things are buzzing in the Division of Speech Pathology and Audiology. In the research realm, faculty members are advancing the field through groundbreaking work in areas including respiratory muscle strength training, swallowing studies, Pompe disease and assistive technology, transcending the research-to-clinical barrier. Clinically, programs continue to grow by leaps and bounds, with the basics – including newborn screenings and hearing aids – covered, and covered well, and more specialized offerings, including the renowned tinnitus program, providing services and treatments largely unavailable in the rest of the state.

“I’m tremendously proud of our faculty and the work we are doing within this Division,” says Harrison Jones, PhD, Associate Professor, Division of Speech Pathology and Audiology. “As far as I know, there is nothing else like this available.”

Answering a Need

For patients with swallowing disorders, there have traditionally been limited tools to assess pill swallowing. “It’s not uncommon for patients to have difficulty swallowing pills,” says Harrison Jones, PhD, Associate Professor, Division of Speech Pathology and Audiology. “It’s frustrating for them, and it’s frustrating for us when we have to guess the best way for individuals to take their medications orally.”

The best item that has been available was a large, dry barium tablet that did not closely approximate normal pill swallowing - until now. “We teamed up with pharmacy and developed a gel-coated barium capsule that is closer to normal pill swallowing,” Dr. Jones says. “As far as I know, there is nothing else like this available.”

The team has started using it in patients with exciting results. “Dr. DeRuyter encourages innovation, and this is one example of that,” Dr. Jones says. In other patients, particularly those who have undergone thoracic surgery – such as lung transplant – or those who have failed to wean from a ventilator, respiratory muscle training (RMT) is very important and is an area of focus for Dr. Jones and his team, both clinically and in the lab.

“By training the respiratory muscles, we have seen real improvement,” Dr. Jones says. The team first determines a patient’s inspiratory and expiratory muscle strength. “That gives us a good respiratory strength profile to start with,” Dr. Jones says.

Next, handheld respiratory trainer devices which provide individualized resistance...
I am pleased to announce that Allan D. Kirk, MD, PhD, has joined Duke Surgery as Chair of the Department effective May 1, 2014.

Dr. Kirk previously was Professor of Surgery and Pediatrics at Emory University and also served as Scientific Director of the Emory Transplant Center and Vice Chair for Research of the Emory Department of Surgery. An internationally recognized surgical scientist and authority on transplant immunology, Dr. Kirk has focused his research on the development and implementation of new immunomodulatory strategies for transplantation and other conditions.

Dr. Kirk also maintains an active clinical practice in adult and pediatric organ transplantation while directing a successful laboratory. He is a diplomat of the American Board of Surgery and a fellow of the American College of Surgeons. He currently serves as editor-in-chief of the American Journal of Transplantation and has authored more than 200 scientific manuscripts.

Dr. Kirk received his medical degree from Duke University School of Medicine in 1987 and completed his PhD in immunology at Duke in 1992. He completed his general surgery residency at Duke in 1995 and a multi-organ transplantation fellowship at the University of Wisconsin in 1997. From 1997 to 2001, Dr. Kirk served in the United States Navy, reaching the rank of commander and principal investigator at the Naval Medical Research Center.

In 1999, Dr. Kirk became the inaugural chief of the NIH Intramural Solid Organ Transplant Program and served as founding chief of the Transplantation Branch at the National Institute of Diabetes and Digestive and Kidney Diseases.

Dr. Kirk is the perfect blend of scientist, clinical surgeon, and educator plus a natural fit for Duke. He brings with him a portfolio of outstanding accomplishment that will benefit our Department, our School, and our Duke Community.

Please join me in welcoming Dr. Kirk back to Duke University School of Medicine as Chair of the Department of Surgery!
blood brain barrier, leading to the accumulation of glycogen in the brain.”

Soon Heller and colleagues will initiate a three-year study of the speech, language, and cognitive function of a large group of 25 individuals with Pompe disease, using telemedicine techniques to collect data otherwise difficult to obtain.

Heller and team are working fervently on efficacy measures for clinical trials aimed at developing therapies for cognitive improvement through drug therapies. Heller works with the Down Syndrome Research Group looking at possible drug therapies to improve cognitive function in individuals with Down syndrome.

“What’s exciting about our work is that we potentially have the opportunity to discover new therapies for diseases and conditions that are not new but have real and distinct areas for therapeutic improvement.”

Assistive Technology

Dr. DeRuyter’s own research focuses on assistive technologies and their impact on quality of life and caregiver involvement when patients are in the home setting. A study published in the American Journal of Physical Medicine and Rehabilitation last year, on which he was senior author, found that use of assistive technology has a positive effect on reducing the burden on caregivers.

“When folks are discharged, there is a burden on the caregiver to ensure that quality of life and function are maintained for the patient, and that can be very hard,” Dr. DeRuyter says. “We hypothesized that assistive technologies—which can be any piece of equipment or product made or customized to maintain or improve function in people with disabilities as they go about what we call their ‘activities of daily living,’ such as taking care of themselves or their home, could help reduce that burden. We especially looked at older adults with disabilities and their caregivers who were often family members and friends.”

Through the study, conducted in Canada among patients 65 years of age or older who received more than two hours of care a week from an informal caregiver—a family member or friend, not a professional—researchers found that use of assistive technology has a positive effect on reducing the burden on caregivers.

“We worked with patients with swallowing problems with a wide range of ages and diagnoses,” says Irby. “One population that is especially affected is patients who have had a head transplant. It is important to make sure that food or liquid does not go into their new lungs, which can complicate the patient’s recovery.”

