THE UNIVERSITY OF KENTUCKY’S cardiovascular medicine program has a distinguished 50-year history, a flourishing present, and a promising future using our advances and innovations to treat patients who need it most.
About the Linda and Jack Gill Heart Institute

The Linda and Jack Gill Heart Institute is at the forefront in the battle against heart disease and stroke in Kentucky and is nationally recognized as a leader in advancing the treatment and prevention of cardiovascular disease. Founded in 1997 with a gift from philanthropists Linda and Jack Gill, the mission of the Gill Heart Institute is to improve heart health by providing clinical services based on the latest evidence and technology, advancing the field with research, and educating students, physicians, health care providers and the public.

Our greatest asset is our faculty – a multidisciplinary clinical team that includes members from five services – adult cardiology, cardiothoracic surgery, vascular surgery, cardiac radiology, and cardiac anesthesiology. The Gill Heart Institute’s cutting-edge facilities are housed within the Albert B. Chandler Hospital Medical Center, ranked No. 1 in Kentucky in U.S. News & World Report’s “Best Hospitals 2012–2013,” UK’s Good Samaritan Hospital complex, and over a dozen outreach sites around the Commonwealth.

As the region’s top teaching and research institution, the educational and research emphasis at the University of Kentucky fosters a bench-to-bedside translational approach that ensures patients benefit from up-to-the-minute scientific advances. Participation in clinical research is an integral part of our cardiovascular service that allows us to improve patient outcomes and determine best medical practices. With the support of a Clinical and Translational Science Award from the NIH, we are among an elite group of biomedical research institutions positioned to transform cardiovascular therapies for our patients.

Improving the cardiovascular health of Kentuckians will require educating health care providers and the public, and we are committed to educating physicians and scientists-in-training, developing the careers of young investigators, and disseminating knowledge to local communities.

The following pages describe our services, accomplishments, and our rich history in the field of cardiovascular medicine. In them, you will learn of our commitment to the highest standards of excellence in the diagnosis and treatment of heart and vascular diseases and our dedication to scholarly pursuits that will improve the future of heart health in Kentucky and beyond.

Susan S. Smyth, MD, PhD
Jeff Gill Professor of Cardiology
Chief, Division of Cardiovascular Medicine
Medical Director, Gill Heart Institute
Director, MD/PhD Program

“Because of the breadth and quality of faculty recruited and our educational and research agenda, critical clinical programs are made available to the state, ensuring Kentuckians have access to the best of contemporary care. We are now poised to serve as a clinical destination for patients from beyond our historic boundaries.”

Michael Karpf, MD
Executive Vice President for Health Affairs,
UK HealthCare
Achievements:

- Editor-in-chief of the premier journal *Arteriosclerosis, Thrombosis, and Vascular Biology* – Alan Daugherty, PhD, DSc.
- Editor-in-chief of the American College of Cardiology’s CathSAP® 4 – David Moliterno, MD.
- 2013 Jeffrey M. Hoeg Arteriosclerosis Award for Basic Science and Clinical Research – Susan Smyth, MD, PhD.
- 2012 NIH Director’s Early Independence Award recipient – Brandon Fornwalt, MD, PhD.
- Anthony N. DeMaria Endowed Chair in Cardiovascular Imaging – Vincent Sorrell, MD.
With a strong cardiovascular research program, the Gill’s physicians are equipped and skilled in the latest advances in the evaluation and treatment of heart and vascular diseases, and we serve as a clinical destination for advanced cardiovascular care in this part of the country.
Inpatient Services

The Gill Heart Institute’s clinical care programs target the high incidence of heart disease in Kentucky and the region. Our physicians, scientists, nurses, and affiliated staff are committed to the highest level of care for both simple and complex cases, and to delivering safe and appropriate treatments. This superb clinical care is provided by more than 150 nursing and clinical staff who manage adult and surgical cardiovascular cases in an integrated intensive care unit, and in acute-care beds. This patient-centered approach reduces the number of transitions experienced during the continuum of the hospital stay, and allows us to keep the time in hospital as short as possible. Indeed, our length-of-stay index remains below that of most academic medical centers in the country.

As we emerge as a quarternary destination site, our case-mix index, a measure of the clinical complexity of the care (based on associated medical conditions) has increased. Hypothermia, EKOS ultrasound-accelerated infusion, catheter-based delivery of thrombolytic drugs, percutaneous and surgically-implanted ventricular assist devices, and extracorporeal membrane oxygenation (ECMO) technology, are employed daily in the intensive care unit.

And while the care that we provide has become more complex and diverse, we maintain the highest clinical standards. A testament to this is the Gill’s recent receipt of the Get with the Guidelines—Resuscitation Silver Quality Achievement Award from the American Heart Association—the first hospital in Kentucky to receive this recognition. The award signifies that the institute has reached an aggressive goal in using guidelines-based care to improve patient outcomes from in-hospital cardiac arrest.

This recognition represents substantial effort on the part of Dr. Charles L. Campbell, director of inpatient cardiovascular services at the Gill Heart Institute, and his team. The Get with the Guidelines-Resuscitation Program aims to help hospital teams save more lives threatened by cardiopulmonary emergencies by consistently following the most up-to-date scientific guidelines.
Cardiologist Rick McClure, MD, sees patients at one of our more than 30 monthly outreach clinics.

for treating patients who suffer a cardiac arrest in the hospital. The Gill joins other hospitals across the country in putting that data to work in everyday practice to save lives. Shortening the time to effective resuscitation and maximizing post-resuscitation care is critical to patient survival. The last nine years were a period of tremendous growth in inpatient care at UK HealthCare. Hospital admissions increased 84% from 19,000 per year to more than 35,000. This volume places UK in the 75th percentile of academic medical centers. In keeping with the growth of UK HealthCare, our inpatient adult cardiovascular admissions have also seen a significant expansion, at nearly 2,000 annually. Our total cardiovascular annual visits went from just over 15,000 in 2005 to around 25,000 in 2013. These gains nearly double our percentage of the area’s adult hospital cardiovascular treatment volume.

Dedicated pharmacy specialists

Six doctors of pharmacy, four of whom are board-certified with added qualifications in cardiology, provide comprehensive and individualized review of care for Gill Heart patients. Hospitalized patients benefit from 24-hour clinical pharmacy coverage and daily medication review by our pharmacy team members. Cardiology pharmacy faculty are jointly appointed to the UK College of Pharmacy, one of the Top Five Colleges of Pharmacy in the nation, according to U.S. News & World Report. Our pharmacy services are one of only eighteen accredited Cardiology Pharmacy Residency training programs in the country.

Cooling in the Real World: Therapeutic Hypothermia

Out-of-hospital sudden cardiac arrest is a common event, occurring in approximately one in 2,000 adults per year. Even though patients may initially reach the hospital, historically very few patients survive to discharge. Hypoxic ischemic brain injury is a key cause of morbidity and mortality following resuscitation. But with the use of therapeutic hypothermia, there is a far higher survival rate and an increased chance of good neurological recovery.

An early adopter of the cooling technique, the Gill team has treated more than 50 patients in the past several years. Our survival rates in patients receiving hypothermia after out-of-hospital cardiac arrest, are approximately 40% compared to 10% survival nationwide in the CDC’s Cardiac Arrest Registry to Enhance Survival study. Of those who survive, about 75% have had a favorable neurologic recovery, including many who report a full recovery. The treatment of these patients is a multidisciplinary effort combining the efforts of the Divisions of Cardiovascular Medicine, Neurology and Cardiothoracic Surgery, as well as the expertise of the nursing staff in our CT Intensive Care Unit.

Outpatient Visits

The general cardiology services at the Gill Heart Institute includes preventive cardiology, sophisticated diagnostic and treatment services, and referral as needed, to one of our dedicated cardiology specialty programs. Our team excels in collaboration, bringing together physicians from all areas of cardiology to create an individualized diagnosis and treatment program for patients.

UK’s cardiovascular heart center provides all patient care in the same location, including clinics, non-invasive cardiac diagnostics, and interventional cardiac techniques such as cardiac catheterization, angioplasty and electrophysiology. The Gill also provides a base for the physicians providing this care, and has special focus on counseling cardiac patients and their families.
Outreach and Affiliates: World-class care close to home

Our cardiologists provide the region’s most comprehensive services, diagnostic assessment, and therapeutic strategies in more than 10 affiliate locations in the Bluegrass region, central and southeastern Kentucky. With more than 30 clinics per month, visits to Gill-affiliated sites topped 17,500 last year. By extending our care to these communities, patients and their families are relieved of the emotional and financial burdens associated with traveling to Lexington.

Working closely with local physicians and hospitals, we help broaden treatment options by providing access to revolutionary diagnostic technology and the latest therapeutic advances. We remain committed to responding to patient needs, whether it’s providing a much-needed specialist in the local community or accepting the transfer of a critically ill patient at UK hospital. Our goal is to keep patients close to home for as much of their medical care as possible.
A Lucky Day

One minute Deborah Lander was on her way to a performance at the Lexington Opera House. The next, she lay dead on the sidewalk. On that February day in 2012, Lander experienced sudden cardiac arrest, where the heart unexpectedly stops pumping blood to vital organs. About 300,000 Americans have sudden cardiac arrest each year. Only about 10 percent survive.

