgeons who provide services at Barnes-Jewish West County Hospital in suburban St. Louis.

Clinical Operations

Adding expertise, services and sites keeps practice healthy

THE DEPARTMENT of Surgery — like all medical providers — faces financial challenges and uncertainty about the future of health care. Governmental health care reform, an aging population, fluctuating Medicare reimbursement and soaring medical malpractice costs are but a few. In this complex environment, the department strives to ensure that adequate resources are available to provide the best and most advanced treatment possible.

In recent years, finding ways to offer existing therapies to new patient groups and to expand the practice geographically have been important boons to clinical revenue and volumes; the number of patient visits has increased in each of the last six years. Clinical research also contributes significantly; in fiscal year 2010, clinical trials involved 744 patients and brought in $1.7 million in revenue.

These strategies are expected to serve the department well in the future.

Patrick Dillon, MD, shown here with young patient Miles Baker and his father, Tim, is among some 50 department surgeons who provide services at Barnes-Jewish West County Hospital in suburban St. Louis.
“It’s key that we continue to expand and grow our services to fulfill our mission.”

— Timothy Eberlein, MD

As it expands, the department has worked hard to maintain patient satisfaction. Surveys show that 98 percent of patients rank surgery faculty in the Excellent/Very Good categories; in addition, in fiscal year 2010, the department exceeded its goal of offering appointments within 14 days in every specialty.

In addition to its clinical activities, the department extends its impact on the region by offering numerous continuing medical education programs in almost every surgical specialty through the School of Medicine, Barnes-Jewish Hospital and Siteman Cancer Center. Topics range from pancreatic cancer to therapeutic challenges in liver disease.

“It’s key that we continue to expand and grow our services in order to fulfill our clinical, research and educational missions,” says Timothy Eberlein, MD, William K. Bixby Professor and chairman of the Department of Surgery.

— Timothy Eberlein, MD

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<thead>
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<th>Highlights</th>
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<td>• The Section of Minimally Invasive Surgery, created in 2008, added two new surgeons and will expand its surgical weight-loss treatment in the next year to include an adolescent center. A wide range of other surgical specialties have added surgeons and expanded treatment by using new techniques and treating sicker patients.</td>
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<td>• Several new faculty members provide services at outlying centers as far away as Farmington, Mo., located about 70 miles south of St. Louis; urologic surgeon Brian Benway, MD, spends several days a week at Parkland Hospital in Farmington.</td>
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<td>• Vascular surgeon Jeffrey Jim, MD, is developing a vascular surgery program at Christian Northeast Hospital in north St. Louis County.</td>
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<td>• Pediatric surgeons opened a Pediatric Acute Wound Service (PAWS) unit at Missouri Baptist Hospital in west St. Louis County. The service — like the unit at St. Louis Children’s Hospital — provides conscious sedation for children who undergo dressing changes, burn or abscess management, or other painful skin treatments.</td>
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<tr>
<td>• Breast surgeon Amy Cyr, MD, and thoracic surgeon Varun Puri, MD, practice at Barnes-Jewish St. Peters Hospital and provide care at the hospital’s affiliated Siteman Cancer Center facility. Cyr and Puri are faculty members of the Endocrine and Oncologic Surgery and General Thoracic Surgery sections, respectively.</td>
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<td>• The department has increased visibility through frequent appearances in two magazines published by Barnes-Jewish Hospital: Innovate, for patients, and Innovate Physician, sent to 272,000 physicians nationwide.</td>
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<th>Off-Campus Practice Sites</th>
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| **St. Louis County**
Barnes-Jewish West County Hospital
- Breast Disease Surgery
- Colon and Rectal Surgery
- Cosmetic, Plastic and Reconstructive Surgery
- Minimally Invasive Surgery
- Pediatric Surgery
- (General, Plastic, Urologic)
- Thoracic Surgery
- Transplant and Hepatobiliary-Pancreatic Surgery
- Urologic Surgery
- Vascular Surgery
Barnes-Jewish St. Peters Hospital
- Breast Disease Surgery
- Thoracic Surgery
- Vascular Surgery
Progress West HealthCare Center
- Colorectal Surgery
- Pediatric Surgery
- Urologic Surgery
Farmington, Mo.
- Parkland Hospital
- Urologic Surgery
**Christian Northeast Hospital**
- Cardiothoracic Surgery
- Vascular Surgery
**Missouri Baptist Hospital**
- Pediatric Surgery

