Vital Connections
Finding solutions through collaboration

Department of Surgery Annual Report 2011
Clinical surgeons have always worked in partnership with other disciplines in the management of individual patients. In their research and teaching endeavors, they have joined with colleagues who are full-time laboratory investigators and with educators. Now and in the future, there will be an increasing emphasis on a multidisciplinary team approach to all aspects of surgical practice, with great benefits to our patients.

One example of this collaboration is the newly established Division of Public Health Sciences. Led by Graham Colditz, MD, DrPH, division researchers reach out to the community through programs such as the Program for the Elimination of Cancer Disparities, but also offer their expertise in epidemiology and biostatistics to departmental colleagues. They played a key role in forming the department’s Surgical Quality and Effectiveness Group to foster quality improvement studies and have helped the group make a major impact.

As three new chiefs begin leadership roles — Grant Bochicchio, MD, MPH, in acute and critical care surgery, Pirooz Eghtesady, MD, PhD, in pediatric cardiothoracic surgery, and Luis Sanchez, MD, in vascular surgery — they all exemplify surgeons who are involved in richly collaborative efforts. For example, our vascular surgeons work closely with cardiac surgeons and cardiologists in the new Washington University and Barnes-Jewish Heart & Vascular Center. This is one of many evolving initiatives being launched by our surgeons.

In laboratory research, the traditional role of the surgical scientist is evolving as more investigations require expertise in genomics, bioinformatics and other fields outside of surgery. Clinical research — also an important component of our mission — is being strengthened by a new department-wide clinical trials group that draws from the best practices of a well-established support center in the Division of Cardiothoracic Surgery.

The continuing focus on multidisciplinary collaboration will also significantly affect surgical education, forcing educators to develop fundamentally different models of training. The department is well-positioned in this effort under the leadership of Mary Klingensmith, MD, who is playing a major role in creating a standard national curriculum in surgical education. Newly appointed as vice chair for education, she is poised to position our programs as leaders in this new era of surgical training.

With this annual report, I am pleased to provide a glimpse into our latest collaborative efforts.

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

Finding solutions through collaboration
Through collaboration, we raise our sights and reach goals that could never be achieved by one specialty alone.

**THE OPERATING ROOM** is a model of teamwork. Although each surgical case is unique, the success of every case depends on a multidisciplinary group of specialists collaborating effectively, each contributing his or her individual expertise to achieve a common goal.

Today, the Department of Surgery relies more and more on the model of teamwork — both inside the operating room and out — to find better approaches to disease prevention, diagnosis and treatment. Through collaboration, we raise our sights and reach goals that could never be achieved by one specialty alone.

The team approach begins during residency; using sophisticated simulation facilities, our surgical residents hone their skills alongside individuals from other medical disciplines in a lifelike environment. Established investigators also use these facilities to study team communication.

In the area of basic and translational research, surgeon-scientists work with tumor immunologists, cell biologists, genome scientists, biomedical engineers, radiologists, psychologists and epidemiologists to tackle research questions that are increasingly complex and interrelated. Their efforts — aimed at developing better treatments for cancer, Barrett’s esophagus, pediatric diseases, abdominal pain and heart disease — are shrinking the distance between bench and bedside.

Collaborative efforts in clinical research draw together individuals from multiple surgical disciplines and other related medical specialties to address quality improvement in ICU procedures, refine methods for minimally invasive heart valve replacement, improve care for complex vascular disorders, and implement new multidisciplinary models for carrying out cancer clinical trials. And in the department’s new Division of Public Health Sciences, epidemiologists, prevention experts, biostatisticians and others work with community partners to understand barriers to receiving health care. In all cases, the interdisciplinary team is critical to success.

The department’s business model supports collaboration with the establishment of multidisciplinary clinical centers for heart and vascular care and for transplant. These centers bring together all the relevant surgical subspecialists and related medical specialists in one location to provide efficient, fully integrated medical care.

All of these efforts are fostered by Washington University’s historic strength in interdisciplinary research; as we move forward together, we look forward to a healthier tomorrow.
Community partnerships fuel new division’s research

Researchers in the newly established Division of Public Health Sciences frequently look outward to accomplish their goals. Whether working to change clinical practice and outcomes, improve public health initiatives or share expertise with colleagues across Washington University campuses, these population health experts focus on creating a healthier future.

“Our goal, through research and education efforts, is to translate research discoveries into policies that keep people healthier and improve quality and access to health care,” says Graham Colditz, MD, DrPh, division chief, deputy director of the Institute for Public Health and the Niess-Gain Professor in the School of Medicine.

The division, within the Department of Surgery, is made up of 20 investigators who collaborate with community health care advocates and medical school colleagues in a wide range of disciplines: epidemiology, chronic disease prevention, cancer prevention, biostatistics, community-based participatory research, comparative effectiveness, health disparities, public health and health literacy.

Researchers within the division are already making an impact in the St. Louis community. For instance, Joaquin Barnoya, MD, MPH, conducted a study in St. Louis bars and restaurants showing that ventilation systems and “voluntary” smoke-free policies do not protect employees and customers from exposure to nicotine in the air.

And Bettina Drake, PhD, MPH, and...
Kimberly Kaphingst, ScD, who studies individuals’ responses to information about family history of cancer, is working with the Genome Institute at Washington University on how best to communicate the results of genome sequencing to patients, family members and clinicians. Kaphingst’s research focuses on the cognitive, emotional and behavioral responses to information about genetic susceptibility to common cancers.

The Siteman Cancer Center launched a 10-month cancer prevention awareness campaign with KSDK/NewsChannel 5 called “8 Ways to Prevent Cancer.” The “8 Ways” are science-based recommendations from the Siteman Cancer Center’s prevention team, led by Graham Colditz, MD, DrPH. The “8 Ways” come from Siteman’s evidence-based risk assessment tool “Your Disease Risk,” found at www.yourdiseaserisk.wustl.edu.

Behavioral epidemiologist Kathleen Wolin, ScD, is testing a diet and exercise weight management program for breast cancer survivors as part of a study funded by the National Cancer Institute. The ENERGY study (Exercise and Nutrition to Enhance Recovery and Good health for You) explores whether two different weight management regimens combining increased exercise and a healthy diet are feasible and have an impact on body weight. The study also includes women at centers in Alabama, California and Colorado.

“Program extends Siteman’s reach

A new $4.27 million, five-year grant from the National Cancer Institute enables the Program for the Elimination of Cancer Disparities (PECaD) at Siteman Cancer Center to extend its work to eliminate racial and economic gaps in cancer care. The grant allows PECaD to broaden its programs to southeastern Missouri and St. Clair County, Ill., as well as strengthen its activities in St. Louis City and north St. Louis County in Missouri.

One such effort is the St. Louis Regional Breast Navigator Workgroup, a coalition of key workers who encourage women from the safety-net system of community and breast health centers to get breast cancer screening. “It is an honor to work with this impressive group of navigators who have a high impact in recruiting the region’s most vulnerable patients into breast screening and care,” says Heidi Miller, MD, who facilitates the navigator workgroup. “PECaD has generously supported this workgroup’s mission, fostered its development and underwritten all its activities.”

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“Aimee James, PhD, MPH, are active in several community projects through the Program for the Elimination of Cancer Disparities (PECaD) at the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine. PEaD’s partnership with People’s Health Centers has allowed People’s to expand mammography services by hiring an additional mammography technician and patient navigator. “Together, we are evaluating the success of the program and measuring barriers among women in completing recommended breast cancer screening,” says Drake.

The division’s researchers work closely with the Siteman Cancer Center to implement cancer prevention programs and lend expertise to colleagues in the Department of Surgery in areas such as epidemiology and biostatistics.

In 2010, the division also established a Master of Population Health Sciences degree program for clinicians, clinical doctorates and medical students. “The program is designed to give clinicians the skills to address the effectiveness and impact of clinical interventions to improve health in the population,” Colditz says.

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Multidisciplinary research improves ICU care

Division of General Surgery
Section of Acute and Critical Care Surgery

TRAUMA SURGEONS typically have a close relationship with nurses and anesthesiologists in the ICU because critically ill or injured patients require constant care on multiple levels. For many years, this collaboration at Washington University and Barnes-Jewish Hospital has extended to addressing quality improvement efforts and research into such medical issues as infection and multiple organ failure.