Lucky for Deborah, someone saw her collapse. The swift actions of bystanders who knew CPR was the first step in saving her life. Next, the ambulance took Lander to UK’s Albert B. Chandler Hospital ED, where a cardiac team was waiting. There, doctors performed therapeutic hypothermia on Deborah, a process using catheters to cool the body to 90-93 degrees Fahrenheit for about 24 hours.

For patients who experience sudden cardiac arrest, much of the damage happens after the heart starts pumping blood again. The rush of blood returning to the brain can cause inflammation and other complications that often result in neurological damage and a slow, challenging recovery. Cooling the body helps it adapt to the return of blood flow. Because she received immediate CPR and then therapeutic hypothermia at UK, Deborah has returned to a normal, healthy life. She’s back playing classical music on her viola and working as a viola professor in the music department at UK, as well as enjoying the local arts scene once again.

“The whole series of events had to happen for me to recover properly like this,” Deborah said. “I was extremely lucky. UK took good care of me.”

Deborah Lander

The Gill’s services are tailored to the needs of each community and range from nuclear stress testing to consultative services for electrophysiology. We also provide access to physicians board-certified in advanced heart failure, who can best determine the need for transplantation or a ventricular assist device. We also work with regional providers to ensure that the most appropriate care is delivered, always based on the latest evidence and technological advances. Our key partnerships include:

• Collaboration with Appalachian Regional Healthcare, providing comprehensive cardiovascular services that benefit the people of Eastern Kentucky. Since 2011, UK CT surgeon Dr. Edward Setser has performed cardiothoracic operations at Hazard ARH Medical Center.

• Through a new agreement, UK and ARH jointly manage cardiovascular services at Hazard and five other ARH locations. In 2013 Appalachian Heart Center physicians Drs. Vidya Yalamanchi, Nageswara Podapati, and Srinivasa Appakondu, who have the largest cardiology practice in the region, joined the Gill Heart office in Hazard.

• Our partnership with Norton Healthcare allows patients in need of cardiac transplantation or ventricular assist devices to have their initial evaluation close to home. We also offer residents of Louisville access to the most experienced structural heart and valve team in the region for minimally invasive procedures, such as transcatheter aortic valve replacement.

• In affiliation with Clark Regional Medical Center, UK cardiologist Charles Salters, MD, provides daily care of heart patients in the hospital as well as a nearby office setting, to meet the needs of patients in the Winchester, Kentucky area.

• UK cardiologists also provide heart care at Rockcastle Regional Hospital, located in Mount Vernon, Kentucky, electrophysiology services at Ephraim McDowell Regional Medical Center in Danville, Kentucky, and at St. Claire Regional Medical Center in Morehead, Kentucky.
Women’s Heart Health

Cardiovascular disease is the leading cause of death in U.S. women, with nearly a quarter million women dying from coronary heart disease, heart failure and stroke every year. Indeed, more women will die from these causes than from the top five forms of cancer combined. Women in Kentucky die from heart disease at a rate 23 percent higher than the national average. Nearly 80 percent of all cardiac events in women could be prevented if women made the right choices for their hearts involving diet, exercise and abstinence from smoking. Recent studies show that women with suspected CVD are less likely than men to be referred for diagnostic testing and less likely to undergo invasive testing or aggressive early treatment. This gender bias alone is reason enough for women to take a proactive role in understanding their risk of CVD. The Gill Heart Institute’s Women’s Heart Health Program was created to serve the needs of women by providing a comprehensive approach to their cardiac care.

The Women’s Heart Health Program is dedicated to offering support, education and clinical services to help women prevent and live with heart disease. The program is led by a team of four women cardiologists and two nurse practitioners with advanced training in cardiovascular medicine. Our faculty is actively engaged in understanding why heart disease is different in men and women and optimizing strategies for the treatment of all our women patients.
UK’s rich history of women cardiologists

At the tender age of five, Dr. Jacqueline Noonan began dreaming of becoming a doctor. “It never dawned on me that there would be prejudice because I was a woman,” Noonan said. “I never presumed that if anything bad or good happened to me, it had anything to do with my gender.”

During her more than 52 years as a cardiologist, Dr. Noonan has received numerous accolades, including having a congenital heart disorder named after her, Noonan Syndrome, which is characterized by distinct facial traits, short stature, and congenital heart defects. It’s often one of those ‘gotcha’ questions on a med school exam.

Today, Dr. Noonan is one of eight women heart specialists at UK HealthCare who have carried on a strong tradition of women cardiologists. “We are fortunate to have had several female icons in cardiology at UK – Jacqueline Noonan, Nancy Flowers, and Cindy Grines among them,” said Dr. Susan S. Smyth, chief of the Division of Cardiovascular Medicine and director of the Gill Heart Institute. “These trailblazing women made fundamental contributions to congenital heart disease, electrophysiology, and percutaneous management of heart disease. Their dedication to the field opened many doors for other women.”

In addition to Drs. Noonan (who still works with medical students on a daily basis and has taught every year since the UK College of Medicine began in 1961), Flowers, and Smyth, other current female faculty specializing in heart disease at UK HealthCare are cardiologists Dr. Alison Bailey, Dr. Sara Rugg, Dr. Melina Aguinaga-Meza, Dr. Anna Kamp, director, pediatric electrophysiology lab, and Dr. Carol Cottrill, a pediatric cardiologist.

Despite leading a tradition of women cardiologists at UK, Dr. Noonan stresses that gender shouldn’t play a role in someone’s dream to become a cardiologist, or any type of doctor. “If you have a passion for something, go for it,” she said. “If it’s a difficult road, you’ve just got to be willing to work hard. Work hard and you will succeed.”
Cardiovascular Wellness and Rehabilitation

UK Cardiac Rehabilitation offers a comprehensive program of medical evaluation, supervised exercise, risk-factor modification, and medication optimization, to improve the chance of survival and lower the risk of another cardiac event. Headed by Alison L. Bailey, MD, the team includes cardiologists, a cardiac nurse specialist, exercise physiologists, and registered dieticians.

Working with the team, each patient learns how to lower his or her own risk of future cardiac events and become more educated about heart disease. Another aspect is to increase physical activity levels and improve their quality of life.

Once structured cardiac rehabilitation is completed, individuals may enroll in the “OH” program for Optimal Health, an ongoing cardiovascular risk-reduction plan.

Million Hearts™ Campaign

The Gill Heart Institute’s cardiologist Alison Bailey, MD, is the state team leader for the CDC’s Million Hearts™ campaign. The goal of this national initiative is to prevent 1 million heart attacks and strokes over the next five years.

Million Hearts brings together communities, health systems, nonprofit organizations, federal agencies, and private-sector partners from across the country to fight heart disease and stroke.

Says Bailey: “In Kentucky, we have very high rates of smoking, and when adults smoke their children are exposed to the dangerous effects of second-hand smoke, and they’re much more likely to smoke as adults themselves. In addition, Kentucky also has high rates of diabetes, obesity and hypertension and some of the lowest rates of physical activity in the nation.”
Faculty

Susan S. Smyth, MD, PhD
Jeff Gill Professor of Cardiology
Chief, Division of Cardiovascular Medicine
Medical Director, Gill Heart Institute
- Antithrombotic therapy
- Platelet and vascular biology
- Translational cardiovascular medicine

Alison L. Bailey, MD
Associate Professor of Medicine
Director, Cardiac Rehabilitation and Wellness Program
- Cardiac rehab and heart disease prevention
- Women’s heart health
- Critical care cardiology

Charles L. Campbell, MD
Associate Professor of Medicine
Director, Inpatient Services
Director, Cardiovascular Medicine Fellowship Program
- Congestive heart failure
- Critical care cardiology
- Ischemic heart disease

Craig Chasen, MD
Associate Professor of Medicine
Clinical Cardiology
- Cardiovascular disease prevention
- Hypertension and lipid management

Melina Aguinaga-Meza, MD
Assistant Professor of Medicine
- Cardiac intensive care
- Women’s heart health
- General cardiology

Nancy C. Flowers, MD
Professor of Medicine
Heart Station
- Electrocardiography

Paul Anaya, MD, PhD
Associate Professor of Medicine
- Atherosclerosis
- Echocardiography
- Nuclear cardiology
- Critical care cardiology

Leo G. Horan, MD
Professor of Medicine
Heart Station
- Electrocardiography
Adult Cardiovascular Services

**Rick R. McClure, MD**
Associate Professor of Medicine
Director, Cardiology
Outreach Clinics
- Adult cardiology
- Interventional cardiology
- Peripheral vascular disease

**Thomas F. Whayne, MD, PhD**
Professor of Medicine
Director, Lipid Management Clinic
- Cardiovascular disease prevention
- Lipid management

**Navin Rajagopalan, MD**
Assistant Professor of Medicine
Director, Advanced Heart Failure Program
Medical Director, Cardiac Transplantation
- Cardiomyopathy
- Heart transplantation
- Pulmonary hypertension

**Sarah Rugg, MD**
Assistant Professor of Medicine
- Cardiovascular disease prevention
- Women’s heart health
- Echocardiography
- Hypertension

**Tracy E. Macaulay, PharmD**
Assistant Professor of Pharmacy
Director of Cardiovascular Pharmacy Services

**Sarah Brouse, PharmD**
Associate Professor of Pharmacy
Cardiovascular Pharmacy Clinical Coordinator

**Charles Salters, MD**
Assistant Professor of Medicine
- Non-invasive cardiovascular disease therapies

**Jonathan Bain, PharmD**
Cardiovascular Clinical Pharmacist

**Terri Cook, PharmD**
Cardiovascular Clinical Pharmacist

**Jeremy Flynn, PharmD**
Assistant Professor of Pharmacy and Surgery
Cardiothoracic Pharmacy Specialist

**Heather Hesselson, PharmD**
Cardiovascular Clinical Pharmacist
Clinical Trials

The Gill Heart Institute Cardiology Research Center is designed to facilitate all aspects of patient-based clinical research. This includes coordination of Phase I-IV multi-center trials, support of the infrastructure for clinical trials as well as education of faculty and fellows in clinical research methodology.