Other patients at risk for dysphagia are patients who have had a stroke, brain tumor, head and neck cancer, or portions of their esophagus removed. Children with respiratory difficulties, cranial-facial malformations, neurological deficits, and cardiac issues are also at risk for swallowing problems and difficulties eating.

Speech pathologists use advanced diagnostic studies to evaluate swallowing problems. “One example of advanced instrumentation is a flexible naso-endoscope that allows direct visualization of the structures in the throat as the patients swallow,” Irby says. “The results from swallow studies help speech pathologists create an individualized treatment plan.” Speech pathologists work with patients to rehabilitate impaired swallowing function through treatment exercises such as respiratory muscle strength training. They can also provide patients with compensatory strategies, such as altering the thickness of food and liquid or changing the position of the patient to make swallowing safer.

Tinnitus

Tinnitus, or ringing in the ear, affects over 50 million Americans, and of that number, 12 to 15 million seek medical treatment. Ninety percent of people with tinnitus have underlying hearing loss.

“Our Duke Audiology Tinnitus program is one of the few clinics in North Carolina that offers comprehensive tinnitus evaluations and treatment,” says King. “The goal of our tinnitus program is to develop a treatment plan and provide strategies that give tinnitus sufferers relief.”

There are several ways to do that, and the team works with each patient individually to determine what will work best in their given situation. “We can help to not just give relief from tinnitus, but also help improve their quality of life,” King says. Tinnitus treatment devices focus on helping to retain the patient’s brain to tolerate the tinnitus. Counseling and at-home exercises are other components of a comprehensive treatment plan.

Alternative & Augmentative Communication (AAC)

Another area of practice is alternative and augmentative communication. Augmentative communication techniques are used for patients who can’t talk, whether it’s a long or short-term problem. This might include patients who are on ventilators, have tracheostomy tubes, or have aphasia or dysarthria—communication disorders that do not impact cognitive and thinking abilities but prevent patients from either getting their words out or being able to speak so others can understand them.

“Low and high-tech AAC devices are utilized,” says Irby. “We use everything from picture, phrase, and eye gaze boards, to iPads with voice output technology.”

Traumatic Brain Injury (TBI)

The Division of Speech Pathology and Audiology is a strategic partner in the care of patients with TBI. Clinicians screen patients who are admitted to certain services in the hospital for a traumatic brain injury within 24 hours of admission. This collaborative effort has helped identify patients with cognitive-communication problems, which has resulted in education for patients and their families about TBI and timely initiation of treatment. Patients are also seen after discharge for follow-up evaluation and/or treatment.

Success Dependent on Collaborative Efforts

Successful management of communication disorders involves close collaborations with specialties across the institution. “Our Division collaborates with many teams throughout Duke Medicine,” says Gwendolyn M. O’Grady, PhD, Assistant Professor, Division of Speech Pathology and Audiology. These clinical partners include Otolaryngology, Pediatrics, Infectious Disease, Neuromotor Medicine, Neurology, Neurosurgery, and Plastic Surgery. The Division of Speech Pathology and Audiology is also an important part of several multidisciplinary clinics including Duke’s ALS Clinic, Huntington’s disease Clinic, Chromosome Clinic, Cleft Palate and Craniofacial Clinic, and Parkinson’s Clinic.

Since assuming the role of Chief of the Division in 1995, Dr. DeRuyter has overseen significant growth in the Division and in the fields of Speech Pathology and Audiology. “Our programs and services just continue to grow with the need,” Dr. DeRuyter says. “The effect we can have on the lives of patients and their families is spreading like wildfire—it’s an exciting time.”
Fighting Aneurysms to the Future
Duke’s Division of Vascular Surgery Pioneers New Treatments Through Innovation

From ruptured abdominal aortic aneurysms to the diagnosis and treatment of complicated vascular malformations to a comprehensive vein program, there is almost no vascular problem or disease that the Duke Division of Vascular Surgery cannot treat. Its surgeons employ the latest, most innovative treatment modalities based on ground-breaking research being conducted by the Division’s own faculty.

“We do it all, and we have some of the most outstanding clinicians and scientists in the field in this Division,” says Cynthia K. Shortell, MD, Professor and Chief, Division of Vascular Surgery. “We are offering the latest and best treatment options to our patients and we’re moving the field forward with clinical and basic science research.”

Confronting a Dangerous Condition with more Treatment Options
Rupture of an abdominal aortic aneurysm, which occurs when a dangerous balloon-like thinning of the abdominal aortic aneurysms’ largest artery bursts, is a life-threatening emergency. Largely due to the critical nature of the situation, ruptured abdominal aortic aneurysms used to be treated almost exclusively with emergent, open surgical repair. In recent years, a minimally invasive procedure – leading to shorter recovery time and smaller incisions – has become increasingly more common, with Duke clinician-scientists contributing to important, field-advancing research that is allowing more and more patients to benefit from the procedure, while retaining the conventional open surgery as well as other procedures as an option.

“There is no doubt that the minimally invasive procedure leads to shorter hospital stays and quicker recovery, but with the life-threatening nature of ruptured abdominal aneurysms, it’s crucial to have all tools available,” says Leila Mureebe, MD, MPH, Associate Professor, Division of Vascular Surgery. “Some centers have become less adept at doing the open repair so that when it becomes necessary, they may struggle, but here at Duke, we’re confident in doing the minimally invasive procedure, the open repair, and even an ‘in-between’ hybrid approach when necessary.”