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<tr>
<th>Department of Surgery Clinical Activity</th>
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<tr>
<td>The Department of Surgery’s clinical activities have increased steadily over the past several years, at both the main campus and off-site locations. At Barnes-Jewish West County Hospital, work RVUs (relative value units) doubled from fiscal year 2006 to fiscal year 2010.</td>
</tr>
</tbody>
</table>
Faculty

Division of Cardiothoracic Surgery

G. Alexander Patterson, MD, Chief
Evarts Ambrose Graham Professor of Surgery

Section of Cardiac Surgery

Ralph J. Damiano Jr., MD, Chief
John M. Shoenberg Chair in Cardiovascular Disease

Marc R. Moon, MD
Joseph C. Bancroft Professor of Cardiothoracic Surgery

Nabil A. Munfakh, MD
Michael K. Pasque, MD

Section of Pediatric Cardiothoracic Surgery

G. Alexander Patterson, MD
Evarts Ambrose Graham Professor of Surgery; Director of Lung Transplantation

Charles L. Roper, MD
Professor Emeritus of Surgery

Traves D. Crabtree, MD
Alexander S. Krupnick, MD
Varun Puri, MD
Assistant Professors of Surgery

Critical Care Service in the Cardiothoracic Intensive Care Unit

Michael S. Avidan, MBBCh, FCA, Chief
Associate Professor of Anesthesiology and Surgery

Laureen L. Hill, MD
Vice Chair, Department of Anesthesiology; Associate Professor of Anesthesiology and Surgery

R. Eliot Fagley, MD
Adnan Sadqi, MD
Assistant Professors of Anesthesiology and Surgery

William C. Chapman, MD, Chief
Professor of Surgery

Section of General Thoracic Surgery

Bryan F. Meyers, MD, MPH, Chief
Patrick and Joy Williamson Chair in Cardiothoracic Surgery

Section of General Surgery

Jeffrey F. Moley, MD, Chief
Professor of Surgery

Section of Acute and Critical Care Surgery

Bradley D. Freeman, MD
Professor of Surgery

John P. Kirby, MD
John E. Mazuzski, MD, PhD
Douglas J.E. Schuerer, MD
Associate Professors of Surgery

Alicia N. Kieninger, MD
Robert E. Southard, MD
Assistant Professors of Surgery

Section of Colon and Rectal Surgery

James W. Fleshman Jr., MD, Chief
Professor of Surgery

Ira J. Kodner, MD
Solon and Bettie Gershman Chair in Colon and Rectal Surgery

Elisa H. Birnbaum, MD
Professor of Surgery

Matthew G. Mutch, MD
Associate Professor of Surgery

Sekhar Dharmarajan, MD
Steven R. Hunt, MD
Anne Y. Lin, MD
Bashar Safar, MBBS, MRCS
Assistant Professors of Surgery

Section of Hepatobiliary-Pancreatic and Gastrointestinal Surgery

David C. Linehan, MD, Chief
Professor of Surgery

Steven M. Strasberg, MD
Pruett Professor of Surgery; Carl Moyer Departmental Teaching Coordinator

David P. Jaques, MD
Professor of Surgery; Vice President of Surgical Services, Barnes-Jewish Hospital

William G. Hawkins, MD
Associate Professor of Surgery

Section of Endocrine and Oncologic Surgery

Timothy J. Eberlein, MD
William K. Bixby Professor of Surgery; Chairman, Department of Surgery

William E. Gillanders, MD
Bruce Lee Hall, MD, PhD, MBA
Professors of Surgery

Rebecca L. Aft, MD, PhD
Julie A. Margenthaler, MD
Associate Professors of Surgery