Early use of rosuvastatin in acute coronary syndromes: targeting platelet-leukocyte interactions (AVATAR)
Principal Investigator (overall): Susan S. Smyth, MD, PhD

Targeting platelet activation, platelet-leukocyte aggregates, and acute lung injury in pneumonia with ticagrelor (THIPPE)
Principal Investigator (overall): Susan S. Smyth, MD, PhD

Functional validation of lysophospholipid metabolism pathways identified by human genetics of CAD
Principal Investigator (overall): Susan S. Smyth, MD, PhD

International study of comparative health effectiveness with medical and invasive approaches (ISCHEMIA)
Principal Investigator (site): David C. Booth, MD

A study of evacetrapib in high-risk vascular disease (ACCELERATE)
Principal Investigator (site): Khaled M. Ziada, MD

Prevention of cardiovascular events in patients with prior heart attack using ticagrelor compared to placebo on a background of aspirin (PEGASUS)
Principal Investigator (site): Khaled M. Ziada, MD

A single ascending dose study examining the safety and pharmacokinetic profile of reconstituted high density lipoprotein (CSL112) administered to patients
Principal Investigator (site): Alison L. Bailey, MD

The PARIS Registry: Patterns of non-adherence to anti-platelet regimens in stented patients – an observational single-arm study
Principal Investigator (site): David J. Moliterno, MD

SOLID TIMI-52 The stabilization of plaques using darapladib-thrombolysis in myocardial infarction 52
Principal Investigator (site): Charles L. Campbell, MD

IMPROVE-IT: Improved reduction of outcomes: Vytorin efficacy international trial
Principal Investigator (site): Charles L. Campbell, MD

A multicenter, controlled, open-label extension study to assess the long-term safety and efficacy of AMG 145.
Principal Investigator (site): Alison L. Bailey, MD

LAPLACE: TIMI 57 – A double-blind, randomized, placebo-controlled, multicenter, dose-ranging study to evaluate tolerability and efficacy of AMG 145 on LDL-C in combination with HMG-CoA reductase inhibitors in hypercholesterolemic subjects
Principal Investigator (site): Alison L. Bailey, MD

NIH: Rural health outreach special initiative: Heart health in rural Kentucky Phase II
Co-Investigator: Alison L. Bailey, MD

Publications


Publications, continued


Whayne TF Jr. Effects of unemployment stress on the risk of acute MI. Cardiol Review. 2013 Feb [epub ahead of print].


UK has the region’s only state-of-the-art hybrid catheterization/OR. Here, doctors perform both open-heart and catheter-based procedures guided by fluoroscopy and ultrasound. The hybrid OR suite is optimal for collaborative procedures between interventional cardiologists and CT surgeons for the many challenging, high-risk cases referred to us.
Operating in four, state-of-the-art catheterization laboratories situated in 20,000-square-feet dedicated to procedural and peri-procedural patient care, our team of interventionalists, nurses, pharmacists, and technicians employ sophisticated technologies to approach complex cases safely and with excellent outcomes.

Our survival rates following PCI procedures are among the highest in the nation. Arteries was born at UK in the late-1980s. And as leaders in cardiovascular education, our interventional cardiology training program at UK was one of the first-ever established in the U.S.

Coronary Interventions

As a tertiary center, the cardiac catheterization laboratory performs complex coronary interventions. Between the Gill Heart Institute and the Lexington VA Medical Center, our interventional cardiologists perform more than 750 interventional coronary procedures every year. In addition to standard coronary angioplasty, we have special expertise in more complex interventional approaches that provide a higher level of diagnostic accuracy. We also perform innovative therapeutic interventions for patients with serious conditions, where standard techniques are unfeasible or inadequate.

Our substantial experience includes:

- high-risk coronary interventions with mechanical circulatory support
- restoring patency of chronic total occlusions
- rotational atherectomy for heavily calcified lesions
- optical coherence tomography
- intravascular ultrasound and virtual histology
- pressure wire assessment of coronary lesions

Mortality after PCI by hospital

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2013 Gill Heart Institute State of the Heart | University of Kentucky
Transradial Access for Coronary Procedures

Adoption of transradial access has been one of the most significant improvements to the technique of coronary angiography and interventions in the last two decades. European and Asian operators have advocated this approach for a longer period, but its adoption by U.S. cardiologists has been slow. Traditionally, access to the coronary arteries has been via the femoral artery, which is technically easier and allows the use of larger catheters. However, that approach has a higher risk of access-site bleeding, prolonged bed rest for the patient, and the frequent use of expensive femoral closure devices. Radial artery access for coronary angiography and interventions requires some technical expertise, but has been shown to improve safety of procedures by eliminating most of the risk of bleeding at the entry site. It is also advantageous for patients with difficulty lying down (for example, those with back pain, obesity, and congestive heart failure).

The radial approach allows earlier patient ambulation and greater comfort during and after the procedure. Because of the enhanced safety, this approach is advocated by national and international societies as the preferred method for performing coronary procedures. UK operators have been the forerunners of radial access adoption in this region, as well as the country. With the largest radial access program in the area, the percentage of interventional coronary procedures performed via the radial artery at the Gill Heart Institute is over 40% (more than twice the national average). It is used diagnostically in nearly 90% of our cath lab cases.

47%

PCI procedures performed via transradial access – twice the national average

TAVR Program

UK’s Gill Heart Institute is one of a select number of sites in the United States to offer the new, minimally invasive procedure called transcatheter aortic valve replacement (TAVR), which uses the Edwards Sapien transcatheter heart valve. The first aortic valvuloplasty at UK was performed in 1984. Building on nearly 30 years of expertise, our physicians have expanded the range of catheter-based repair to mitral, pulmonic, and prosthetic valve diseases.

With the addition of TAVR in 2012, the UK Gill Heart Institute continues to offer the most comprehensive transcatheter valve program in the region. The innovative procedure delivers a replacement valve via catheter while the heart is still beating. Clinical data is promising from the Partner trial: the two-year, all-cause mortality rate is 43%, compared with 68% for patients treated medically. Recovery time averages from one to two weeks.

More than 45 successful procedures have been performed since the program’s inception less than a year ago, making it the largest TAVR program in the region.

Led by interventional cardiologist John C. Gurley, MD, UK’s heart valve team includes cardiologists, cardiac surgeons, advanced imaging specialists, cardiac anesthesiologists, nurse practitioners and care coordinators. The team performs TAVR and other minimally invasive heart valve procedures in UK’s state-of-the-art hybrid operating suite.
Cardiovascular Emergencies

Acute Myocardial Infarction

We were the first hospital in the area to allow emergency medical services (EMS) to bring patients experiencing heart attack symptoms directly to our cardiac catheterization lab. Bypassing the emergency department, EMS can rapidly transport patients by ambulance or helicopter to our team and reduce treatment time. By employing this approach and numerous other streamlining processes, the Gill’s door-to-balloon time now averages 57 minutes, well under the 90-minute standard set by the American Heart Association and American College of Cardiology.

Together with Norton Healthcare in Louisville, KY, we have developed a regional referral system for managing ST-elevation myocardial infarction to improve heart attack mortality in the Commonwealth of Kentucky.

Our interventional fellowship training program was one of the first in the U.S.

Cardiogenic Shock

Although cardiogenic shock is an infrequent presentation of STEMI, it remains the most common cause of death in the early phase. The Gill Heart Institute has become a destination for the management of these extremely high-risk patients. The proportion of cardiogenic shock patients among our interventional volume is almost five-fold that of average catheterization laboratories in the U.S. This has allowed our team to develop great expertise in managing these patients, who frequently require complex mechanical hemodynamic support, in addition to complex angioplasty procedures. Our team of interventionalists and CT surgeons work seamlessly, and in 24/7-fashion, to provide numerous alternatives of hemodynamic support such as implantation of percutaneous ventricular assist devices, use of extra corporeal membrane oxygenators (ECMO), and emergency cardio-pulmonary bypass.