Dr. Mureebe is leading the research effort in this area at Duke, and recently published a study in a peer-reviewed journal, Annals of Vascular Surgery, demonstrating that endovascular repair (EVAR), is safe and preferable for certain patients suffering ruptured abdominal aortic aneurysms. During the EVAR procedure, a stent graft is inserted into the blood vessel weakened by the aneurysm. This is achieved with special instruments that guide the stent through small incisions, usually in the groin, advancing the stent to the aneurysm site. The stent essentially serves to fortify the area affected by the aneurysm, strengthening the vessel wall.

“The data leading up to this study were showing that patients who get the minimally invasive procedure were doing really well, almost surprisingly well,” she says.

What’s at work, Dr. Mureebe says, is a “sea change” in the way ruptured abdominal aortic aneurysms are treated.

“Now, 30 percent of people who have a ruptured abdominal aortic aneurysm undergo this minimally invasive procedure, with good results,” she says.

According to Dr. Mureebe, Duke provides an environment fertile for forward-thinking research, collaboration and excellence in patient care.

“What’s great about Duke is that everybody has a broad vascular practice so there’s nothing that our doctors don’t do, and we work together to bring about the best outcomes for our patients,” she says. “It’s a very robust division, from the basic science work to clinical application and everything in between.”

Improving Treatment of a Common Condition
There is no doubt that management of chronic venous insufficiency (CVI),manifesting in varicose veins and sometimes progressing to more dangerous ulcerations and blood clots, is a substantial, and growing, field. CVI occurs when veins in the legs don’t work properly and are ineffective at returning blood to the heart, often causing symptoms ranging from discomfort in the legs to chronic, non-healing wounds. In its most common form, CVI leads to varicose veins, the painful, swollen, bulging veins that affect up to 25 percent of women and 18 percent of men in the United States.

By some estimates, management of venous ulcers alone – a serious complication of CVI – costs anywhere from $1.9 to $2.5 billion in this country per year. That’s according to Jovan N. Markovic, MD, a postdoctorate in the Division of Vascular Surgery. And he should know – researching the science behind CVI is his passion, and in so doing, he’s hoping to inform the development of new treatments and preventive measures that might help the patients of the near future.

“It’s a significant problem, and it’s becoming bigger secondary to increasing life expectancy and an aging baby boomer generation,” Dr. Markovic says. “People think this is just a cosmetic problem, but for those who spend long hours on their feet, such as doctors, teachers or hairdressers, work can become difficult and quality of life for those with CVI can be seriously impacted. Furthermore, when CVI progresses to the advanced stages, it not only significantly reduces daily functional capacity of the patients but also imposes a significant economic burden on society related to increased direct health care costs and decreased productivity.”

Over the last ten years, new, minimally invasive treatments have emerged – including endovenous laser and radiofrequency ablation, as well as foam sclerotherapy – and all of these treatments are offered in Duke’s comprehensive Vén Clinic, on an outpatient basis. But the influx of patients got Dr. Markovic and his colleagues to thinking about the genetics behind venous insufficiency and what a deeper understanding of that might offer to patients.

By screening the entire human genome, Dr. Markovic and his team looked for genes that might be malfunctioning in patients with CVI. And they found some. To be exact, thirty-six specific genes are likely to be responsible for the development and progression of CVI.

“We identified genes that are differently expressed in patients with CVI,” he says. “Our data suggest that genetic susceptibility for decreased capability to control biologic mechanisms responsible for regulation of inflammation and/or collagen synthesis is responsible for pathogenesis of CVI.”

With the discovery of the affected genes, Dr. Markovic’s group is now delving deeper, looking to discover ways to target these genes in order to develop preventive and treatment plans in an effort to halt the development of CVI, or tailor treatment if and when it does develop – the essence of personalized medicine applied to CVI.

Dr. Markovic and his team are now conducting a Phase-2 trial designed to more precisely identify the metabolic pathways and genetic mechanisms responsible for creating an enhanced susceptibility to venous disease.

“An ultrasound scan can indicate faulty vein valves in a patient, but it can’t tell doctors precisely what leads to valve damage or which of the many manifestations of venous disease those faulty valves are likely to produce,” Dr. Markovic says. “The more data we have, the more confidence we have in what we detect and the greater the likelihood of clinical applications. We hope to lay down a fertile environment to promote novel diagnostic and prognostic modalities, as well as to develop innovative therapeutic interventions and approaches for this often complex vascular disease.”

A Critical Cog in the Multidisciplinary Wheel
A vascular surgeon’s expertise is often needed during surgeries on many organs and areas of the body when vasculature is involved or if tumors or growths are vascular in nature. From malignancies involving the vascular system, to pancreatic cancer that involves vessels in the upper abdomen, to sarcomas of the abdomen, to countless other diseases and traumas, the surgeons of the Division of Vascular Surgery are heavily involved in affecting the best outcomes possible for patients seeking care in the Duke Health System.

“Our involvement often leads to a very aggressive approach during surgeries where our team can address the vascular issues that arise, as well as prevent major bleeding,” says Mitchell W. Cox, MD, Associate Professor, Division of Vascular Surgery. Dr. Cox is one of the Division’s leading surgeons in the area of malignancies, working in close conjunction with surgical oncologists.

Dr. Cox also serves as part of a multidisciplinary team in the treatment of thoracic outlet syndrome. This condition is characterized by pain and numbness of the neck, shoulder, and arm when blood vessels, nerves, or both are compressed in the thoracic outlet. This can be a congenital condition, or it can occur from trauma, repetitive motion, injury or, less frequently, a type of tumor. The syndrome can cause dangerous deep vein thrombosis in the arm if left untreated.