“I don’t think we are the exception, by any means,” says John Mazuski, MD, PhD, Washington University trauma surgeon at Barnes-Jewish Hospital. “Critical care has always been a multidisciplinary model. But I think we pride ourselves on our strong relationships with the hospital and anesthesiologists.”

Approaching a problem through multidisciplinary collaboration ultimately improves the quality of the research, says Grant Bochicchio, MD, MPH, Edison Professor and section chief. “It’s also increasingly necessary for successful grant application.”

Trauma surgeon Robert Southard, MD, left, and anesthesiologist Richard Hotchkiss, MD, review images of liver cell death due to severe infection. Their basic science research is aimed at finding ways to improve patient care practices in the ICU.
Grant Bochicchio, MD, MPH, became the Edison Professor and chief of the Section of Acute and Critical Care Surgery in July 2011. He previously served as the director of Clinical and outcomes Research at the R Adams Cowley Shock Trauma Center and deputy chief of surgery and chief of Surgical Critical Care at the Baltimore VA Medical Center. He was also professor of surgery at the University of Maryland School of Medicine and The Johns Hopkins University School of Medicine. Bochicchio will continue his research in trauma and critical care, which has included the effects of blast injury to the brain and received funding from the United States Army and Navy. “Our goals are to serve a growing number of critically injured trauma patients at Barnes-Jewish Hospital and to work as a team with EMS providers, nurses and others to determine the best approach to treating traumatic injury,” Bochicchio says.

Mazuski says quality improvement projects in the ICU — done in conjunction with nurses, pharmacists and other staff members at Barnes-Jewish — have included such areas as ventilator management, central venous catheter infections, use of sedatives and oral hygiene.

Most recently, trauma surgeon Kathleen To, MD, initiated a study of blood loss from routine phlebotomy practices in the Barnes-Jewish Hospital ICU with clinical nurse specialists Carrie Sona, MSN, and Lynn Schallom, MSN, other hospital staff members and trauma surgeons.

“It is not just the amount of bloodwork that we send off to the laboratory, but every time blood is drawn, a certain amount gets thrown away,” says To, who performed the research as a critical care fellow and served on the faculty from 2010 through 2011. For ICU patients, cumulative blood loss can result in greater illness and the need for transfusions. The ICU team implemented a number of protocols, with the most successful — standardization of nursing procedures — resulting in a reduction of wasted blood.

Efforts also include basic science research; for the past 15 years, trauma surgeons have worked with anesthesiologist Richard Hotchkiss, MD, to study topics such as infection with multiple organ failure. With Hotchkiss, trauma surgeon Robert Southard, MD, is developing a mouse model of lung injury and trauma.

“There are advances that may allow us to manipulate the immune system to improve the ability of patients to resist or overcome the infection,” says Hotchkiss. “It’s a work in progress.”

Trauma surgeon John Mazuski, MD, PhD, and nurse Carrie Sona, MSN, are looking for ways to make the most of every blood draw in the ICU.

“We pride ourselves on our strong relationships with the hospital and anesthesiologists.”

— John Mazuski, MD, PhD

Highlights

- Douglas Schuerer, MD, worked with other doctors and nurses at Barnes-Jewish Hospital as leader of the Opiate Safety Team. The group reviewed the safe use of opiates and adopted improvement projects including patient-controlled analgesia team huddles, improved pain-scoring methods, and use of transcutaneous CO2 monitoring as an early warning for oversedation.
- John Mazuski, MD, PhD, was appointed to a task force developing revised guidelines for the prevention of surgical site infection. This task force was created by the Healthcare Infection Control Practices Advisory Committee, which provides guidance to the U.S. Centers for Disease Control and Prevention and the Secretary of the Department of Health and Human Services.
- The Surgical Care Center — which treats acute care surgery patients and many other patients with wounds — will have new facilities and equipment in March 2012 when it moves from Barnes-Jewish Hospital into a new building across the street from the Center for Advanced Medicine on Forest Park Parkway. Its services will include hyperbaric oxygen therapy and outpatient procedures with equipment for measuring tissue perfusion and oxygenation. The multidisciplinary center brought podiatrists on board in 2010 and is developing a limb salvage program in concert with Washington University vascular surgeons.
- Washington University and Barnes-Jewish Hospital are part of a multicenter study investigating tracheostomies in critically ill patients. Bradley Freeman, MD, heads the study at Barnes-Jewish.

New Section Chief

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Colorectal surgeon James Fleshman Jr., MD, left, and medical oncologist Benjamin Tan, MD, have designed a less toxic, catheter-based method for delivering chemotherapy in advanced abdominal cancer patients.

Collaborative effort yields new regimen for abdominal cancer

**MUCH MORE** than in the past, surgeons and medical oncologists at the Siteman Cancer Center are both playing major roles in clinical trials of new cancer treatments. In the process, they are offering promise to patients who otherwise face a grim prognosis.

Recently, James Fleshman Jr., MD, chief of the Section of Colon and Rectal Surgery at Washington University and Barnes-Jewish Hospital, and medical oncologist Benjamin Tan, MD, worked together to design a regimen that may offer better survival for patients with carcinomatosis of the abdomen that has spread from the colon or appendix. This type of cancer typically results when a mucin-producing tumor invades the wall of the colon or appendix and sheds cells, which are implanted in the abdominal cavity.

“As a group, these are very sick patients,” says Fleshman. “Surgical debulking of the cancer and stripping the lining of the abdominal cavity are the current standard of care for carcinomatosis. This should always be done in combination with some form of chemotherapy.”

Another treatment developed by researchers is the use of heated intraperitoneal chemotherapy (HIPEC) during surgery — in which a heated, sterile chemotherapy solution is circulated throughout the abdominal cavity in an open surgical...
Elisa Birnbaum, MD, was elected as a director and examiner of the American Board of Colon and Rectal Surgery and also serves as an exam writer for the American Board of Surgery.

Washington University is a key institution in several trials comparing technologies in colon and rectal surgery. Topics include open vs. laparoscopic treatment of rectal cancer as part of a trial sponsored by the American College of Surgeons Oncology Group; robotic or laparoscopic anterior resection of rectal cancer (ROLARR), an international study led by the University of Leeds in the United Kingdom; and laparoscopic vs. hand-assisted treatment of rectal cancer as part of the Minimally Invasive Therapeutic Trial, led by Matthew Mutch, MD, and Cornell University’s Sang Lee, MD.

Sekhar Dharmarajan, MD, is collaborating with Washington University gastroenterologist Nicholas Davidson, MD, on basic science research using a mouse model of multiple intestinal neoplasia to investigate the role of fat-binding proteins in the development of colon cancer.

Ira Kodner, MD, the Solon and Bettie Gershman Chair in Colon and Rectal Surgery, was recognized by his colleagues in colorectal surgery and the Department of Surgery for 35 years of leadership in St. Louis at a dinner Feb. 24, 2011. Kodner is a former president of the American Board of Colon and Rectal Surgery and the American Society of Colon and Rectal Surgeons; he also has been a leader in ethics education for surgeons through the Kamangar Surgery Residents Training Program in Medical Ethics. He served as director of the Washington University Center for the Study of Ethics and Human Values from 2002-2007.

Section Chief James Fleshman Jr., MD, was recently named to the American College of Surgeons Board of Governors as the colorectal surgery specialty governor.

Tan says he is working more frequently with surgeons who treat gastrointestinal disease to develop and carry out clinical trials.

“At this institution, there are major collaborative efforts among surgeons, medical oncologists and radiation oncologists,” he says.
WITH THE COST AND TIME
required for genome sequencing shrinking dramatically, the Genome Institute at Washington University is taking systematic steps to advance the emerging field of cancer genomics.

Recently, a research team completed the single largest genomics investigation reported to date — the decoding of DNA from 50 breast cancer patients. To build on this study, a broader group of researchers is now investigating the use of genomics to develop personalized vaccines for treating breast cancer patients.

William Gillanders, MD, Washington University endocrine and oncologic surgeon at Barnes-Jewish Hospital, and Washington University immunologist Ted Hansen, PhD, are co-principal investigators of the effort, funded by a $6.5 million grant from the Susan G. Komen Breast Cancer Foundation. Investigators will initially test whether patients’ T cells are capable of recognizing unique tumor antigens identified by sequencing DNA. They will move on to develop vaccines aimed at generating an immune response to these antigens. Finally, a Phase I clinical trial will test safety and effectiveness in eliciting an immune response.