Pulmonary Embolism

Massive or submassive pulmonary embolism can be a rapidly fatal condition. Traditional anticoagulation therapy alone may not be adequate for treatment of patients with hemodynamic distress. In those, immediate and additional procedures to reduce the blood clot burden may be needed to relieve the hemodynamic stress on the right side of the heart and to reduce the risk of long-term complications such as the development of persistent pulmonary hypertension.

As one of a few sites participating in the SEATTLE multi-center clinical trial, we developed expertise in the use of a catheter-based ultrasonic system (EKOS) to deliver thrombolytic therapy directly into the blood clots in the pulmonary arteries. Based on that experience, and in close collaboration with our ED physicians and pulmonologists, a 24-hour multidisciplinary PE rapid response team was formed, Activate for Pulmonary Embolism (APE). Utilizing an assigned pager, the APE team coordinates the swift delivery of care for patients, including many sent here from other regional hospitals. For select patients who may benefit from catheter-directed fibrinolysis, these patients are brought directly to the UK cath lab for immediate treatment. With this approach we are able to improve clot dissolution, more rapidly reduce pulmonary pressures, and improve right-ventricular function, than what can be achieved with standard use of anticoagulation drugs.
**Structural Heart Disease**

UK offers the greatest expertise in structural heart disease in central Kentucky. The Gill’s structural and transcatheter valve programs are led by two of 2013’s Best Doctors in America™, Dr. John C. Gurley, director of UK’s Interventional Cardiology Program and Dr. Khaled M. Ziada, director of UK’s catherization laboratories.

Our program is Kentucky’s leader in the research and development of catheter-based valve replacement and heart defect repair. Our cardiologists and surgeons have years of experience in performing these procedures, as well as those only recently approved by the FDA, including:

- For patients with inoperable or at high surgical risk, we perform transfemoral and transapical approaches to aortic valve replacement, and will offer the transaortic approach in 2013.
- Catheter-based mitral valve intervention for mitral stenosis.
- For patients with atrial fibrillation unable to tolerate anticoagulant therapy, we perform left atrial appendage closure using the LARIAT suture delivery device and will soon offer the Amplatzer™ Cardiac Plug (ACP), on an investigational basis.
- Catheter-based closure of patent foramen ovale, atrial septal defect, and ventricular septal defect.
- Alcohol septal ablation for hypertrophic obstructive cardiomyopathy in select patients.

**Peripheral Interventions**

In addition to coronary procedures, UK interventional cardiologists are highly experienced in peripheral and cerebrovascular interventional procedures. Hundreds of renal, iliac and femoral procedures are performed at the Gill Heart Institute every year with excellent outcomes. Many of these procedures are referred to the Gill from other hospitals for their complexity, and require innovative approaches such as transpopliteal access, subintimal dissection with ultrasound-guided re-entry, and/or atherectomy.

Our skilled interventional cardiologists also offer extracranial cerebrovascular interventions including subclavian, vertebral, and carotid angioplasty and stenting. The team has been part of the national FDA-mandated registry that examined the outcomes of carotid stenting following approval of devices for clinical use. We are committed to the very best procedures and pay the utmost attention to patient safety—that is why all of our carotid procedures are performed using distal or proximal protection systems to guard against embolic events.

The vascular surgery team has nationally recognized expertise in endovascular treatment of abdominal aortic aneurysms. Our interventional cardiologists’ capabilities include endovascular treatment of renal, iliac and femoral occlusions, use of atherectomy devices, and use of specialized intravascular ultrasound-guided techniques for crossing totally occluded segments. The group also offers endovascular treatment of carotid and subclavian disease using the latest technologies for cerebral protection, and was part of the largest FDA-mandated national registry for carotid stenting, which ensured both the appropriateness and the high quality of carotid procedures across the country.

**Management of Resistant Hypertension**

Management of resistant hypertension via renal denervation is another recent innovation available at the Gill cath labs. This involves using radiofrequency catheters to ablate the sympathetic nervous plexus surrounding the renal artery. It is offered by a limited number of centers across the country in the context of Phase III clinical trials. We are the first center in Kentucky included in this important national study and have the most experience in the region with this therapy.
Cardiovascular Interventions

Faculty

**John C. Gurley, MD**  
Professor of Medicine  
Director of Interventional Cardiology  
- Coronary, structural heart and vascular interventions  
- Transcatheter valve procedures  
- Emerging technologies

**David J. Moliterno, MD**  
Jack M. Gill Professor and Chairman  
Department of Internal Medicine  
Senior Associate Dean for Clinical Affairs  
- Coronary interventions  
- Ischemic heart disease

**Ahmed Abdel-Latif, MD, PhD**  
Assistant Professor of Medicine  
- Coronary interventions  
- Stem cell research

**Lawrence Rajan, MD**  
Assistant Professor of Medicine  
- Coronary interventions  
- Peripheral vascular interventions

**David C. Booth, MD**  
Endowed Professor of Medicine  
Director, Pulmonary Hypertension  
Chief, Cardiology, Lexington VAMC  
- Coronary interventions  
- Acute cardiac disease  
- Pulmonary hypertension  
- Heart and lung transplantation

**Khaled M. Ziada, MD**  
Associate Professor of Medicine  
Director, Cardiac Catheterization Laboratories and Interventional Fellowship Program  
- Coronary and peripheral interventions  
- Transcatheter valve procedures  
- Carotid interventions

**Adrian Messerli, MD**  
Associate Professor of Medicine  
- Acute coronary syndrome and preventions  
- Peripheral vascular interventions

**Not Pictured**

**Vicky Turner, APRN**  
Valve Program Coordinator
Clinical Trials

ABSORB III—“A Clinical Evaluation of Absorb™ BVS, the everolimus-eluting bioresorbable vascular scaffold in the treatment of subjects with de novo native coronary artery lesions

Principal Investigator (site): Khaled M. Ziada, MD

AMR-001 versus placebo post-ST segment elevation myocardial infarction (PreSERVE AMI)

Principal Investigator (site): Ahmed Abdel-Latif, MD, PhD

Global assessment of plaque regression with a PCSK9 antibody as measured by intravascular ultrasound (GLAGOV)

Principal Investigator (site): Khaled M. Ziada, MD

GORE HELEX septal occluder and antiplatelet medical management for reduction of recurrent stroke or imaging-confirmed TIA in patent foramen ovale (PFO) (the REDUCE study)

Principal Investigator (site): John C. Gurley, MD

Drug-eluting stents vs. bare metal stents in saphenous vein graft angioplasty (DIVA)

Principal Investigator (site): Khaled M. Ziada, MD

Renal denervation in patients with uncontrolled hypertension (SYMPLECTIC HTN-4)

Principal Investigator (site): Khaled M. Ziada, MD

Multi-center, randomized, single-blind, sham-controlled clinical investigation of renal denervation for uncontrolled hypertension (EnligHTN IV)

Principal Investigator (site): Khaled M. Ziada, MD

A prospective, single-arm, multi-center trial of Ekosonic® endovascular system and activase for treatment of acute pulmonary embolism (SEATTLE II)

Principal Investigator (site): John C. Gurley, MD

PREMIUM migraine trial – prospective randomized investigation to evaluate incidence of headache reduction in subjects with migraine and PFO using the AMPLATZER PFO occluder compared to medical management

Principal Investigator: John C. Gurley, MD

WATCHMEN left atrial appendage system for embolic protection in patients with atrial fibrillation

Principal Investigator (site): John C. Gurley, MD

AMPLATZER Cardiac Plug (ACP) clinical study

Principal Investigator (site): John C. Gurley, MD

Closure of muscular ventricular septal defects with the Amplatzer muscular VSD occluder–post approval study

Principal Investigator (site): John C. Gurley, MD

Closure of atrial septal defects with the Amplatzer septal occluder – post market study II (ASD PMS II)

Principal Investigator (site): John C. Gurley, MD

Publications


Cardiovascular Interventions

 Publications, continued


When he learned a valve in his heart needed to be replaced, 81-year-old Robert Kraus was totally against it. He was adamant doctors would not perform an open-chest procedure on him. Not at his age. Fortunately for Kraus, he landed at the right place at just the right time and became the first patient at the University of Kentucky to undergo TAVR – Transcatheter Aortic Valve Replacement. Krauss, a psychiatrist, knew one thing he didn't want was open-heart surgery: “When you get to be my age, most of the people you know who have it done don’t do very well,” said Kraus. “They wind up depressed or demented, and it took them a year or more to recuperate. So I was against that.”

After learning of his patient’s feelings regarding open-heart surgery, Dr. John C. Gurley presented Kraus with an alternative – a new, minimally invasive TAVR procedure. When Gurley told Kraus that he would be a candidate for the first such procedure done at UK, Kraus agreed to the surgery. “He had no hesitation,” Gurley recalled.