“Collaborating with our colleagues in other disciplines allows us to offer the most comprehensive, aggressive approach to challenging diseases and conditions,” Dr. Cox says. “We are able to complement one another in a way that ultimately benefits our collective patients.”

Leading the Charge in Treating Congenital Vascular Malformations
Congenital vascular malformations (CMVs) are abnormal clusters of blood or lymph vessels that form during fetal development. Duke is the only hospital in the region that has a dedicated Vascular Malformation Team (VM) that routinely reviews individual cases to formulate treatment plans specifically tailored to each patient’s unique needs. Patients from throughout the United States and all over the world come to Duke for proper diagnosis and treatment, as well as correction of misdiagnosed and inadequately treated CMVs.

Upon joining the Duke faculty as Division Chief in 2005, Dr. Shortell founded a multidisciplinary team to address vascular malformations, with initial input from Jeffrey R. Marcus, MD, Associate Professor, Division of Plastic and Reconstructive Surgery and Associate Vice Chair of Surgery for Pediatric Services; Charles E. Spitzer, MD, Professor of Radiology and Chief of Musculoskeletal Imaging; and Tony R. Smith, MD, Professor of Radiology and Chief of Interventional Radiology.

surgery.duke.edu
Forging a Road to the Future

Dr. Shortell still directs the program. “Over the past nine years, the team has grown to include representatives from adult and pediatric dermatology, otorhinolaryngology, pediatric surgery, orthopaedic and reconstructive surgery, adult and pediatric hematology, and adult and pediatric ophthalmology,” Dr. Shortell says. “This select group of highly skilled physicians has a unique knowledge of vascular malformations and many members of the VM Team are nationally and internationally recognized for their work.” Duke’s VM Team has published cutting-edge research demonstrating their successful use of dynamic contrast enhanced (dce) MRI - a technique pioneered by VM Team radiologists - to identify vascular malformations; the newest and most effective scintigraphs, solutions that stop the flow of blood to the malformations; as well as medical and conservative management of CVMs.

Dr. Shortell is a member of the International Union of Phlebology (IUP) Consensus Group for Venous Malformation, responsible for integrating VM lesion classification systems and international practice guidelines.

The VM Team, now co-directed by Dr. Shortell and Michael Miller, MD, Assistant Professor of Radiology, serves as a model for the efficacy of patient care using a multidisciplinary approach, which includes dedicated patient coordinators to assist patients in navigating their care at Duke.

Almost Human: Bioengineered Blood Vessels Show Amazing Promise

Accessing the vascular system is a common and sometimes challenging factor in many areas of medicine, from management of kidney failure through dialysis, to coronary artery bypass graft surgery for those with heart disease. Graft access and failure is a common challenge, and the need for alternative techniques for vein grafting is immense.

Answering that need is the daily goal of Jeffrey H. Lawson, MD, PhD, Professor, Division of Vascular Surgery, and his colleagues, who, along with his team, recently developed a bioengineered blood vessel that is showing exceptional promise.

The team utilized the vessels in a study of dialysis patients, an ideal first testing group due to the large numbers of patients in this population – about 380,000 people in the United States receive dialysis – and the relatively low-risk profile they present as compared to patients in more critical populations, such as heart disease patients in need of surgery. And the need is there. Current synthetic vascular grafts only provide initial blood flow in less than 50 percent of patients at six months.

The new bioengineered vessels were tested in 28 hemodialysis patients, and the bioengineered blood vessel provided blood flow in 100 percent of the study patients.

“All of the vessels we have implanted are still functioning, and there have been no infections. That’s pretty amazing and very exciting for these patients and the patients of the future who will benefit from this,” Dr. Lawson says.

Studies are ongoing, testing use of the vessels in other patient populations, including those patients requiring arterial reconstruction in their legs.

Educating the Next Generation of Vascular Surgeons

Duke’s two-year vascular surgery fellowship program, under Dr. Cox’s direction, is preparing the next wave of vascular surgeons in both open and endovascular surgical techniques as well as diagnostic modalities, with incorporation of training from related fields such as cardiology, hematology, and interventional radiology.

Fellows also have the opportunity to participate in research projects during their time at Duke.

“The Division participates in a number of trials of the endovascular devices that are on the frontier, such as branched endografts, and our trainees get the experience of working with the techniques that are really paving the way for the future of vascular surgery,” says Richard McCann, MD, Professor, Division of Vascular Surgery.

Branched endografts allow surgeons to attach arteries leading to other organs, useful in patients whose aortic aneurysms are located in areas where arteries branch off toward organs such as the kidneys.

“We also cover the whole aorta [within vascular surgery training], which I think sets us apart from other programs,” Dr. McCann says.

“Our Division is, I believe, truly one of the most robust, busy, and prolific vascular surgery programs in North Carolina, and possibly in the country,” says Dr. Shortell. “With each procedure we perform and perfect, and the truly forward-thinking work going on in our research labs, we are really moving this field into the future, and it’s a very exciting place to be as us, clinicians, scientists, and educators, and of course, most importantly, for the patients of the present and the future.”

Early Data Show Potential for Investigational Bioengineered Vessel as Dialysis Graft

A n investigational, man-made blood vessel used in vascular grafts for kidney dialysis patients may potentially show encouraging early results among study patients in Poland, according to preliminary data. Presented at the American Heart Association Scientific Sessions meeting in Dallas, the early findings of this interim patient data track 28 hemodialysis patients who received grafts using the investigational bioengineered vessel during a multi-center study launched in Poland last December.