“Almost all of the cancer vaccines to date have targeted tumor antigens shared by patients with a certain type of cancer,” says Gillanders. “With genome sequencing, for the first time, there is a systematic and effective way of identifying tumor antigens unique to individuals.”
Julie Margenthaler, MD, is collaborating with Lihong Wang, PhD, the Gene K. Beare Distinguished Professor of Biomedical Engineering, in the development of photoacoustic tomography to identify the sentinel lymph node in breast cancer patients. Currently, breast surgeons inject a blue dye to find the sentinel node, then remove it surgically for biopsy. The new technology couples ultrasound and a laser system that absorbs the blue wavelength to identify the sentinel node. A needle could be used to obtain sample cells for biopsy. Early tests are promising.

Diagnosis can’t be determined in about 20 percent of fine-needle aspiration (FNA) biopsies of thyroid nodules; of these, about 80 percent are found to be benign after thyroid removal. Section Chief Jeffrey Moley, MD, led a study showing preliminary data that positron emission tomography (PET) with (18)F-fluorodeoxyglucose (FDG) imaging may rule out cancer in cases of indeterminate FNA biopsy. Moley worked with Mallinckrodt Institute of Radiology’s Farrokh Dehdashti, MD, and others on the study, published in the World Journal of Surgery.

Disseminated tumor cells (DTCs) are detected in the bone marrow of up to 40 percent of breast cancer patients at the time of diagnosis and are an independent predictor of recurrent disease. A team led by Rebecca Aft, MD, PhD, developed a technique to identify DTCs using a system that develops an RNA signature for the cells. The test identifies women at high risk of breast cancer recurrence and may eventually provide guidance on how to tailor therapy.

Projects advancing breast cancer research

Working with Elaine Mardis, PhD, and others in the Genome Institute, Matthew Ellis, MD, PhD, led an effort to sequence the whole genomes of tumors from 50 breast cancer patients and compared them to the matched DNA of the same patients’ healthy cells. The work — the single largest cancer genomics investigation reported to date — allowed researchers to find tumor mutations and has laid the foundation for collaborative work to develop personalized approaches to care and prevention.

William Gillanders, MD, has served as principal investigator of a Phase I clinical trial to evaluate a DNA breast cancer vaccine for mammaglobin A, a protein found in 80 percent of breast tumors. The protein was first isolated at Washington University by Timothy Fleming, PhD, and Mark Watson, MD, PhD. Other collaborators included Thalachallour Mohanakumar, PhD, Jacqueline G. and William E. Maritz Professor of Surgery, and Peter Goedegebuure, PhD.
Survivors’ event provides hope

EACH PANCREATIC CANCER survivor has a story to tell about overcoming obstacles and embracing life after recovery. For Barbara Clendenin, 77, that story includes visiting her first great grandchild in Lake Havasu City, Ariz., in April 2011.

Clendenin was one of about 80 patients, survivors and caregivers who attended the pancreatic cancer “Surviving and Thriving Workshop” on April 30 at Washington University School of Medicine in St. Louis. Survivors were invited to share a message of hope and to network with others as patients and caregivers learned skills for coping with the illness.

Clendenin actually survived pancreatic cancer twice.

In 2002, she saw her primary care physician for back pain, and tests revealed a pancreatic tumor. Washington University surgeon David Linehan, MD, removed the head of the pancreas, gallbladder and a portion of the stomach. The cancer had not spread from the pancreas.

Having seen her husband undergo lung cancer treatment, Clendenin declined chemotherapy. But in 2006, the cancer returned, and Linehan then removed the rest of the pancreas.
“They can really be a shining light for people who are going through a tough time.”

— Charli Prather, MSW, LCSW

and the spleen. Again, Clendenin chose not to undergo chemotherapy.

Though diabetic now — because she has no pancreas — Clendenin is doing well, and especially enjoys being with family, including her great-grandson Logan Hunter.

Linehan, chief of the Section of Hepatobiliary-Pancreatic and GI Surgery, and Charli Prather, MSW, LCSW, clinical program director of the Cancer Support Community, which co-sponsored the event, say having a group of about 45 survivors at the event sends a powerful message to patients, who, overall, have a 5-year survival rate of about 4 percent.

“They can really be a shining light in the room for people who are going through a tough time,” says Prather.

Linehan and the Siteman Cancer Center partnered with the Cancer Support Community to organize the event, where patients and caregivers learned more about movement and sleep, financial wellness, communicating before a crisis, and how caregivers can care for themselves.

Linehan, hepatobiliary-pancreatic surgeons Steven Strasberg, MD, and William Hawkins, MD, and other Washington University faculty members also held an educational program for community physicians.

“We wanted to get the word out to send us patients with the disease because we can help them,” says Linehan.

The pancreatic cancer survivors who attended the recent “Surviving and Thriving Workshop” in April are a testament to increasingly successful treatment efforts for this difficult disease.
Harnessing light and sound to visually penetrate biological tissue, photoacoustic endoscopy, invented by biomedical engineer Lihong Wang, PhD, right, may provide surgeon Brent Matthews, MD, a powerful new tool to screen for Barrett’s esophagus.

**Collaboration yields better view of Barrett’s esophagus**

**PEOPLE WITH** Barrett’s esophagus — a disorder in which the lining of the esophagus is damaged by stomach acid or bile — must undergo periodic endoscopic examinations with biopsies because they have a risk for cancer. But because this surveillance technique may miss precancerous tissue, a better screening method is needed. That’s why a Washington University minimally invasive surgeon was very interested when a biomedical engineer at Washington University’s Danforth Campus called him about a new imaging technology that could visually penetrate biological tissue safely.

“Once you have Barrett’s esophagus, you must undergo regular screening endoscopy for a lifetime,” says Brent Matthews, MD, chief of the Section of Minimally Invasive Surgery. “Four-quadrant biopsies every centimeter along the area where the Barrett’s is located are required. But there could be areas between the biopsy sites that actually could show a higher-grade Barrett’s esophagus, and you wouldn’t necessarily know that.”
Several division faculty won top awards at the 2011 Annual meeting of the Society of American Gastrointestinal and endoscopic Surgeons (SAGES):

— Section Chief Brent Matthews, MD, received the inaugural SAGES Foundation Excellence in Medical Leadership Award. Matthews has led the minimally invasive surgery section since its founding in 2008 and has served as co-chair of the SAGES Resident Education Committee. As part of the award, he received a scholarship to attend a medical leadership program at the Wharton School at the University of Pennsylvania.

— Michael Awad, MD, PhD, won the SAGES Career Development Award, given to young surgeons for the development of critical skills required for their academic career. The award supports Awad’s efforts to take educational materials developed by SAGES and incorporate them into the standard national curriculum being developed by the Surgical Council on Resident Education (SCORE). (Also see article on page 33.)

— Esteban Varela, MD, MPH, received the 2011 SAGES Golden Laparoscope Young Researcher Award. Recipients must be within five years of having completed training and have significant clinical and/or basic science research, publications or presentations at national meetings, and be dedicated to an academic career.

— L. Michael Brunt, MD, serves as treasurer of SAGES and is on the SAGES Executive Committee and Board of Governors. General surgery resident Lora Melman, MD, is one of two candidate representatives to the board. The other, James Bittner, MD, began his minimally invasive fellowship at Washington University in July 2011.

Lihong Wang, PhD, the Gene K. Beare Distinguished Professor of Biomedical Engineering, contacted Matthews about the possible use of the 3D imaging method photoacoustic tomography in the diagnosis of gastrointestinal disease. Wang invented photoacoustic endoscopy, which applies photoacoustic tomography by way of an endoscope; with this technology, an endoscope pulses light into tissue, generating a sound wave that is then converted to an image. Wang and postdoctoral fellow Joon-Mo Yang, PhD, have been fitting a standard endoscope with the instrumentation to view the esophagus.

“There is a rotating mirror, which we spin to reflect light and sound,” says Wang. “We get a 360-degree perspective with dual contrasts — both optical and ultrasound. If there are lesions beyond 1 millimeter in depth, you cannot see them using standard optical endoscopy. In the current version, we can penetrate to about 7 millimeters in depth.”

Photoacoustic tomography can also measure concentration and oxygen saturation of hemoglobin to assess blood vessel development and hypermetabolism, respectively, which are hallmarks of cancer. The next step is to test the endoscope in animals, and ultimately to assess the technique in humans.

Barrett’s esophagus is commonly found in people with gastroesophageal reflux disease. “Photoacoustic endoscopy could be a more accurate way to map out the entire esophageal mucosa as part of a surveillance program,” says Matthews.
After a liver transplant, Ed Rosenbaum is back to work as an engineer at a local company that produces plastic waterproofing products for concrete.