Amy E. Cyr, MD*
Assistant Professor of Surgery

Faculty
Unrestricted Gifts to the Department of Surgery

Dr. James Adams
Dr. Charles Anderson
Dr. Dorothy Andriole
Dr. Gerald Andriole
Dr. William Barkins
Dr. Steve-Felix Belinga
Dr. Bipin and Bharati Bhayani
Dr. Thomas Blanke
Dr. Richard Bradley
Dr. Ross Brownson
Dr. and Mrs. Robert Bruce
Dr. Rebecca Chancey
Dr. John Stanley Dillon
Dr. Ramsey Ann Ellis
Dr. Sherburne Figenshau
Dr. Michael Freeman
Dr. Robert Fry
Dr. Koichi Fujii
Mr. Thomas Guyton
Dr. Ian Hagemann
Dr. Valerie Halpin
Dr. Robert Hunt
Dr. Richard Karl
Dr. Raymond and Carla Keltner Jr.
Dr. Wolff Kirsch
Dr. Harry Lichtwardt
Mr. Dory C. Malott
Dr. Adam Meadows
Dr. Arthur Misisschia
Dr. Robert Nickel
Dr. George Oliver
Dr. Henry Onken
Dr. Kenneth Rybicki
Dr. Danielle Sandsmark
Mr. Donald Sher
Dr. Mark Siegel
Mr. Howard Stephens
Dr. Lewis Thomas Jr.
Dr. John Cecil Vander Woude
Dr. Jacqueline Ahillen Walker
Dr. Leslie M. Wise
Dr. Thomas Zaydon
Dr. Daniel Zurcher

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Section of General Thoracic Surgery
(314) 362-8598
Section of Pediatric Cardiothoracic Surgery
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Division of General Surgery
(314) 362-7792
Section of Acute and Critical Care Surgery
(314) 362-9347
Section of Colon and Rectal Surgery
(314) 454-7183
Section of Endocrine and Oncologic Surgery
(314) 747-0064
Section of Hepatobiliary-Pancreatic and Gastrointestinal Surgery
(314) 747-2938
Section of Minimally Invasive Surgery
(314) 454-7195
Section of Transplant Surgery
(314) 362-7792
Section of Vascular Surgery
(314) 362-7841

Division of Pediatric Surgery
(314) 454-6066

Division of Plastic and Reconstructive Surgery
(314) 362-4586

Division of Urologic Surgery
(314) 362-8212
Our Partner Institutions
Washington University School of Medicine's 2,100 employed and volunteer faculty physicians also are the medical staff for our partner institutions.

Barnes-Jewish Hospital
Barnes-Jewish Hospital, a 1,228-bed facility, is the largest hospital in Missouri. With a premier reputation in patient care, medical education, research and community service, the hospital has been ranked among an elite group of the nation's best academic hospitals on the U.S. News & World Report Honor Roll for 18 consecutive years. It is the first adult hospital in Missouri to be awarded Magnet status, nursing's highest honor for clinical excellence. Barnes-Jewish Hospital provides clinical experience for medical students in all clinical departments except pediatrics. The medical staff is composed exclusively of Washington University full-time or voluntary School of Medicine faculty physicians.

St. Louis Children's Hospital
St. Louis Children's Hospital is staffed exclusively by Washington University faculty physicians. It is on U.S. News & World Report's Honor Roll of America's Best Children's Hospitals, and is ranked #5 on Parents magazine's list of the country's Best Children's Hospitals. St. Louis Children's was redesignated as a Magnet® hospital by the American Nurses Credentialing Center (ANCC), which recognizes excellence in nursing. Only two percent of hospitals nationally have achieved Magnet redesignation. The hospital provides a full range of services for children and their families across a 300-mile service area and beyond. The school's comprehensive pediatric specialty services at Children's Hospital include newborn medicine, cardiology and the world's leading pediatric lung transplant program. St. Louis Children's Hospital provides extensive community outreach services, including home care services, pediatric mobile intensive care units, affiliations with regional hospitals and physicians, support groups, educational programs, and a free health information line staffed by pediatric nurses.

The Alvin J. Siteman Cancer Center
The Alvin J. Siteman Cancer Center at Washington University School of Medicine and Barnes-Jewish Hospital is an international leader in cancer treatment, research, prevention, education and community outreach. It is the only cancer center in Missouri and within a 240-mile radius of St. Louis to hold the prestigious Comprehensive Cancer Center designation from the National Cancer Institute and membership in the National Comprehensive Cancer Network. Siteman offers the expertise of more than 350 Washington University research scientists and physicians who provide care for about 8,000 newly diagnosed cancer patients each year. These scientists and physicians currently hold more than $165 million in grants. Siteman is ranked among the top cancer centers in the country each year by U.S. News & World Report.

Gifts to the Department of Surgery
The Department of Surgery welcomes your support. Ways to make a gift include annual unrestricted giving such as membership in the Eliot Society, gifts for education of residents and fellows, support for research and endowment, and planned gifts and bequests.

For additional information, please contact the Medical Alumni and Development Office at (314) 935-9690.

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The School of Medicine is committed to recruiting, enrolling and educating a diverse student body.