The investigational bioengineered blood vessel, designed to be the first off-the-shelf product incorporating human tissue in the bioengineering process, provided blood flow in 100 percent of the study patients, reported Jeffrey H. Lawson, MD, PhD, Professor, Division of Vascular Surgery. Eight patients later lost blood flow, but it was restored with interventions in each case.

Dr. Lawson says there is a significant need for alternative types of vascular technology. Current synthetic vascular grafts used for hemodialysis access provide initial blood flow in less than 50 percent of patients at six months, and with secondary interventions the success rates rise to 77 percent, Dr. Lawson says. Preliminary interim analysis of the investigational bioengineered vessel currently being used for dialysis among the Polish patients has resulted in no infections to date, no immune reactions, and no sign of structural degeneration.

“These early data are very encouraging,” says Dr. Lawson, who performed the first U.S. implantation of the blood vessel last June in a patient with end-stage kidney disease.

“Long-term evaluations in a larger patient population are needed to confirm the early findings, but we are hopeful the technology continues to demonstrate potential benefit to dialysis patients.”

The investigational bioengineered blood vessel is being tested initially as a vascular graft for patients with end-stage kidney disease who need dialysis procedures. An estimated 380,000 people in the United States receive dialysis, and costs associated with vein access complications are significant.

Subject to review and approval from regulatory agencies, subsequent tests of the technology are planned for replacement or bypass of diseased and injured blood vessels.

The technology uses donated human tissue that grows on a biodegradable tubular scaffold, which gradually dissolves as the cells grow. The resulting vessel is then rinsed of its cellular properties, creating a collagen structure that does not appear in preliminary studies to trigger an immune response when implanted in humans. That feature, if established in future studies, could enable it to be mass-produced without tailoring it to individual patients.

The investigational bioengineered vessel is being tested initially as a vascular graft for patients with end-stage kidney disease who need dialysis procedures. An estimated 380,000 people in the United States receive dialysis, and costs associated with vein access complications are significant.

Subject to review and approval from regulatory agencies, subsequent tests of the technology are planned for replacement or bypass of diseased and injured blood vessels.
Duke Professors Pioneer New Cardiac Assist Device

Roberto J. Manson, MD, Assistant Professor, Division of Vascular Surgery and Mari A. Daneshmand, MD, Assistant Professor, Division of Cardiovascular and Thoracic Surgery, participated in the implantation of a new type of cardiac assist device in collaboration with Pong-jeu Lu, Professor at the National Cheng Kung University in Taiwan. What made the researchers’ approach novel was the use of a para-aortic blood pump (PABP), Dr. Daneshmand says.

“When the heart is contracting, the balloon fills and by filling, it lowers the work of the heart,” Dr. Daneshmand says about how the PABP works. “When the heart is resting, it pumps blood back into the system, raising blood pressure.” He noted that the pump improves circulation throughout the body as well as circulation to the heart.

Currently, the researchers are looking to find funding to repeat the trials at Duke. Dr. Daneshmand explained that the current economic situation limits availability of federal funds. While the researchers face a financial challenge in continuing their research, they are motivated by the possibility of making cardiac treatment more economical.

“PABP can be accessible to a larger portion of the population with less complications in an affordable way,” says Dr. Manson.

“The PABP could serve as an alternative for several current treatments, such as the intra-aortic balloon pump and left-ventricular assist devices,” says Dr. Daneshmand.

The intra-aortic balloon pump—which involves a balloon inspired by the design of the PABP—is inserted in the groin. Patients who use an intra-aortic balloon pump are essentially bedridden, Dr. Daneshmand noted. Dr. Daneshmand added that patients waiting for heart transplants while using intra-aortic balloon pumps wait in the intensive care unit for weeks or months and can develop complications associated with a sedentary lifestyle.

“Their muscles atrophy. They get pneumonia. All these things happen to them, and if they were able to get up and walk around, they would not have these problems,” says Dr. Daneshmand.

The PABP inserts the assisting device directly into the aorta, which might allow patients to be mobile.

“Duke has been a leading enroller in clinical trials that led to the approval of many devices that combat heart failure, including the Thoratec Heartmate II and the Heartware HVAD,” Dr. Daneshmand says. “These devices are limited, however, by the invasiveness of their implantation procedures and associated complications.”

The PABP seeks to prevent complications by being less invasive and cause less physiological trauma, Dr. Daneshmand explains.

The new PABP pump is also innovative in its relationship to the heart. “Currently, the widespread devices really replace the heart functions,” says Carmelo A. Milano, MD, Associate Professor, Division of Cardiovascular and Thoracic Surgery. “I think it is possible that some of the newer devices will be able to help us recover the natural heart,” says Laura Blue, the ventricular assist device program nurse coordinator.

Basic and Translational Research

Hardean E. Athnneck, MD, Assistant Professor, Division of Surgical Sciences, was awarded a grant from North Carolina Biotechnology Center for “GoFlo: Multi-well Flow Chamber System for Drug Toxicity Testing.”

Dan G. Blazer III, MD, Assistant Professor, Division Surgical Oncology, was awarded a grant from KCI USA Inc. for “A Randomized Phase II Evaluation of Negative Pressure Wound Therapy for Reduction of Postoperative Surgical Site Infection.”

R. Duane Davis, MD, Professor, Division of Cardiovascular and Thoracic Surgery, was awarded a grant from the University of North Carolina Chapel Hill for “More and Better Lungos: Ex-Vivo Perfusion of Non-Heart-Bating Donors.”

Gayatri R. Devi, PhD, Associate Professor, Division of Surgical Sciences, was awarded a grant from North Carolina Central University for “GLI Inhibition to Enhance Chemo- and Targeted-Therapies in Inflammatory Breast Cancer.”