TAVR is the latest addition to UK’s comprehensive catheter-based structural heart program, which began offering balloon valvuloplasty in 1985. In a healthy heart, the aortic valve is able to open wide, allowing the heart to pump oxygenated blood to the body. In aortic stenosis – Kraus’ diagnosis – the valve is unable to open adequately, resulting in an obstruction of blood flow from the heart chamber into the aorta. When the blood flow is obstructed, less oxygen is able to flow through, and patients can suffer from shortness of breath, chest pains or fainting episodes.

“I started to complain of dizziness and balance problems, and I felt nauseous all the time,” Kraus said. “I used to be very energetic. I found myself spending a lot of time just sitting in a chair.” Kraus said he then began falling frequently – something he had never done before. It was at that point that doctors pinpointed the problem to a valve in Kraus’ heart.

Within hours of his surgery, Kraus was talking and making jokes with doctors. The next day, Gurley walked into Kraus’ room to find him reading a book on the psychiatric history of the Civil War. “At that point, it was clear that his mental function was not compromised at all,” Gurley said. “The operation was an outstanding success.”

Kraus said part of the reason he had no hesitation in being the first to have this procedure at UK was because of the facility itself and his knowledge of the level of expertise at the Gill Heart Institute. “My feeling – my particular bias – is that the place to be is a place like this,” Kraus said. “The people here are trained and have the skills necessary to do these sort of procedures. That’s the advantage of a big academic medical center. The continuity of care here is unprecedented,” he added. “This team is dedicated to performing these types of procedures. That’s all they do.”

Kraus spent five days in the hospital before returning home, where his rehabilitation included physical therapy. Just a few days after returning home, Kraus celebrated his 82nd birthday. “This is my birthday present,” Kraus said. “The new valve.”
A snapshot of surgery is like viewing an Old Master painting, each figure plays a crucial role, and even the smallest detail or gesture is essential to the final work. Here, Dr. Michael Sekela and his team perform coronary bypass surgery.
Cardiothoracic Surgery

The Division of Cardiothoracic Surgery is engaged in all areas of academic practice. Our surgeons are committed to compassionate patient care, which is reflected in our many excellent outcomes. Our surgeons are internationally known and engaged in research supported by the NIH, and other. They are also dedicated teachers, passing on the art and science of medicine to medical students, residents and fellows.

Under the direction of Dr. Sibu P. Saha, Professor of Surgery and Bioengineering, the primary mission of our physicians and staff is to provide the most appropriate and safest care for all of our patients.

UK’s CT surgeons are accomplished in the areas of major aortic surgery, coronary bypass, beating-heart cardiac operations, arrhythmia surgery (the MAZE operation), and minimally invasive techniques that include robotic surgery. We provide specialized care for heart failure patients, including cardiac assist devices and heart and multiple-organ transplantation.

UK is pleased with the recent return of well-known heart surgeon, Dr. Michael Sekela, to the place where he first pioneered advanced heart surgeries and transplants, in the early 1990s. Dr. Sekela brings with him a wealth of technical skills and unparalleled expertise in cardiovascular surgeries, particularly for highly complex procedures on patients who have undergone open-heart surgeries in the past.

Joining Dr. Sekela is CT surgeon, Theodore S. Wright, MD, the region’s expert on atrial fibrillation surgery (the MAZE operation). This is done via thoracoscopic approach that includes bilateral pulmonary vein isolation, creation of superior and inferior connecting lines, ganglionic plexi ablation, and ligation of the left atrial appendage—the major source of stroke in nonvalvular atrial fibrillation.

Entering a new frontier in collaborative medicine, with TAVR team leader Dr. John C. Gurley (Director of Interventional Cardiology), surgeon Dr. Hassan Reda is a key member of our transcatheter aortic valve replacement program for treatment of aortic valve stenosis. For patients who are either inoperable or at high surgical risk, the team performs transfemoral and transapical approaches to aortic valve replacement in the state-of-the-art hybrid OR, and will offer the transaortic approach in late-2013. More than 45 successful procedures have been performed since the program’s
inception less than a year ago, making it the largest TAVR program in our region.

Our cardiothoracic surgeons remain committed to responding to patient needs, whether it is to provide a much-needed surgical specialist in the local community or to accept the transfer of a critically ill heart patient to UK hospital. In cooperation with Appalachian Regional Healthcare’s Heart Institute, we’ve helped expand patient treatment options by providing access to cardiothoracic surgery expertise that benefits the people of Eastern Kentucky. Since 2011, UK faculty CT surgeon, Dr. Edward Setser, has practiced full-time in Hazard, conducting operations at Hazard ARH Medical Center. Our goal is to keep patients close to home for as much of their medical care as possible, offering our specialized services and resources where they’re needed most.

Six-Year CT Surgery Program

UK’s Division of Cardiothoracic Surgery recently launched an integrated 6-year training program, directed by Timothy W. Mullet, MD. The ACGME-accredited program allows physicians to begin their CT surgery training immediately after graduating from medical school, rather than after the traditional five years of general surgery, and to learn the discipline in a comprehensive manner throughout their training.

Over the past 15 years, the scope and breadth of cardiothoracic surgery has expanded exponentially. Having six years in a comprehensive curriculum allows surgical trainees the time necessary to learn many of the skill sets presently being neglected, such as catheter-based techniques, cardiac electrophysiology, thoracic oncology, interventional bronchoscopy, benign foregut surgery, and vascular surgery techniques, to name a few. UK’s program is divided into two introductory years, where time is allotted for rotations in endoscopy, trauma, cardiology, and cardiac imaging. The training then culminates with more intensive, hands-on operative experience in adult cardiac and thoracic surgery, and transplantation. The six-year program has been specially designed to provide the resident in-depth experience in many aspects of cardiac and thoracic care, which are most relevant to CT surgery.

The Widow Maker

Vickie Rowe knew something was wrong that morning as soon as she saw her husband sitting oddly on the front porch of their Harlan County home. She helped him inside to the couch and quickly called for an ambulance. But as Vickie lay down the phone she turned to find her husband having a heart attack…right before her eyes.

It came with little warning. In fact, the day before Bobby Rowe had assembled a trampoline and gone about his chores and projects as usual. The 49-year-old security manager was accustomed to hard work. He had a hobby of restoring old cars and had recently started on a vintage ’63 Impala. Bobby did not much care for doctors, so he had not been to one in a while. But both his parents had cardiovascular disease. Later, in addition to heart disease, he’d discover he also had diabetes, which had silently been damaging his heart.

Dr. Nageswara Rao Podapati, a cardiologist working at Hazard ARH Medical Center, later told Vickie that Bobby had experienced a major myocardial infarction that morning. “He said it was the Widow Maker,” remembered Vickie. And it nearly was as Bobby suffered several more cardiac arrests that day in June, 2012. And things continued to get worse. As Dr. Rao Podapati was placing stents to open Bobby's blocked arteries, his patient went into cardiopulmonary arrest. The medical team at Hazard ARH began aggressive chest compressions.

continued on page 35
Faculty

Cherry Ballard-Croft, PhD
Associate Professor of Surgery
- Ischemic heart disease
- Ventricular assist devices (VADs)

Victor A. Ferraris, MD, PhD
Tyler Gill Professor of Surgery
- Post-operative bleeding
- Adult cardiac and non-cardiac chest disease
- Adult vascular disease

Angela L. Mahan, MD
Assistant Professor of Surgery
- General thoracic surgery
- Thoracic oncology
- Minimally invasive surgery

Jeremiah T. Martin
Assistant Professor of Surgery
- General thoracic surgery
- Thoracic oncology
- Surgical robotics (da Vinci)
- Foregut surgery
- Surgical education

Timothy W. Mullett, MD
Professor of Surgery
- End-stage lung disease
- Esophageal cancer
- Lung cancer
- Mediastinal tumor
- Pleural effusion
- Pulmonary metastases

Hassan K. Reda, MD
Associate Professor of Surgery
- Valvular heart disease
- Coronary artery surgery
- Left ventricular aneurysm surgery
- Aortic aneurysm surgery
- Transfemoral/transapical aortic valve replacement

Sibu P. Saha, MD, MBA
Chief, Division of Cardiothoracic Surgery
Professor of Surgery and Bioengineering
Chairman, Director’s Council of Gill Heart Institute
- Thoracic and vascular surgery

Michael Sekela, MD
Professor of Surgery
- Adult cardiac and vascular surgery
- Valvular cardiac surgery
- Minimally invasive/robotic cardiac surgery
- Reoperative/complex adult cardiac surgery
Dr. Hassan Reda

UK cardiothoracic surgeon Dr. Hassan Reda, who happened to be in Hazard covering for his partner, Ed Setzer, was called into the room. “He had reached the limit where there was nothing more to do. We could not bring him back,” Reda recalled. The team was ready to call it quits when Reda noticed a trace of blood pressure, offering a tiny sliver of hope to save Bobby’s life. Reda urged the team to continue.

Bobby’s life was saved that day, probably due to the stents Dr. Rao Podapati had inserted just in time, which kept Bobby’s arteries open and allowed blood to flow through his heart. Bobby was later transferred to UK Chandler Hospital for further treatment, where the Gill’s inpatient team of cardiologists and critical care nurses made sure the life-saving work done in Hazard had the best possible result. After recuperating at UK, and at home under Vickie’s watchful eye, Bobby is back to tinkering on cars in Harlan County. Though Bobby has some limits to what he can do, his prognosis is very good. He will be returning periodically to Lexington for follow-up care. His diabetes is under control and his wife has changed his diet.