**ED ROSENBAUM** represents the success of the Washington University and Barnes-Jewish Transplant Center as it works to continually improve patient care.

A St. Louis native, Rosenbaum was diagnosed with primary biliary cirrhosis, and faced liver failure and deteriorating health when he reached his early 50s. He was referred to the Barnes-Jewish Hospital liver transplant program, where he was put on the transplant waiting list.

Before undergoing a liver transplant in 2002, he weighed only 110 pounds. “The doctors said I was about 24 hours from dying,” Rosenbaum says.

With the donor liver, Rosenbaum was soon restored to health. Now, at age 65, he still works as a plant engineer for a plastics company and mentors other liver transplant patients as a way to give back to the program that gave him a second chance.

“There are a lot of transplant patients who feel like they are part of a club,” says Jeffrey Crippin, MD, medical director of liver transplantation. “When you are a part of the club, you take pride in the work that the club subsequently does. Ed is a beautiful example of that.”

Consolidation of transplant programs fosters excellence
Jason Wellen, MD, and transplant nephrologist Christina Klein, MD, are co-principal investigators at Washington University of a multicenter, randomized clinical trial of the drug everolimus as an immunosuppressive agent for kidney transplant patients. The aim of this study is to prolong long-term kidney graft survival by minimizing some of the nephrotoxic effects seen with prolonged usage of calcineurin inhibitors.

In addition to providing optimal care at the time of transplant, the program manages the care of all its transplant patients for life, as well as for those awaiting transplant.

“People often measure transplant programs by the number of transplants you do,” says Ridolfi. “But we manage thousands of patients with end-stage organ disease as they wait for life-saving organs and manage the organ health and overall quality of life of thousands of patients after transplant.”

After a successful liver transplant performed by William Chapman, MD, Ed Rosenbaum gives back to the transplant program as a mentor to future transplant recipients.

Over the past three years, Crippin, Abdominal Transplant Surgery Chief William Chapman, MD, and Barnes-Jewish Hospital Transplant Center Program Director Gene Ridolfi have organized the five organ transplant programs — liver, kidney, pancreas, heart and lung — under one center. The resulting multidisciplinary team shares best practices and has improved the tracking of patient outcomes and set goals for growth. In so doing, the center’s staff has made these highly regarded programs even better.

One improvement is the development of a single protocol to test for viral transmission in patients receiving organs from high-risk donors.

“If each program had come up with its own plan, it would create a huge redundancy and introduce inconsistencies,” says Chapman.

In conjunction with a multicenter trial sponsored by the American College of Radiology Imaging Network, transplant surgeons are working with radiologists, pathologists, radiation oncologists and hepatologists to evaluate the significance of the increased number of small liver tumors that are now being identified with new contrast agents and imaging techniques. Plans are to examine the diseased livers of transplant patients to determine whether the new imaging is accurate and evaluate implications for the patient’s medical outlook.

Patients undergoing abdominal organ transplants and those with diseases of the liver, gall bladder and bile ducts (HPB surgery) are benefiting from combined services on a new patient care floor at Barnes-Jewish Hospital. The floor has a special procedure area for liver and kidney biopsies, a physical and occupational therapy unit, a satellite transplant pharmacy, a step-down observation unit and a conference room.

A new clinical trial will test the effectiveness of an immunoglobulin in preventing the recurrence of hepatitis C in liver transplant recipients. An immunoglobulin is effective in preventing recurrence of hepatitis B in liver transplant patients. The trial will determine whether a similar regimen can prevent recurrence of hepatitis C.
Vascular surgeon Gregorio Sicard, MD, left, treated Howard Nelms’ aortic aneurysm by implanting a fenestrated stent as part of a clinical trial conducted with Section Chief Luis Sanchez, MD.

**THE ADVANCED,** collaborative medical care provided by Washington University vascular surgeons, cardiac surgeons and cardiologists make Barnes-Jewish Hospital a leading center in the treatment of aortic aneurysms and aortic dissections.

For Howard Nelms, 84, of Charleston, Ill., having expert vascular care 150 miles away meant that his abdominal aortic aneurysm — which had ballooned near his renal arteries — could be treated with a minimally invasive procedure.

A local medical group had initially detected and monitored the aneurysm, but when a member of that team left, Nelms sought more specialized care. His internist arranged an appointment with Gregorio Sicard, MD, the Eugene M. Bricker Professor of Surgery.

Sicard continued to closely monitor the size of the aneurysm for two years. Ordinarily, Nelms would have been a candidate only for open surgery. But in May 2010, the aneurysm had grown to the size when treatment is recommended; not only was the aneurysm larger, it was close to the renal arteries, which supply blood flow to...
“We are a center that can coordinate, plan, and perform the short- and long-term treatment of these complex patients.”

— Marc Moon, MD

The kidneys. Sicard performed a minimally invasive procedure to implant a fenestrated stent — a specialized device with fenestrations, or openings, that allow blood to flow into the renal arteries. The procedure was performed as part of a clinical trial conducted by Sicard and Vascular Surgery Chief Luis Sanchez, MD.

Since then, Nelms has been back to enjoying travel and retirement with his wife, Doreen. “I could not even tell I had surgery,” he says.

Sanchez, the Gregorio A. Sicard Distinguished Professor of Vascular Surgery; cardiac surgeon Marc Moon, MD, the Joseph Bancroft Professor of Surgery; and cardiologist Alan Braverman, MD, the Alumni Endowed Professor of Cardiovascular Disease in Medicine, say the interrelationships among physicians treating aneurysms and aortic dissections, or tears, are essential to improved survival and quality of life for patients with these disorders.

“These patients are rare to the outside physician, who may not be familiar with the latest protocols for therapy and surveillance,” says Moon. “We are a center that can coordinate, plan and perform the short- and long-term treatment of these complex patients.”

Braverman says a team approach to the treatment of aortic disease is the “new paradigm.”

“We are fortunate to have skilled surgeons, radiologists, cardiologists and medical geneticists who can evaluate why a person has the condition, the best way to image and treat it, and the best timing of treatment,” he says.

Fenestrated stents, shown here by computed tomography, are polyester tubes surrounded by metal mesh. Once placed, the stent hugs the vessel walls from the inside. Blood flows through the stent, avoiding the aneurysm.

**Highlights**

- **Washington University School of Medicine** will be one of the first U.S. sites to participate in a clinical trial of a new fenestrated stent that could broaden the ability of vascular surgeons to treat patients with complex aneurysms using minimally invasive techniques. These devices are designed for patients with aneurysms close to the arteries that feed the kidneys and feature small openings that can be strategically positioned to allow blood to pass into the renal arteries.

- **Vascular surgeons** will soon join other specialists to treat patients with limb-threatening cardiovascular disease at the Surgical Care Center at Barnes-Jewish Hospital and Washington University School of Medicine. The center will move into a new building adjacent to the medical campus in March 2012.

- **Jeffrey Jim, MD**, continues his review of clinical trial outcomes for endovascular devices — including those used for repair of abdominal and thoracic aortic aneurysms — in a series of papers that have been published or are near publication. He also uses administrative databases to study “real world” outcomes comparing endovascular and open surgical techniques for aortic aneurysms and carotid occlusive disease.

- **The surgical suites of Dr. Leonardo Valentin Tirado Professional Hospital in Guaynabo, Puerto Rico, were dedicated in the name of Gregorio Sicard, MD, in October 2010. Sicard was chosen for the honor by the hospital board of directors at the suggestion of Leonardo Valentin, MD, hospital CEO and an alumnus of the Washington University Vascular Surgery Fellowship.**
THREE YEARS AGO, Mary Ann Cahalin’s heart was functioning so poorly that she was unable to walk up stairs. The aortic valve in the left pumping chamber of her heart had become narrowed with calcium deposits, limiting blood flow.

Cahalin could barely function, but she was too ill to undergo open-heart surgery to replace the valve. Unfortunately, patients with her condition — inoperable severe aortic stenosis — typically face rapid decline.

It was this poor prognosis, however, that brought Cahalin to Barnes-Jewish Hospital on Jan. 15, 2008. There, she became the first patient in the St. Louis region to have her calcified aortic valve replaced without open-heart surgery. As part of a clinical trial, Washington University physicians implanted a new valve by threading a catheter from the femoral artery in her leg to her heart. Cahalin’s heart continued beating during the procedure.