Dennis G. Frank-ito, PhD, Assistant Professor, Division of Otolaryngology — Head and Neck Surgery, was awarded a grant from the University of California-Irvine for “The Pediatric Upper Airway Using a 4-DCT and Direct Numerical Simulation (DNS) Computation Fluid Dynamics.”

Stephen T. Keir, DrPH, Associate Professor, Division of Neurosurgery, was awarded a grant from the National Cancer Institute for “Acute Leukemia Clinical Trials in Children.”

Shivanand Ladi, PhD, Associate Professor, Division of Neurosurgery, was awarded a grant from the National Cancer Institute for “Using Publicly Available Claims with Focus on Neuro modulation.”

Jeffrey H. Lawson, MD, PhD, Professor, Division of Vascular Surgery, was awarded a grant from the National Heart, Lung, and Blood Institute for “A Diagnostic Capability Concurrence Study of a 510 Mobile Fluoroscopy System and the OEC 9900 Elite Mobile Fluoroscopy.”

John H. Sampson, MD, PhD, Professor and Chief, Division of Neurosurgery, was awarded grants from the National Institutes of Health for “National Institute of Neurological Disorders and Stroke (NINDS) Research Education Programs for Residents and Fellows in Neurosurgery” and “EGRF/EGFR Targeted Bispecific T Cell Engagers for Brain Tumors.”

Dr. Sampson was also awarded a grant from the Kinetics Foundation for “John Livingston Study of Precision Drug Delivery.”

Smita K. Nair, PhD, Associate Professor, Division of Surgical Sciences, was awarded a grant from the Department of Defense for “Novel Immune Modulating Cellular Vaccine for Prostate Cancer.”

Julie A. Sosa, MD, Professor, Division of Surgical Oncology, was awarded a grant from the National Cancer Institute for “A Randomized Double Blind Study to Compare the Complete Remission Rate Following a 5 week course of Sulfonmetn or Plac.”

Bruce A. Sullenger, PhD, Professor, Division of Surgical Sciences, was awarded a grant from the National Heart, Lung, and Blood Institute for “Novel Nucleic Acid-Binding Polymers as Molecular Scavengers to Control Acute Inflammation.”

Georgia D. Tomaras, PhD, Associate Professor, Division of Surgical Sciences, was awarded grants from Northwestern University for “Harnessing Antibody-Mucus Interaction to Prevent HIV Transmission” and “Testing the Ability of Antibody-mucus Interactions to provide Vaccine Function.”

Surgery Research Grant Activity

Clinical Trials

Linda M. Farkas, MD, Associate Professor, Division of Surgical Oncology, was awarded a grant from the University of Chicago for “Robotic versus Laparoscopic Resection for Rectal Cancer: An International Multicenter, Prospective, Randomized, Controlled, Unblinded, Parallel-group Trial of Robotic-assisted Versus Standard-Laparoscopic Surgery for the Curative Treatment of Rectal Cancer.”

Stephen J. Freedland, MD, Associate Professor, Division of Urology, was awarded a grant from Albert Einstein College of Medicine for “Genomic Basis of Prostate Cancer Health Disparity Amongst African-American Men.”

Contact: Jennifer Stout, 919-613-3786

Charles G. Hughes, MD, Associate Professor, Division of Cardiovascular and Thoracic Surgery, was awarded a grant from Glaxo Smith Kline for “Phase II Randomized, Placebo-Controlled, Double-Blind (Parallel/Open) Study of GSX1278683, a HIF-1α/Prolyl Hydroxylase Inhibitor to Reduce Ischemic Events in Patients Undergoing Thoracic Aortic Aneurysm Repair.”

Contact: Victoria Sutton, 919-668-2382

David M. Kayle, MD, Associate Professor, Division of Otolaryngology — Head and Neck Surgery, was awarded a grant from Phorcas, LLC for “Evaluation of OxoIntegrated Cochlea Stimulator (BAHA) and CNOS Aid Preoperative Assessment.”

Dr. Kayle was also awarded a grant from Gizmon-Stadler, Inc. for “Vestibular Schwannoma Auditory Brainstem Recording using CHIRP-US.”

Contact: Amy Walker, 919-664-1782

Alexander T. Limkakeng Jr., MD, Associate Professor, Division of Emergency Medicine, was awarded a grant from Abbott Laboratories for “ARCHITECT® STAT High Sensitive Troponin-I Assay Clinical Evaluation for Spectral CT Scans in Varying Specimen Tube Types.”

Contact: Weijing Diao, 919-661-5097

Carmelo A. Milano, MD, Associate Professor, Division of Cardiovascular and Thoracic Surgery, was awarded a grant from HeartWare International, Inc. for “A Prospective, Randomized, Controlled, Unblinded, Multi-Center Clinical Trial to Evaluate the HeartWare Ventricular Assist Device System for Destination Therapy of Advanced Heart Failure.”

Contact: Han-Billard, 919-641-1437

Debora L. Sudan, MD, Professor and Chief, Division of Abdominal Transplant Surgery, was awarded a grant from Bristol-Myers Squibb Company for “Evaluation of the Benefits and Risks in Maintenance Renal Transplant Recipients Following Conversion to Nplate (bamlanigin) -Based Immunosuppression.”

Contact: Andre Sarkir, 919-667-6672

Georgia D. Tomaras, PhD, Associate Professor, Division of Surgical Sciences, was awarded a grant from Johns Hopkins University for “International Maternal Pediatric Adolescent AIDS Clinical Trials.”