“I can’t tell you how long it’s been since he had a hot dog or a hamburger,” Vickie said, laughing. Vickie was pleased with the care throughout her husband’s ordeal in Hazard and during his time at UK, and says she is thrilled with the “outcome.” She chuckles and points to her husband: “It’s sitting right over there in the chair.”
Clinical Trials

A phase IIb, randomized, double-blind, placebo-controlled, safety and efficacy trial of multiple dosing regimens of ABT-719 for the prevention of acute kidney injury in subjects undergoing high risk cardiac surgery
Primary Investigator: Hassan Reda, MD

Platelet function in early stage lung cancer – a pilot study
Primary Investigator: Victor Ferraris, MD

A randomized, open label, parallel-group, multicenter trial to compare efficacy and safety of TachoSil® versus Surgicel® Original for the secondary hemostatic treatment of needle hole bleeding in vascular surgery

A prospective, single-blind, randomized, phase III study to evaluate the safety and efficacy of Fibrin Sealant Grifols (FS Grifols) as an adjunct to hemostasis during peripheral vascular surgery
Primary Investigator: Sibu Saha, MD

Spiration IBV valve system-humanitarian use device
Primary Investigator: Timothy Mullett, MD

A phase II, randomized, double-blind, multinational, placebo-controlled, parallel-groups study to evaluate the safety and efficacy of intramuscular injections of Allogeneic PLX-PAD cells for the treatment of subjects with intermittent claudication (IC)
Primary Investigator: Sibu Saha, MD

Publications


Publications, continued


**Ferraris VA**. Severe blood conservation: Comment on outcome of patients who refuse transfusion after cardiac surgery. *Arch Intern Med.* 2012 Jul 2;7-8.


The division of Vascular and Endovascular Surgery is staffed with thought leaders in the treatment of vascular disorders of the arterial, venous, and lymphatic system, including treatment of cerebrovascular disease, aneurysmal and occlusive disease of the aorta, iliac, and peripheral arteries.

Led by Eric M. Endean, MD, the division’s renowned faculty have authored surgical textbooks and invented surgical techniques considered cutting edge in the field of vascular medicine. While both open and endovascular techniques are utilized for treatment of our patients, UK vascular surgery faculty are especially interested in translating the latest findings into minimally invasive surgical procedures for some of the most complicated cases in the state.

UK houses an advanced and nationally certified vascular laboratory dedicated to ultrasound and imaging tests. Together with state-of-the-art computerized tomography and magnetic resonance imaging technology, our vascular imaging capabilities enable the diagnosis of the presence and severity of vascular disease before any invasive procedure is undertaken.

Many of the vascular surgeries are performed in UK’s state-of-the-art hybrid operating room, which is equipped with all the tools needed for treating the most complex vascular conditions. The new hybrid, catheterization/OR is the only one in the region. Here, doctors can perform both open surgery and catheter-based procedures guided by fluoroscopy and ultrasound. The space allows our program’s team to provide unparalleled comprehensive care to challenging, high-risk patients.

The vascular surgery faculty is actively involved in research as it pertains to the development of endovascular techniques, acute mesenteric ischemia, effects of obesity on surgical outcome, and treatment of aneurysms. They are joined by basic and translational investigators who enjoy international recognition for developing preclinical models for studying the development and progression of abdominal aneurysms. Led by Alan Daugherty, PhD, UK researchers have been instrumental in defining the role of inflammation in the disease process and non-surgical therapy for abdominal aortic aneurysm.

Our surgeons are also committed to education of surgery residents, who rotate on the vascular and endovascular surgery service during their first, third and fifth years of training, and gain experience in 50 or more major vascular operations including carotid, aortic, and lower extremity revascularizations.

Further advanced training in vascular and endovascular surgery is offered through an ACGME-approved fellowship. The fellowship is two years in duration, with the first year focusing primarily on open vascular surgical reconstructions. The second year includes an intensive endovascular experience and training in the non-invasive vascular laboratory.
Faculty

Eric D. Endean, MD
Gordon L Hyde Endowed Professor
Chair, Vascular Surgery Program
Director, General Surgery Residency Program
• Abdominal aortic aneurysm
• Carotid artery disease
• Mesenteric ischemia
• Peripheral vascular occlusive disease

Ehab E. Sorial, MD
Assistant Professor
• Abdominal aortic aneurysm
• Carotid artery disease
• Cerebrovascular disease
• Mesenteric ischemia
• Peripheral vascular occlusive disease

Joseph L. Bobadilla, MD
Assistant Professor
• Carotid stenting
• Endovascular open thoracic aortic aneurysm repair
• Spinal ischemia after complex aortic surgery
• Venous disease

David J. Minion, MD
Associate Professor
• Carotid stenting
• Cerebrovascular arterial disease
• Endovascular aortic aneurysm repair
• Ischemic nephropathy
• Thoracic aneurysm repair

Eleftherios S. Xenos, MD, PhD
Assistant Professor
• Abdominal aortic aneurysm
• Dialysis access
• Renovascular hypertension
• Thoracoabdominal aneurysm

Vascular surgeon Eleftherios S. Xenos, MD serves as UK HealthCare’s Medical Director of Patient Safety. In this position, Dr. Xenos strengthens our effort to provide safe and high quality care to every patient and provides enterprise-wide leadership to enhance our culture of safety and eliminate patient harm.

A particularly important function of his position is fostering constructive relationships between clinical and administrative leaders across the medical center.
Vascular and Endovascular Surgery

Publications

**Bobadilla JL.** From ebers to endografts: A historical perspective on aortic surgery. *Aorta.* 2013 [in press].


Rubinstein C, Davenport DL, Dunnagan R, **Sahani VA,** **Xenos ES.** Intraoperative blood transfusion of one or two units of packed red blood cells is associated with a five-fold risk of stroke in patients undergoing elective carotid endarterectomy. *J Vasc Surg.* 2013 Feb;57(2 Suppl):S33-S35.


Vallabhaneni R, **Sorial EE,** Jordan WD Jr, **Minion DJ,** Farber MA. Iliac artery recanalization of chronic occlusions to facilitate endovascular aneurysm repair. *J Vasc Surg.* 2012 Dec;56(6):1549-64.


Heart Rhythm Program

The Gill Heart Institute’s Heart Rhythm Program brings together a team of certified cardiac electrophysiologists, cardiovascular surgeons, cardiologists and cardiac anesthesiologists for the management and treatment of cardiac rhythm disorders. This collaborative approach enables the development of patient-centered, combination treatment therapies including medical management, cardiac resynchronization therapy (CRT), and both catheter-based and minimally invasive surgical solutions.

Our electrophysiology services include implantation of MRI-compatible pacemakers, implantable cardioverter defibrillators (ICDs) including biventricular devices, and advanced ablation procedures for rhythm disturbances such as atrial fibrillation (AF), atrial flutter, supraventricular tachycardia or ventricular tachycardia. Our highly skilled surgical teams utilize robotic systems, magnetic catheter guidance and the latest 3-D mapping technology to perform procedures with a very high success rate.

Rethinking Digoxin

Digoxin, widely used to treat heart disease, increases the possibility of death when used by patients with atrial fibrillation, according to a recent study led by UK electrophysiologists Dr. Samy-Claude Elayi. The results were published in the European Heart Journal (Increased mortality among patients taking digoxin—analysis from the AFFIRM study. Eur Heart J. 2013 May;34(20):1481-8), and raises serious concerns about the expansive use of this long-standing heart medication in patients with atrial fibrillation.

Elayi and his team analyzed data from 4,060 patients enrolled in the landmark Atrial Fibrillation Follow-up Investigation of Rhythm Management (AFFIRM) trial. This analysis was intended to determine the relationship between digoxin and deaths in this group of patients.
with atrial fibrillation, and whether digoxin was directly responsible for some deaths. “These findings raise important concerns about the safety of digoxin, one of the oldest and most controversial heart drugs,” said Dr. Steven E. Nissen, chair of cardiovascular medicine at the Cleveland Clinic. “Although considered obsolete by some authorities, digoxin is still widely used. A thorough review by the FDA is warranted to determine whether regulatory action is needed, including stronger warnings about the use of digoxin in patients with atrial fibrillation.”

The results of the analysis found that digoxin was associated with a 41 percent increase in deaths from any cause, after controlling for other medications and risk factors. An increase in deaths occurred regardless of gender or the presence or absence of underlying heart failure. Digoxin was also associated with a 35 percent increase in deaths from cardiovascular causes, and a 61 percent increase in deaths from arrhythmias or problems with the rate or rhythm of the heartbeat.

“Within five years of use, one additional AF patient out of six taking digoxin – compared to those not on digoxin in the AFFIRM trial– will die from any cause,” Elayi said. “One additional patient out of eight will die from cardiovascular causes, and one additional patient out of 16 will die from arrhythmias.