Four weeks later, the 81-year old mother of five participated in a Girl Scout campout. “I call it a miracle,” says Cahalin.

Cahalin’s procedure, called transcatheter aortic valve replacement (TAVR), was performed as part of
Washington University cardiac surgeons performed a record number of more than 1,200 surgeries in 2010. The school was one of the nation’s top enrollers in the PARTNER Trial of transcatheter aortic valve replacement.

Cardiac surgery faculty members are principal investigators of six National Institutes of Health (NIH) grants; the division participates in the NIH’s Cardiothoracic Surgical Network, established to conduct clinical trials evaluating surgical interventions for moderate and severe ischemic mitral regurgitation.

Hersh Maniar, MD, is the principal investigator for a clinical trial of a hybrid procedure combining surgical and catheter ablation to treat atrial fibrillation. Maniar or Cardiac Surgery Chief Ralph Damiano Jr., MD, perform the procedure with electrophysiologist Phillip Cuculich, MD.

The Washington University and Barnes-Jewish Heart and Vascular Center has officially opened as a centralized outpatient care facility that brings cardiac surgeons, vascular surgeons and cardiovascular disease specialists together in one location.

Scott Silvestry, MD, became surgical director of the Heart Failure and Cardiac Transplant Program. Washington University cardiac surgeons at Barnes-Jewish Hospital implanted 55 ventricular assist devices in 2010, 35 as a bridge to transplant and 20 as destination therapy — an increase from only 12 as recently as 2006. In addition, 29 patients received heart transplants.

Damiano was named chairman of the Education Committee for the American Association for Thoracic Surgery (AATS). He is also president of the International Society of Minimally Invasive Cardiothoracic Surgery. Marc Moon, MD, serves as chairman of the AATS Graham Memorial Travel Fellowship, Research Scholarship and Centennial committees.

As part of a clinical trial, Mary Ann Cahalin received a new heart valve through a groundbreaking minimally invasive procedure.

“This technique is innovative and exciting, with the cardiac surgeons and cardiologists learning from each other.”

— Hersh Maniar, MD
Cancer drug trials move toward team approach

A NOVEL TREATMENT that combines chemotherapy, radiation therapy and surgery may open up options for patients with locally advanced esophageal cancer, who face a grim prognosis. It may also be a step toward greater clinical trial collaboration among thoracic surgeons, medical oncologists and radiation oncologists at the Siteman Cancer Center.

The patients involved have cancer that has spread beyond the primary site where the cancer originated, but not broadly throughout the body, says Bryan Meyers, MD, the Patrick and Joy Williamson Professor of Surgery and chief of the Section of General Thoracic Surgery. “Many of them have positive lymph nodes, and based on that, their life expectancy would be about 18 months.”

The treatment — offered at Siteman through a clinical trial sponsored by the American College of Surgeons Oncology Group (ACOSOG) — introduces the biologic agent panitumumab into the chemotherapy regimen. Panitumumab, approved by the FDA to treat metastatic colorectal cancer, is a monoclonal antibody that works by blocking a receptor in the cancer cell responsible for a prominent growth...
Traves Crabtree, MD, was named co-chair of the Thoracic Subcommittee of the American College of Surgeons’ Patient Education Committee in acknowledgement of his educational efforts, which have included producing a patient education video and an appearance in a documentary on the Discovery Channel.

Section Chief Bryan Meyers, MD, was appointed thoracic chair of the American College of Surgeons Oncology Group. Meyers also was appointed to the Thoracic Malignancy Steering Committee of the National Cancer Institute.

Washington University cardiothoracic surgeons Sunil Prasad, MD, Nabil Munfakh, MD, and Crabtree performed the St. Louis region’s first-ever fully robotic lobectomy to treat lung cancer at Christian Hospital in St. Louis County. The technology, with high-definition 3D vision, may provide surgeons with greater precision, control and access to hard-to-reach areas.

Researchers in the Thoracic Immunology Laboratory — led by Andrew Gelman, PhD, Daniel Kreisel, MD, PhD, and Alexander Krupnick, MD — identified a gene that limits damage to the lung during acute stress from illness, trauma or transplant. The new discovery lays the groundwork for developing therapies to reduce complications of pneumonia, trauma and lung transplants. The research was published in the Journal of Clinical Investigation.

Varun Puri, MD, with significant contributions from medical student Yinin Hu, presented a poster on an unusual method of protecting patients from aspiration and pneumonia after esophagectomy at the Society of Thoracic Surgeons 2011 Annual Meeting. The presentation won a blue ribbon as the best thoracic poster.

“Our study shows that when you have engaged investigators, a coordinated, multidisciplinary effort can be successful.”
— Craig Lockhart, MD

Left to right, Jennifer Bell, RN, Farley Johnson and Jo Musick, RN, perform critical coordinating roles in Siteman Cancer Center’s multidisciplinary trial of esophageal cancer treatment.

pathway. The goal of the combined chemotherapy and radiation therapy is to shrink the cancer before a surgeon removes it, enhancing the patient’s chances for survival.

Although Meyers is the principal investigator at Siteman, the trial’s success depends on a team that also includes medical oncologist Craig Lockhart, MD, director of Siteman’s Developmental Therapeutics Program; radiation oncologists Parag Parikh, MD, Jeffrey Bradley, MD, and Clifford Robinson, MD; dermatologist Milan Anadkat, MD, who treats the skin rash caused by panitumumab; the Division of Cardiothoracic Surgery’s Jennifer Bell, RN, manager of research operations, and Jo Musick, RN, clinical nurse research coordinator; and Farley Johnson, Siteman’s research patient coordinator.

As a surgeon, Meyers’ role as principal investigator on a cancer drug clinical trial is unusual, says Lockhart, who originally wrote the treatment regimen for the national study and serves as its lead medical oncologist. “Typically, the surgical, medical oncology and radiation groups have their own separate studies related to their own specialties,” he says. “Our study shows that when you have engaged investigators, a coordinated, multidisciplinary effort can be successful.”
TEAMWORK WAS CRITICAL for three children who recently received mechanical circulatory support devices as a bridge to heart transplant at St. Louis Children’s Hospital.

“Pediatric surgery is a team sport with three components,” says Pirooz Eghtesady, MD, PhD, chief of the Section of Pediatric Cardiothoracic Surgery at Washington University and St. Louis Children’s Hospital. “One is the judgment factor of who you operate on, when you operate, what kind of surgery you perform, should you even do surgery or should there be some other intervention. Then there is the operative component and post-operative management.”

The Washington University/St. Louis Children’s Hospital Heart Center Team — including Eghtesady and colleagues Charles Canter, MD, medical director of transplant services, and Avihu Gazit, MD, chief of the cardiac intensive care unit — worked together with referring cardiologists to determine the best course for the three children, who were too unstable to simply wait for a transplant. All survived with the help of the Berlin Heart, a pumping device available to pediatric patients as part of a national clinical trial.

Ten-year-old Thomas Pottorff, who was born with a congenital heart defect, presented the biggest challenge. He had undergone two surgeries and a valve replacement and had a pacemaker for an arrhythmia. He became a close buddy with Quinton Bogner, Kallie Finn and Thomas Pottorff (left to right) all received Berlin Hearts at St. Louis Children’s Hospital. They have become good friends through their shared experience.
The Pediatric Heart Center at St. Louis Children’s Hospital is looking at ways for parents to get a much closer look at the surgical treatment and care their children receive. Plans under consideration would enable families to watch heart and lung surgeries – either in a theater or remotely through video devices – and to follow the progress of their children 24/7 through webcams.

Pirooz Eghtesady, MD, PhD, was named chief of Pediatric Cardiothoracic Surgery and cardiothoracic surgeon-in-chief at St. Louis Children’s Hospital in May 2011. Eghtesady previously served as surgical director of Pediatric Cardiac Transplantation at Cincinnati Children’s Hospital and was interim director of pediatric cardiac surgery from 2010-2011. He earned his medical and doctoral degrees at UCLA School of Medicine; he completed his general surgery residency at Stanford University Hospital, a cardiothoracic surgery residency at The Johns Hopkins Hospital and a cardiac surgery fellowship at UCSF/Stanford University Hospital. He studies potential therapeutic fetal cardiac interventions, with particular emphasis on novel uses of extracorporeal circulation, as well as mechanisms of disease pathogenesis in hypoplastic left heart syndrome. He recently was appointed to the FDA Circulatory System Devices Panel of the Medical Devices Advisory Committee.