For an up-to-date listing of Duke Surgery research, visit surgery.duke.edu/research
FACULTY NEWS

Division of Neurosurgery Leadership Changes

Allan Friedman, MD, who has played a key role in establishing The Preston Robert Tisch Brain Tumor Center at Duke as one of the premier neurosurgery services in the United States, has stepped down as Chief of the Division of Neurosurgery. Under Dr. Friedman’s leadership, the Division has grown to 25 neurosurgeons who perform some of the most extensive procedures and groundbreaking research in the country. Dr. Friedman also served as program director for the Neurosurgical Residency Training Program from 1996 to 2008. The division, well-known for its commitment to education, has trained more than 50 residents and fellows during the last decade.

While stepping away from his administrative responsibilities for the Division, Dr. Friedman will continue his surgical practice and research activities. An internationally recognized tumor and vascular neurosurgeon, Dr Friedman has published more than 330 peer-reviewed papers on the neurological management of brain tumors and vascular lesions. He has also published 69 books and book chapters and more than 75 abstracts.

Dr. Friedman will also continue to serve as deputy director of The Preston Robert Tisch Brain Tumor Center at Duke and Associate Chief of the Preus Laboratory for Brain Tumor Research. He has also accepted an appointment as Vice Chair of Administration in the Department of Surgery.

John H. Sampson, MD, PhD, was named Chief of the Division of Neurosurgery April 1, 2014. Dr. Sampson joined the division in 1998 after completing his training at Duke and has emerged as one of the next generation of neurosurgical leaders in the country, having benefited from mentoring and training by Drs. Allan Friedman, Henry Friedman, and Darell Bigner. In addition to his clinical practice, Dr. Sampson has been highly regarded for his innovative research in drug delivery to the brain and immunotherapy for brain tumors. His laboratory effort is currently funded in excess of $1 million in direct costs annually and supports the research and educational activities of the Division of Neurosurgery and the School of Medicine. Dr. Sampson was named the Robert H. and Gloria Wilkins Distinguished Professor of Surgery in 2010.

New Association Medical Directors Named for Surgical Education and Activities Lab

The Surgical Education and Activities Lab has announced the following new Associate medical directors: Robert J. Manson, MD, Assistant Professor, Division of Cardiovascular and Thoracic Surgery; Traci L. Thoureen, MD, Assistant Professor, Division of Emergency Medicine; and Michael N. Ferrandino, MD, Assistant Professor, Division of Urology.

NEW FACULTY

Gwendolyn O’Grady, PhD
Division of Speech Pathology and Audiology
Clinical interests include Pediatric and adult diagnostic hearing assessment, pediatric and adult hearing-aid dispensing.
919-684-3859

Linda Cendales, MD
Division of Plastic, Maxillofacial, and Oral Surgery
Clinical interests include hand and microsurgery, hand transplantation, and vascularized composite allograft transplantation.
919-684-8561

Fernando Gonzalez, MD
Division of Neurosurgery
Clinical interests include cerebral aneurysms, arterovenous malformation, dural arterovenous malformation, spinal vascular malformations, stroke, carotid and vertebral stenosis, and neuroendovascular neurosurgery.
919-668-0650

Luis Sanchez-Perez, PhD
Division of Neurosurgery
Research interests include the elucidation of immune mechanisms underlying the efficacy of novel immunotherapeutic strategies for the treatment of malignant brain tumors.
919-613-0926

HONORS

Duke Tied for 8th in US News and World Report

US News and World Report rankings: for medical schools again place Duke University School of Medicine among the top 10 medical schools in the nation. Five of Duke’s medical education specialty programs also were ranked in the top 10. The Duke University School of Medicine comprises 21 basic science and clinical departments and numerous centers and institutes, with more than 2,000 faculty members. Among its student body are 489 MD students, 998 residents and fellows, 841 PhD students, as well as 241 medical students at Duke-NUS Graduate Medical School in Singapore.

Duke Medicine Pavilion – Certified as first LEED Gold Hospital in North Carolina

Duke Medicine Pavilion (DMP) has been certified as the first LEED (Leadership in Energy and Environmental Design) Gold hospital in North Carolina and in the Southeast. It joins fewer than 30 other LEED Gold hospital buildings in the world and becomes the third Duke Medicine building to attain LEED Gold status. The Duke Cancer Center and the Trent Semans Center for Health Education were also awarded LEED Gold status. LEED was developed by the US Green Building Council. LEED standards provide third-party verification of green buildings to certify that they satisfy prerequisites and earn points to achieve different levels of certification.

Three Duke System Hospitals Names Top Performers by Accreditation Agency

All three hospitals in the Duke University Health System (DUHS) were recognized as top performers in the 2013 assessment by the Joint Commission, which accredits health organizations in the United States.

Duke University Hospital, Duke Regional and Duke Raleigh hospitals were among 1,099 facilities that attained excellence by the Joint Commission, representing the top 33 percent of accredited hospitals that report accountability measures nation-wide. Assessments were based on 2012 performance data.

The three DUHS hospitals achieved the designation for following processes that have been proven to improve the outcomes of patients seeking care for various conditions, including heart attacks, heart failure, pneumonia, surgeries, stroke, and others.

Hospitals are required to select and report on four measure sets, and each of the recognized hospitals had to achieve cumulative performance of 95 percent or above for all reported accountability measures. The four accountability measures specifically highlighted for excellence at Duke University Hospital, Duke Regional and Duke Raleigh hospitals include heart attack, heart failure, pneumonia and surgical care.

surgery.duke.edu
HONORS

Duke Surgery Faculty Honors

Hardean E. Achneck, MD, Assistant Professor, Division of Surgical Sciences, has been appointed to Adjunct Assistant Professor in the Cardiovascular & Metabolic Disorders Program at the Duke-National University of Singapore, Graduate Medical School Singapore.