“This study calls into question the widespread use of digoxin in patients with AF, particularly when used for controlling AF rate in a similar way as in the AFFIRM trial,” Elayi said. “These findings suggest that physicians should try to control a patient’s heart rate by using alternatives such as beta-blockers or calcium blockers, as a first line treatment.

Living “Shock-Free”

At 42, Ollie Whitaker suffered a massive heart attack. Her life, she said, changed forever. “I never could do much of anything since the heart attack,” said Ollie, now 72. “I went to doctors, and they tried everything until there was no more to offer.”

That was before she met Dr. Samy Claude Elayi, a cardioelectrophysiologist with UK’s Gill Heart Institute. When the life-long homemaker and mother of four grown children first came to UK, Elayi and his team found themselves seeking answers. Ollie suffered from several heart issues. An internal defibrillator - used to “shock” Ollie’s heart back into rhythm during one of the three different arrhythmias she suffered from - was shocking her repeatedly. Each time it happened, Ollie had to make a three-hour trip from her home in Whitesburg to Lexington either by ambulance or helicopter. “I wouldn’t wish it on anybody,” said Ollie. “It was hard to get used to. I was in the hospital every time I turned around.”

“The defibrillator going off is a very bad experience for those have gone through it, and it is typically described as like a ‘horse kicking the chest,’” said Elayi. “It can really deteriorate the quality of life when it is frequent, as one never knows when it is going to happen.”

continued on page 45
Faculty

**Jeffrey Brumfield**  
Assistant Professor  
- Device therapy for heart failure  
- Supraventricular tachycardia  
- Wolff-Parkinson-White syndrome

**Chien-Suu Kuo, MD**  
Associate Professor  
Director, Heart Station  
- Cardiac arrhythmias  
- Electrocardiography

**Samy-Claude Elayi, MD**  
Associate Professor  
Director, EP Laboratory  
- Atrial fibrillation  
- Hybrid ablation therapies

**Gustavo X. Morales, MD**  
Assistant Professor  
- Invasive treatment of atrial fibrillation  
- Atrial flutter ablation  
- Ablation of supraventricular tachycardia

Clinical Trials

**Vest prevention of early sudden death trial and VEST registry**  
Principal Investigator (site): Samy-Claude Elayi, MD

**Position of leads in advanced heart failure: the POLAR study**  
Principal Investigator (site): Samy-Claude Elayi, MD

**Ascending dose study of OPC-108459 intravenous infusion in patients with paroxysmal and persistent atrial fibrillation (CADENCE)**  
Principal Investigator (site): Samy-Claude Elayi, MD

Publications


Publications, continued


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**Living “Shock-Free” continued from page 43**

Elayi knew that ablation surgery was the only way to stop the shocks. The procedure consists of inserting a catheter into a patient’s blood vessels to remove a faulty electrical pathway, as well as tissue from the patient’s heart. Typically, the catheter is placed into the patient’s femoral artery, internal jugular or subclavian vein. The catheter is guided toward the heart, and high-frequency electrical impulses are used to induce the arrhythmia and then ablate the abnormal tissue causing it.

The procedure is generally performed with one target, rarely two. But Ollie’s case, performed in December 2010, was even more complex. It was then that Elayi and his partner, Dr. Gustavo Morales, performed the first known triple ablation during the same procedure, targeting three areas of the heart in three different chambers, to help it maintain a regular rhythm.

Performing two ablations during one procedure is commonly done, but three with this complexity is basically unheard of: “In this patient’s case, despite the risk, I believed that we could perform three ablations - one for her ventricular tachycardia, one for atrial fibrillation, and a third for her atrial flutter, for it to be effective and to do everything when we are in her heart,” recalled Elayi.

Today, nearly three years after the procedure, Ollie is grateful for Elayi and his team, and for their willingness to perform such a complex procedure at one time. “I’m so very pleased,” Ollie said. She is now able to do some of the things she hasn’t done in decades: “I can work in my flower bed outside and do more around the house. It’s easier than it ever was before. And the best part is, I haven’t been shocked. I’m doing very well.”
UK’s Advanced Cardiovascular Imaging Program provides Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) of the heart and great vessels for adult and pediatric patients. The Gill Imaging Center was the first site in Kentucky to offer dual-source CT scanner. Two MRI scanners – the 1.5 Tesla and 3.0 Tesla – expand UK HealthCare’s advanced imaging capabilities. In addition to routine 3-D volumetric, functional, contrast viability cardiac MRI studies, real-time, 3-D time-resolved MRA, pharmacologic stress MRI is regularly performed.

The Gill Heart Institute Adult Echo Lab has a long-standing commitment to providing excellent care and education to people in Kentucky. Accredited by the Intersocietal Accreditation Commission for Echocardiography (ICAEL) continuously since 1999, the echo lab upholds the highest standards. Indeed, all of our interpreting cardiologists are certified by the National Board of Echocardiography, and we have more than 130 combined years of cardiac sonographer experience in echocardiography. Historically, the adult echo lab faculty contributed to developments in Doppler, color-flow imaging and 3-D echo. Additionally, the echo lab faculty and cardiac sonographers have a regional and national reputation for organizing ultrasound imaging courses and providing hands-on training to physicians and sonographers in the region.

The Gill’s nuclear imaging lab utilizes a state-of-the-art, upright, dual-head SPECT camera with attenuation correction and off-line workstations using advanced Cedars-Sinai Quantitative Perfusion and Gated SPECT software. Three-D regional perfusion, global and regional function at rest and after stress, and quantitative summed stress scores are measured in all patients.

Our cardiovascular imaging fellowship program is unique in that there is a close collaboration between cardiology and radiology, offering the opportunity to learn sophisticated tomographic anatomy as well as advanced cardiovascular physiology. Fellows develop in-depth knowledge of cardiac imaging techniques, appropriate applications, and research applications, as part of a multi-disciplinary team imaging ventricular mechanics, ischemic heart disease, hypertrophic cardiomyopathy, congenital heart disease, and valvular disease.
The University of Kentucky is one of seven institutions in the country to have the state-of-the-art 7-Tesla Clinscan MRI for imaging in preclinical, animal models. Working with world leaders at the University of Virginia (Dr. Frederick Epstein’s laboratory), UK investigators, led by Cardiovascular Imaging researchers, Drs. Brandon Fornwalt and Moriel Vandsburger, have established advanced mouse cardiac MRI sequences that allow direct quantification of sub-millimeter motion from mouse hearts beating over 500 times per minute. Our Clinscan MRI has a Siemens control system identical to the MRIs used in our cardiology clinic, which facilitates direct translation of our findings in mice into a greater understanding of the human heart.

Today, Dr. Fornwalt is among a growing number of translational scientists whose expertise in research and medicine bridges the gap—taking innovations from the lab to the patient setting, producing rapid clinical advances.

Fornwalt, assistant professor of pediatrics, physiology and biomedical engineering in the Division of Pediatric Cardiology at the University of Kentucky, recently received the National Institutes of Health Director’s Early Independence Award. The award provides funding for junior scientists who have demonstrated outstanding scientific creativity, intellectual maturity, and leadership skills with the opportunity to conduct independent biomedical or behavioral research by skipping the traditional postdoctoral training period. Fornwalt was one of only 14 exceptional junior scientists to receive the honor. Fornwalt will receive $1.96 million over five years to advance his research in exploring the role of dyssynchrony—a condition where the heart suffers from uncoordinated contraction—in pediatric heart disease.

His research focus is in congenital heart disease—or heart defects at birth—which affects more than a million children and adults in the United States and is responsible for more years of life lost than all of childhood cancer combined. According to Fornwalt, “the big-picture goal of my research program is to address this problem by adapting a relatively new, highly successful therapy for adult heart failure called cardiac resynchronization therapy, into a treatment option for patients with congenital heart disease.”

The most critical knowledge gap is identifying which patients with congenital heart disease are most likely to benefit from cardiac resynchronization therapy, he said. He is using MRIs to address this challenge by studying a population of patients with a common, serious congenital heart defect known as tetralogy of Fallot. In the future, he plans to use this work as the basis for initiating randomized trials to study the effectiveness of cardiac resynchronization therapy in patients with congenital heart disease.