Eghtesady was recently named to the American Heart Association committee that writes safety guidelines for the cardiac operating room. The appointment recognizes his extensive research in safety and quality improvement, which led to decreases in surgical mortality and other complications following pediatric heart surgery.

At St. Louis Children’s Hospital, a Michigan newborn was the youngest child ever to receive an artificial lung as a potential bridge to lung transplant. The baby had alveolar capillary dysplasia, a fatal condition in which the normal air-blood diffusion barrier in the lung fails to form. Although the newborn ultimately died, his survival for 55 days offers hope for other newborns in need of lung transplantation.
Pediatric surgeon Brad Warner, MD, left, and neurosurgeon David Limbrick, MD, PhD, are among a large group of researchers who have come together to form the Children Surgical Sciences Institute, sharing lab space, resources, ideas and expertise.

Collaborative synergy fosters translational research

HEIGHTENED COLLABORATION, as a way to further the development of innovative treatments, is a key goal for the Children Surgical Sciences Institute (CSSI) — a group of pediatric surgical laboratories that share resources and ideas.

The CSSI was recently established as part of the BJC Institute of Health at Washington University School of Medicine, a 680,000 square-foot translational research building that opened on the medical campus in June 2010.

On the seventh floor, the CSSI’s Intestinal Adaptation Laboratory — led by Brad Warner, MD, chief of pediatric surgery and the Jessie L. Ternberg, MD, PhD Distinguished Professor of Pediatric Surgery, Christopher Erwin, PhD, and Jun Guo, PhD — shares space with the CSSI labs of Paul Austin, MD, pediatric urology; David Limbrick, MD, PhD, pediatric neurosurgery; and Pirooz Eghtesady, MD, PhD, chief of pediatric cardiothoracic surgery, who studies fetal aortic stenosis and hypoplastic left heart syndrome.

Individually, the labs represent hope for children with short bowel syndrome, urinary obstruction, and congenital brain and heart injury. Grouped together, they meet to share
“Each lab brings a particular expertise in an area that complements, but does not duplicate, the others.”

— Paul Austin, MD

Eghtesady, who joined Washington University in May 2011, also looks forward to extensive collaboration after setting up the pediatric cardiothoracic surgery lab.

Engineered plant provides beneficial growth factor

The Division of Pediatric Surgery’s Intestinal Adaptation Laboratory and the Donald Danforth Plant Science Center are developing a soybean plant that will generate epidermal growth factor (EGF), which is known to enhance intestinal adaptation after removal of the bowel for injuries or birth defects.

“The body produces EGF naturally, but to get a pharmaceutical product, you have to have some way of manufacturing it in large quantities,” says Christopher Erwin, PhD. “The non-pharmaceutical grade EGF that we buy has a lot of biotoxins. With the soybean plant, these potential toxins are not as big a factor, and the regulatory pathway for approval of a product is less complicated.”

Highlights

- A team from the American College of Surgeons (ACS) visited St. Louis Children’s Hospital to evaluate the hospital as a potential ACS-verified Level 1 Pediatric Trauma Center. A decision is expected this year. The designation would make Children’s the only ACS-verified level 1 pediatric hospital within a surrounding five-state region.

- Brian Bucher, MD, a pediatric surgery research fellow, presented data at the American Surgical Association showing that hospitals performing high volumes of congenital diaphragmatic hernia repairs have lower in-hospital death rates. The findings were also published in the Annals of Surgery.

- Jacqueline Saito, MD, is the surgeon champion for the American College of Surgeons National Surgical Quality Improvement Program-Pediatric (NSQIP-Peds) at St. Louis Children’s Hospital and serves on the Data Definitions Committee for this national initiative. The program collects and analyzes data on 30-day risk-adjusted postoperative outcomes. Saito works with Bruce Hall, MD, who leads Barnes-Jewish Hospital’s participation in NSQIP. Saito also will study outcomes of acute abdominal pain and treatment of acute appendicitis to identify which approaches are the least invasive and most cost-effective.

- Lucas McDuffie, a Doris Duke Medical Student Research Scholar working in the laboratory of Brad Warner, MD, won the basic science research award at the American Academy of Pediatrics – Section on Surgery Annual Meeting. The manuscript will be published in the Journal of Pediatric Surgery.

- Derek Wakeman, MD, a Washington University surgical resident working in Warner’s laboratory, won the basic science award at the Society for Surgery of the Alimentary Tract Annual Meeting.
Division fills delicate niche in team procedures

PLASTIC AND RECONSTRUCTIVE surgery is often collaborative in nature as surgeons in this field work alongside other specialists and complete some of the most delicate portions of complex operations. Washington University plastic and reconstructive surgeons fill this role every day and pride themselves on the excellent working relationships they have forged with their colleagues.

“Often our work is behind the scenes; it’s planned quickly to meet urgent needs and is unseen and seamless,” says Susan Mackinnon, MD, Sydney M., Jr. and Robert H. Shoenberg Professor of Surgery and chief of the Division of Plastic and Reconstructive Surgery. “We are the stealth collaborators who can help make the outcome seem polished and very innovative.”

The surgeons’ collaborative procedures reflect the wide range of their practices and expertise. Procedures include the treatment of patients with extreme pain in conjunction with other specialists; working with thoracic surgeons to elevate muscle flaps so a tumor can be removed; microsurgical procedures such as free tissue transfers; joint craniofacial procedures with pediatric...
neurosurgeons; breast reconstruction at the same time as mastectomy or reshaping after lumpectomy; peroneal nerve repair as a staged procedure with orthopedic surgeons; and jaw advancement surgery to assist pulmonologists in the treatment of pediatric sleep apnea.

Other Washington University surgeons have high praise for their plastic and reconstructive surgery counterparts.

Orthopedic surgeon Jeffrey Johnson, MD, works with Mackinnon and Thomas Tung, MD, on a two-stage procedure for patients with peroneal nerve injury, which can prevent patients from lifting or turning their ankle. The plastic surgeons’ work improves nerve function; Johnson may follow up with a tendon transfer if the injured nerve proves unsalvageable. Johnson has also recently worked with Keith Brandt, MD, the William G. Hamm Professor of Surgery, on a patient with an infected heel bone and with Tung on a wound closure.

“They are very skilled,” says Johnson, “and I value their judgment during the consultation phase of managing patients. We are treating different problems, so we come to a collaborative decision on the best approach and timing.”

Brandt, Terence Myckatyn, MD, and Marissa Tenenbaum, MD, frequently perform breast reconstruction while Julie Margenthaler, MD, and other breast cancer surgeons remove cancer.

“My patients love them,” says Margenthaler. “They are an incredibly important part of the cancer team.”

As plastic surgeons team up with other surgical specialties, careful planning and coordination provide the optimal outcome for the patient.
Broad team studies pelvic pain

MANY WOMEN AND MEN with chronic pelvic pain suffer significant discomfort without knowing the cause of their condition. This has led urologic researchers at Washington University School of Medicine to join with colleagues at the medical school and at other institutions to investigate a range of possible sources for this puzzling medical problem. Ultimately, these researchers hope their discoveries may lead to better treatment.

The researchers are part of the Multidisciplinary Approach to the Study of Urologic Chronic Pelvic Pain (MAPP) Research Network, established by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The network’s focus is taking a broad approach to the study of interstitial cystitis, which occurs predominantly in women, and chronic prostatitis.

“Urologic chronic pelvic pain can result from a myriad of causes,” says Gerald Andriole Jr., MD, the Robert Killian Royce, MD, Distinguished Professor of Urologic Surgery and chief of the Division of Urologic Surgery. “There is a lot of evidence...
that patients change their perception so they become more sensitive to pain stimuli in other parts of the body.”

Andriole, as principal investigator of the Washington University MAPP Project, and H. Henry Lai, MD, as co-PI, are leading an effort to study five aspects of urologic chronic pelvic pain: an animal model investigating spinal cord pain signaling molecules, with Robert Gereau, PhD, of the medical school’s Department of Anesthesiology; a neuroimaging study with Timothy Ness, MD, PhD, of the University of Alabama; psychological effects with Washington University psychologist Barry Hong, PhD; possible infectious causes with Thomas Hooton, MD, of the University of Miami; and epidemiology with Siobhan Sutcliffe, PhD, of the Department of Surgery’s Division of Public Health Sciences.