Obinna O. Adibe, MD, Assistant Professor, Division of Pediatric General Surgery, has been nominated to participate in the Society of Black Academic Surgeons (SBAS) Leadership Institute.

Todd V. Brennan, MD, Associate Professor, Division of Abdominal Transplant Surgery, was awarded membership to the Society of University Surgeons (SUS). The SUS is recognized as one of the world’s premier organizations dedicated to the advancement of the surgical sciences. Dr. Brennan was also recently elected to the Executive Committee of the Association for Academic Surgery (AAS), representing the class of 2010. Leaders within the AAS have traditionally been responsible for maintaining active laboratories at their institutions.

Linda M. Farkas, MD, Associate Professor, Division of Surgical Oncology, will start a three-year term as Council Member of the Collaborative Group of the Americas on Inherited Colorectal Cancer.

David H. Harpole, Jr, MD, Professor, Division of Cardiovascular and Thoracic Surgery, was recently re-elected to a three-year term as Co-Chair of the Thoracic Malignancy Steering Committee.

David M. Kaylie, MD, Associate Professor, Division of Otolaryngology - Head and Neck Surgery, was recently elected for membership in the American Otologic Society. This is an Otolologic/Neurotologic subspecialty society where membership is granted by unanimous vote of the society to senior accomplished otologists that are leaders in their field. Dr. Kaylie was recognized as a new member at the Combined Otolaryngology Spring Meeting in Las Vegas.

Eileen M. Raynor, MC, Assistant Professor, Division of Otolaryngology - Head and Neck Surgery, completed the North Carolina Medical Society (NCMS) Leadership College for 2012-2013 and was invited to present her project “Factors Affecting Care in Non-English Speaking Patients and Families at the NCMS annual Leadership College meeting.

Edward N. Rampersaud Jr, MD, Assistant Professor, Division of Urology was honored by the Division of Surgical Oncology, was one of the nominees to participate in the Society of Black Academic Surgeons (SBAS) Leadership Institute.

Ranjan Sudan, MD, Associate Professor, Division of Metabolic and Weight Loss Surgery, represented Duke Surgery for the American College of Surgeons’ Division of Education at the 5th Alliance for Surgical Simulation in Education and Training Conference in February 2014. Dr. Sudan is a leader in Surgical Education and is recognized nationally for his expertise in Simulation-based Surgical Education and Training.

Julie K. Thacker, MD, Assistant Professor, Division of Surgical Oncology, was one of the chairs at the first US Enhanced Recovery After Surgery (ERAS) Symposium at the American College of Surgeons last Fall. The one-day symposium for surgeons, anesthesiologists, and perioperative and surgical nurses addressed the issues related to enhanced recovery for colorectal and other surgery from a multidisciplinary perspective.

George D. Webster, MD, Professor, Division of Urology was honored by the Society of Urodynamics, Female Pelvic Medicine and Urogenital Reconstruction for his leadership in fellowship training for the specialty of Female Pelvic Medicine and Reconstructive Surgery.

Henry E. Rice, MD, Professor and Chief, Division of Pediatric General Surgery, was recently named one of Vaccine Ambassador’s 31 Inspiring People.

Debra L. Sudan, MD, Professor and Chief, Division of Abdominal Transplant Surgery, was elected for membership in the Southern Surgical Association. Dr. Sudan will be recognized as a new member at the annual meeting to be held at Palm Beach, Florida, in November, 2014.

DUKE SURGERY CME COURSES

Duke Center for Surgical Innovation

The Duke Center for Surgical Innovation (DCSI) is dedicated to training surgeons using the latest surgical techniques and innovative approaches in minimally invasive surgery. Utilizing a combination of didactic lectures, live surgeries, video, and hands-on labs in minimally invasive surgical techniques, hundreds of surgeons and allied health professionals from around the world have been trained through the center. CME credit is available for a number of courses held throughout the year in a wide range of surgical specialties.

July 18-19, 2014 Duke Masters of Surgical Oncology: New approaches to Endocrine, Breast, and GI Malignancies The Umstead Hotel Cary, NC

September 18-21, 2014 Masters of Minimally Invasive Thoracic Surgery Waldorf Astoria Hotel Orlando, FL

March 19-21, 2015 Masters of Minimally Invasive Bariatric Surgery JW Marriott Hotel Orlando, FL

For more information, visit innovation.surgery.duke.edu/courses.
Mission
The Department of Surgery is committed to excellence, innovation, and leadership in meeting the health care needs of the people we serve and fostering the very best medical education and biomedical research.

Vision
As one of the leading national and international academic departments of surgery, we will assemble and integrate a comprehensive range of health care resources providing the very best in patient care, medical education, and clinical research. As the health care providers of choice in the region, we will improve the health of the communities we serve through the development of new and better models of health care. Through careful stewardship of our resources, we will preserve and promote our core missions of outstanding clinical care, discovery research, and improved health for the communities we serve.

Partners in Philanthropy
A gift to the Duke Department of Surgery is a gift of knowledge, discovery, and life. Every dollar is used to further our understanding of surgical medicine, to develop new techniques, technology, and treatments, and to train the surgeons and researchers of the future.

If you would like to make a philanthropic investment in Duke Surgery, visit surgery.duke.edu/gift.

For Duke Surgery appointments, call:
800-MED-DUKE (for referring physicians)
888-ASK-DUKE (for patients)
surgery.duke.edu