Lai is leading an effort to enroll patients in the study, who give urine and blood samples and also answer questions online. Under Sutcliffe’s guidance, Washington University is one of a number of sites looking at epidemiology with a specific focus on risk factors that may cause flare-ups.

“The epidemiologic aspect is a significant one,” says Lai. “We do not know what causes symptoms in these patients or what makes the symptoms get better or worse. This will clearly help us better define the disease and the patient subgroups.”

**Highlights**

- R. Sherburne Figenshau, MD, the Taylor Family and Ralph V. Clayman Chair in Minimally Invasive Urology, and Sam Bhayani, MD, provided blood and urine samples from patients with kidney cancer to Evan Kharasch, MD, PhD, vice chancellor for research at Washington University and the Russell D. and Mary B. Shelden Professor of Anesthesiology, and co-investigator Jeremiah Morrissey, PhD, to aid their work in finding a urine test for kidney cancer. Figenshau plans to investigate whether the proteins are specific for kidney cancer or are expressed in other urologic cancers as well.

- Adam Kibel, MD, the Holekamp Family Chair in Urology, is working with Elaine Mardis, PhD, co-director of Washington University’s Genome Institute, and Peter Humphrey, MD, PhD, the Ladenson Professor of Pathology and chief of the Division of Anatomic and Molecular Pathology, to sequence the whole genomes of tumors in prostate cancer patients to find mutations associated with aggressive cancer. The effort could dramatically improve outcomes by identifying tumor types most likely to spread.

- Gerald Andriole Jr., MD, chief of the Division of Urologic Surgery, reported that dutasteride, a drug that shrinks an enlarged prostate, improves the performance of the PSA test (J Urol 2011). This could result in earlier detection of aggressive cancers and reduce the need for biopsies.

- A team including Seth Strope, MD, MPH, and researchers from the Division of Public Health Sciences and the Washington University Institute of Clinical and Translational Sciences is evaluating surveillance methods for patients after removal of urologic cancers. Goals include determining which tests help most and whether efficiency can be improved.
A 23-YEAR-OLD MAN is rushed to a trauma center with a gunshot wound in his chest. A team of two trauma surgeons and an emergency physician quickly detects his decreased blood pressure and labored breathing. After jointly deciding where to place his chest tube and then inserting it, they see drainage from his chest, and the patient stabilizes. The team reviews chest X-rays and CT scans and decides on abdominal exploration.

This scenario is typical of emergency room cases. But in fact, it occurred as part of a training exercise in the Howard and Joyce Wood Simulation Center at Washington University School of Medicine. The patient was a mannequin that can mimic human vital signs: breathing, blood pressure, carbon dioxide content and eye dilation. The doctors were two general surgery residents and an emergency medicine resident. The training sometimes also includes anesthesiology residents.

The goal is twofold — to better prepare residents for working on a team with other disciplines and to enable researchers to study team communication. The research component is supported by an Agency for Healthcare Research and Quality grant, led by David Murray, MD, the Carol B. and Jerome T. Loeb Professor of Anesthesiology, working with co-principal investigators Mary Klingensmith, MD, general surgery residency program director and the Mary Culver Distinguished Professor of Surgery, and Brad Freeman, MD, Washington University trauma surgeon at Barnes-Jewish Hospital.
Associate Program Director Michael Awad, MD, PhD, received a grant from the U.S. Department of Education to develop an online resource that will help educators in medical schools and residency and fellowship programs develop curricula. The Nexus Project will stress sound educational methodology, encourage development of a national network of curriculum developers, and help programs achieve compliance with national accreditation requirements. At the School of Medicine, the Graduate Medical Education Committee and Department of Medicine are participating. Fifteen outside medical institutions, the Association of American Medical Colleges and the Accreditation Council for Graduate Medical Education are partners and will take part in a pilot project. The grant is the School of Medicine’s first ever from the Department of Education.

Trauma surgeon Kareem Husain, MD, has been appointed an associate program director for the General Surgery Residency Program. Husain is a graduate of the residency and also completed a fellowship in surgical critical care at Washington University School of Medicine in St. Louis. As a director, Husain serves as the primary mentor to one-third of the program’s 55 residents, organizes team activities and works with residents whenever issues arise.

Third-year resident Lora Melman, MD, was the first-place winner of the Top Gun competition measuring laparoscopic skill, held at the 2011 Annual Meeting of the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES).

Mary Klingensmith, MD, program director of the General Surgery Residency Program, has been named vice chair for education in the Department of Surgery and the Mary Culver Distinguished Professor of Surgery at Washington University School of Medicine. Klingensmith has directed the residency program for 10 years. Nationally, she serves as chair of the Surgical Council on Resident Education (SCORE), a non-profit consortium formed by the principal organizations involved in U.S. surgical education to improve residency education through delivery of a standard curriculum. She also co-directs the Kamangar Surgery Residents Training Program in Medical Ethics, now implemented at more than 40 U.S. programs.

The professorship honors the late Mary Culver, a prominent St. Louis philanthropist whose 1916 gift to the School of Medicine was recognized by the establishment of the Mary Culver Department of Surgery. “Mary has taken our residency program to a new level,” says Timothy Eberlein, MD, Bixby Professor and chairman of the Department of Surgery. “In this new role, she will lead our education effort throughout the entire department. We look forward to many years of Mary’s leadership.”

“On teams, a lot of assumptions are made, and often those assumptions that you think are absolute in your own specialty are not understood as effectively by other specialties,” says Murray. “These training exercises help us identify problems and learn to communicate more effectively.”

Murray, Klingensmith and Freeman join simulation center administrator Julie Woodhouse, RN, in a control booth to observe, speak for the patient and provide directions. They believe the training breaks down the silo mentality and prepares residents for real-life situations.

“Those scenarios seem simple, but you start feeling as if they are real,” says Malcolm Mac Conmara, MD, a fifth-year general surgery resident. “You have your peers around you, and you want to make good decisions.”

Freeman says the communications research has implications for other medical teams. “You can expand this to a lot of domains,” he says.

“These training exercises help us identify problems and learn to communicate more effectively.”

— David Murray, MD
IMPROVING THE RECOVERY of patients undergoing heart surgery — and eventually also helping those who suffer heart attacks — may be possible through a drug called diazoxide, already used to treat low blood sugar and high blood pressure. But scientists must first better understand how diazoxide works — a challenge taken up by Washington University cardiac surgeon Jennifer Lawton, MD, working alongside cell biologist Colin Nichols, PhD.

Ever since conducting lab research during her general surgery residency, Lawton has been interested in the process of myocardial stunning, which occurs during open-heart surgery, when a patient’s heart is stopped and blood circulates by means of a heart-lung bypass machine.

“With myocardial stunning, the heart muscle isn’t beating normally for a period of time after the surgery despite the fact you have re-established normal blood flow,” says Lawton.

Myocardial stunning is caused by several factors, including low blood supply to the heart and the use of a high-potassium solution to stop the heart. The heart cells of rabbit, mice and humans exposed to these stresses swell and show reduced contractility, or ability to beat.

With a grant from the National Heart, Lung, and Blood Institute, Lawton is studying the use of diazoxide in isolated mouse heart cells exposed to stresses caused by myocardial stunning. The drug — which opens one of thousands of ion channels on heart cell membranes known as the ATP-sensitive potassium (K$_{ATP}$) channel — prevents swelling and reduced contractility in the heart cells of mice.
Vascular surgeon John Curci, MD, has developed a new model of abdominal aortic aneurysm disease in mice to understand the impact of cigarette smoking on developing the disease. Drawing from prior work at Washington University on smoking’s role in lung cancer and emphysema, Curci’s lab exposes mice to controlled amounts of cigarette smoke in specially designed chambers. Curci has found that the mice exposed to cigarette smoke consistently develop larger aneurysms than controls. Most recently, the model demonstrated that mice exposed to tobacco smoke for six weeks, and then to no tobacco smoke for up to six additional weeks, still developed larger aneurysms — even though, by then, the toxins from tobacco smoke had washed out of their systems. Ongoing projects will investigate the lasting changes from smoking that affect the vascular health of older adults, including those who have stopped smoking.

Paul Goodfellow, PhD, professor of surgery, of genetics and of obstetrics and gynecology, received the 2011 Distinguished Educator Award for Clinical Fellow Mentoring from Washington University School of Medicine. Goodfellow has made important contributions to the improvement of women’s health care through his laboratory efforts and his role in mentoring gynecologic oncologists in basic science and translational research. Much of his work focuses on the genetic and epigenetic events that are associated with the initiation and progression of endometrial cancer.

Support for clinical investigation extended department wide

The Department of Surgery has created a group to support the growth in its clinical investigation activities. The group — modeled after the Division of Cardiothoracic Surgery’s Clinical Research and Data Management (CRDM) group, formed in 1996 — provides key services such as study design, data gathering and analysis. These services will allow the department’s surgeons to be a consistent presence at major meetings.

“We’ve had a very successful model in cardiothoracic surgery,” says Tracey Guthrie, RN, who previously managed the CRDM group and now is director of clinical trials for the department. She and Kristin Luepke, RN, who was appointed to oversee clinical research operations for general surgery, have been meeting with department faculty and staff to assess needs.

Department-wide, services include assistance with regulatory paperwork and research billing compliance; hiring quality research coordinators and data management staff; education, training and mentorship of research team members; implementing quality assurance processes and self-auditing techniques; identifying potential funding resources; enhanced budgeting and reimbursement tracking of funded research; development of standard operating procedures; and assistance with developing manuscripts and presentations for major meetings.
Meeting health care reform challenges

**Clinical Operations** face a challenging and continually changing environment, from increased competition and costs to new models for care delivery, the move toward value-based medicine, and other more regional challenges. The department is employing several approaches to continue to excel.

**Multidisciplinary Care**
One key to meeting these challenges is multidisciplinary care, says Timothy Eberlein, MD, the William K. Bixby Professor of Surgery and chairman of the Department of Surgery. The department is currently applying cancer care’s multidisciplinary model to two of its own clinical centers: the Washington University and Barnes-Jewish Heart & Vascular Center, which combines the expertise of cardiologists, cardiac surgeons and vascular surgeons, and the Washington University and Barnes-Jewish Transplant Center, which brings together surgeons and other specialists in heart, lung, liver, kidney and pancreas.

“Ultimately, we should have a paradigm of having true multidisciplinary care for all of our patients,” says Eberlein. “By bringing together surgeons with all other relevant medical specialties, we offer the best possible solutions for our patients, and do so more efficiently and with better outcomes.”

**Value-Based Medicine**
Although the future of health care reform remains uncertain, meeting cost and outcome requirements will likely be a must. The Premier Billing Network of the Department of Surgery’s Business Services Organization is already submitting data on quality measures to the Centers for Medicare & Medicaid Services as part of the Provider Reporting Quality System. Currently, an

Workers install signs to finish the renovated entrance of the new Washington University and Barnes-Jewish Heart & Vascular Center in Queeny Tower. The center brings together clinical services from cardiology, cardiothoracic surgery and vascular surgery, providing patients a single point of entrance and better-integrated care.
incentive is given for meeting requirements, but by 2015, the system will move from an incentive phase to penalties. Washington University surgeons also have been at the forefront of national quality improvement efforts such as the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) and development of practice guidelines by the Society of Vascular Surgery on treating abdominal aortic aneurysms. Faculty in the Divisions of Public Health Sciences and Urologic Surgery and in the Section of Vascular Surgery also are leaders in outcomes research.

**OTHER CHALLENGES**

Expansion to off-campus practice sites is essential for business development, and collaboration with outside physicians has been key to their success. The most successful programs are the surgical services offered in conjunction with medical and radiation oncologists at the Siteman Cancer Center at Barnes-Jewish West County Hospital and surgical practices that have a full-time presence at hospitals in St. Louis County or further away.

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**Department of Surgery clinical activity**

The Department of Surgery’s growth in clinical activity includes increased volume at off-site facilities.

**CME at a glance**

Washington University surgeons extend continuing medical education (CME) to regional and community physicians by offering programs in almost every surgical specialty through Washington University, Barnes-Jewish Hospital and Siteman Cancer Center.

**Washington University School of Medicine Key Programs**

- 19th Annual Refresher Course and Update in General Surgery
- 4th Annual Anderson-Newton Lectureship in Transplantation
- Contemporary Thoracic General Surgery Course

**Barnes-Jewish Hospital Outreach (2010)**

- 29 CME presentations in eight specialties
- Farthest distance: Chicago (295 miles)

**Siteman Cancer Center Presentations (2010)**

- 39 in six specialties, including 22 CME programs
- Farthest distance: Springfield, Mo. (187 miles)
Vascular surgeon Luis Sanchez, MD, left, describes his esteemed colleague Gregorio Sicard, MD, as an exemplary surgeon and educator. “His vision and unwavering leadership have made the section a leader in clinical vascular care as well as clinical and basic science research,” says Sanchez.

THE DEPARTMENT OF SURGERY has established a distinguished professorship to honor Gregorio Sicard, MD, an internationally recognized vascular surgeon who has played an important role in the development and growth of the department for more than 30 years. The professorship recognizes Sicard’s pioneering work in establishing the Section of Vascular Surgery, training of almost 50 fellows, and significant contributions to the department and to vascular surgery.

Sicard recently transitioned the position of vascular surgery chief to Luis Sanchez, MD, who was named the first Gregorio A. Sicard Distinguished Professor of Vascular Surgery.

“Greg has been one of the most important contributors to our department and to our institution,” says Timothy Eberlein, MD, Bixby Professor and department chair. “Through his selfless dedication, he has served as an outstanding role model for all of our faculty.”

EDUCATION AND CAREER
The son of the town surgeon in a small community outside Ponce, Puerto Rico,

Vascular surgeon Luis Sanchez, MD, left, describes his esteemed colleague Gregorio Sicard, MD, as an exemplary surgeon and educator. “His vision and unwavering leadership have made the section a leader in clinical vascular care as well as clinical and basic science research,” says Sanchez.
Sicard did not initially want to follow in his father’s footsteps. He was fascinated with the work, but the unending hours weren’t appealing.

Sicard attended boarding school at St. Louis Chaminade College Preparatory School and majored in biochemistry at Saint Louis University. Upon graduation, Sicard worked at Sigma Chemical Co. in St. Louis and soon realized that he did not mind working long hours as long as he enjoyed his work. So he completed medical school at the University of Puerto Rico and then a general surgery residency and renal transplant fellowship at Washington University. He joined the faculty in the late 1970s.

Sicard served as vascular surgery chief from the founding of the section in 1983 until this year. In the 1990s, the section was one of the leading centers in the development of minimally invasive techniques to insert supportive metal tubes called stents inside arteries with aneurysms. Washington University participated in the first clinical trials of stents and has taken part in the trials of numerous devices now commercially available. Today, the section has eight surgeons at three medical centers and an exceptional vascular laboratory with three basic science labs led by surgeons.

Sicard was also chief of the General Surgery Division from 1998-2007 and continues to serve as the department’s executive vice chairman. In addition, he has been an outstanding mentor to surgical fellows from around the world. He held the position of president of the Society of Vascular Surgery and Midwestern Vascular Surgical Society and recently played a key role in updating national practice guidelines for treating abdominal aortic aneurysms.

“The department continues to grow in an exponential fashion,” he says. “To have the opportunity to work on that has been a great privilege.”

The Wendi Gordon Shelist Foundation is dedicated to advancing the understanding and treatment of necrotizing fasciitis—a disease that Wendy Gordon Shelist survived with physical limitations, but more than 50 percent of those afflicted do not. The disease, also known as the “flesh-eating disease,” consumes not only the skin, but also the muscles and underlying tissue beneath the body’s surface. So when John Kirby, MD, director of the Surgical Care Center at Barnes-Jewish Hospital, proposed a method of sharing patient data with other academic medical centers to improve clinical understanding, the foundation provided strong support. Kirby set up a database on the foundation’s website that collects the de-identified records of patients with necrotizing fasciitis, skin and soft tissue infections, diabetic foot wounds, open wounds of the abdomen, and pressure ulcers. The site is open to invited outside collaborators and eventually will be open more broadly. The data will be valuable for evaluating potential treatments, Kirby says.

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Staff member honored

A person very familiar to faculty members in the Department of Surgery received the highest form of staff recognition from Washington University School of Medicine in St. Louis in May 2011. James Lee, coordinator of international scholars and patients, was given the Dean’s Distinguished Service Award for his dedication to service of international visitors, scholars and patients. “These visitors cannot say enough good things about James,” says vascular surgeon Gregorio Sicard, MD. “He is a true friend who goes out of the way to make them feel at home.” In addition to his responsibilities with the Department of Surgery, Lee is president of the Saint Louis Concierge Service Association and an active volunteer in the St. Louis community.
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