Fornwalt is the first faculty member from Kentucky selected to receive the NIH Director’s Early Independence Award and as a recipient, joins scientists from such elite research institutions as Yale University, UCLA, Stanford University, Brigham and Women’s Hospital in Boston, and the University of Pennsylvania.
Faculty

Vincent L. Sorrell, MD  
Professor of Medicine  
Anthony N. DeMaria Chair of  
Cardiovascular Imaging  
Director, Cardiovascular Imaging  
- Myocarditis  
- Cardiac syndrome X and microvascular heart disease  
- Mitral valve diseases

Steve Leung, MD  
Assistant Professor of Medicine  
Associate Director, Advanced  
Cardiovascular Imaging  
Director, Cardiovascular Imaging,  
Lexington VAMC  
- Cardiovascular MRI and CT  
- Echocardiography  
- Nuclear cardiac imaging

Mikel D. Smith, MD  
Professor of Medicine  
Alberto Mazzoleni Professor of  
Cardiology  
Director, Echocardiography  
Laboratory  
- Cardiovascular disease  
- Echocardiography  
- Valvular heart disease

Moriel Vandsburger, PhD  
Assistant Professor of  
Physiology  
- Cardiac MRI

Brandon Fornwalt, MD, PhD  
Assistant Professor  
Division of Pediatric Cardiology  
Department of Biomedical  
Engineering  
- Cardiac MRI

Advanced mouse cardiac MRI
M. Elizabeth Oates, MD
Professor and Chair, Radiology
Rosenbaum Endowed Chair of Radiology
• Nuclear cardiology
• Radioiodine therapy for benign and malignant thyroid diseases
• Single photon emission computed tomography (SPECT)
• Computed tomography (CT) fusion imaging

Michael A. Brooks, MD
Assistant Professor of Radiology
Director of Residency Program
• Cardiovascular MRI and CT
• High resolution computed tomography (CT) of lung
• Lung cancer
• Occupational lung diseases

Stephen B. Hobbs, MD
Assistant Professor of Radiology
• Diffuse pulmonary parenchymal diseases
• Lung cancer
• Infiltrative cardiomyopathies
• Pulmonary hypertension

Michael A. Winkler, MD
Assistant Professor
• Cardiovascular computed tomography (CT)
• Coronary artery disease
• Pericardial disease

Gill Heart Imaging leadership team. From left, Drs. Michael Winkler, Steve Leung, Vincent Sorrell, Michael Brooks and Stephen Hobbs.
Clinical Trials

Prospective multicenter imaging study for evaluation of chest pain (PROMISE)
Principal Investigator(site): Vincent L. Sorrel, MD

Publications


UK’s first imaging fellowship

When Dr. Kunal Bodiwala began his internal medicine residency at the University of Kentucky in 2003, his plan for the future was to be a general cardiologist.

Forward to the present, Dr. Bodiwala, now a board-certified cardiologist, is the first graduate of the University of Kentucky Interdisciplinary Fellowship in Advanced Cardiac Imaging, and an emerging leader in the field of cardiovascular imaging, who has already started lecturing in national forums.

Bodiwala might say that landing this opportunity was a matter of being in the right place at the right time. During his general cardiology fellowship, he was exposed to conventional and contemporary cardiac imaging techniques and he began to manifest an interest in reading imaging studies with both radiologists and cardiologists. Around that same time, Dr. Vincent L. Sorrell came to UK to lead the cardiovascular imaging program at the Gill Heart Institute and develop an advanced cardiovascular imaging fellowship program.

“The third year of my fellowship, I started interviewing for general cardiology position but I realized that demand in the field of advanced imaging is growing more and more,” Bodiwala said. “Institutions are now asking for cardiologists with specialized cardiac imaging training. I always liked diagnostic imaging, so I thought learning more about these advanced cardiac scans like MRI and CT would be an excellent opportunity for me.”

After careful consideration, Sorrell chose Bodiwala to be UK’s first advanced imaging fellow: “Dr. Bodiwala’s knowledge of the program, his familiarity with our facility and people, and the fact that he was already credentialed in other areas of cardiac imaging such as echocardiography and nuclear cardiology made him the perfect match,” Sorrell said. “His enthusiasm with the program made him a very exciting candidate.”

Advanced imaging, Bodiwala said, has the ability to provide physicians with information previously only available through invasive techniques. “With advanced CT imaging techniques we can visualize the coronary arteries in the heart and assess for blockage without having to have the patient undergo invasive catheterization tests. With advanced MRI imaging techniques, we can also non-invasively see the heart muscle and valves and their function and impact on the heart,” Bodiwala said.

“There are various heart diseases that can involve heart muscle and cause heart failure or abnormal heart rhythms,” said Bodiwala. “Now with advanced imaging we can also characterize heart muscle tissue without having to undergo invasive tissue biopsy and be able to make an accurate diagnosis. It’s fascinating how far we have come over the last 10 years with advanced imaging techniques.”
UK’s world-class surgeons and staff allow us to successfully transplant some of the sickest patients in the region.
Heart Failure, Transplant & Mechanical Circulatory Support

Providing hope, restoring lives

The UK Transplant Center is at the forefront of clinical technology in heart failure care, heart transplant, and VAD services. We are the only full-service transplant center serving central and eastern Kentucky. Also, many patients come to us from elsewhere for modalities of treatment not offered at their local hospital or in their home state. Transplant patients benefit from our expert, multidisciplinary approach to the evaluation, treatment, and management of their advanced heart failure. Our integrated Cardiothoracic and Vascular Intensive Care Unit (CTV-ICU) is staffed by a team of skilled caregivers made up of board-certified cardiologists and cardiothoracic surgeons, advanced practice nurses, critical care-certified registered nurses, mechanical circulatory system coordinators, as well as specialty pharmacists, physical, occupational, and speech therapists; nutritionists, and social workers. This team works together to keep patients informed of their options at every stage, and to assist them with managing their long-term care.

The cardiac transplant program at UK was established in 1991 by Dr. Michael Sekela, and has since performed approximately 275 heart transplants. Dr. Charles W. Hoopes was recruited from the University of California at San Francisco in 2010 to become the Director of the UK Transplant Program, and is nationally recognized for performing highly complex transplant procedures, artificial heart and lung implantations and ambulatory extracorporeal membrane oxygenation (ECMO).

The Gill employs the full spectrum of mechanical devices to help patients. Temporary devices, such as the Impella 2.5 or 5.0, can be placed in patients in critical cardiogenic shock as a bridge to ventricular recovery. For those with...
When WAVE 3 Chief Meteorologist Tom Wills retired in July 2009, his only goal was to spend more time with his wife, two daughters and two grandchildren. But those plans came to a screeching halt early this year when a medical scare nearly took his life.

For 40 years, Tom brought his own brand of sunshine to the Ohio Valley. He remains one of local TV’s most popular personalities for a couple of reasons: the serious meteorologist doesn’t take himself too seriously, and because he was conservative with rain and snow totals, Tom usually was right on the money with his forecasts. From Paris to the Swiss Alps, to zip-lining in Central America, Tom and his wife Pam, were having the time of their lives. That is, until a strange day this past January.

“I got up one morning, and basically, I just fell flat on the ground,” Tom remembered. He went in for a few tests. “Leaving the hospital, I fainted again,” he said, “right there on the sidewalk.”

Tom’s health quickly began failing. He spent February and March with specialists. Finally a diagnosis came: Amyloidosis, a very rare disease where amyloid protein attacks the heart. Tom’s was so rare, only about three in one-million patients have it. Healthy for most of his life, suddenly a heart transplant became Tom’s only option.

“When I first heard that, I was just like, ‘Nah, that’s extreme. We can’t do that,’” Tom said.

But “can’t” isn’t a word Pam Wills recognizes when it comes to her beloved husband of 41 years. She got Tom to the Mayo Clinic where he was approved for a life-saving heart transplant. But as the weatherman knows, sometimes when it rains it pours. Insurance would not cover the out-of-state procedure, and Louisville’s Jewish Hospital did not perform transplants for amyloid patients.

In a private moment, Tom worried it might all be over. Then came a break in the clouds in Lexington. “UK said, ‘We will,’” Tom recalled.

Cardiologist Dr. Navin Rajagopalan, director of the heart transplant program at the University of Kentucky’s Gill Heart Institute, said of possible recipients, “We have to determine is the heart severe enough to justify transplant? and in Tom’s case it definitely was. His heart failure was going to get worse and he probably wouldn’t make it much longer without a transplant.”

Patients wait months, sometimes a year for a match. For some, a match never comes. One thing in Tom’s favor was his blood type. He was AB. At 68, Tom’s medical perfect storm was about to hit. The AB universal recipient got on the transplant list June 11. Back at UK for a test on the 12th, the heart of a 42-year-old male donor was a match.

“We had just gotten dinner,” Tom remembered, “and they came in and took my tray away and said, ‘Nope, you’re not going to eat anymore because you’re getting a heart tonight,’ and I said, ‘What?’ “

The surgery was a success, and so far, there are no signs that Tom’s body is rejecting the donor heart. “It’s hard to express in words [how grateful I am to the anonymous heart donor and his family],” Tom said, “because it’s obviously a tragedy for them, and it became a life-saving miracle for me.”

Now proudly sporting his scar, Tom is dedicated to protecting his special gift. He’s doing at least 20 minutes of living room laps and is motivated by his get well cards. And speaking of Cards, the former University of Louisville Meteorology Instructor and longtime Cardinal fan (who even watched a game when he was seriously ill), said the UK staff he loves loved giving him the business during his recovery.

“That’s just sports,” Tom laughed. “When it comes to really important matters like this and your health, UK will always be number one in my heart.”

(Adapted from a story by WAVE3 reporter Connie Leonard.)
refractory heart failure, the HeartMate II LVAD may serve as a bridge to transplant, or as destination therapy. Finally, Syncardia’s Total Artificial Heart™ is an option for patients with severe biventricular failure.

275 heart transplants in 20 years

UK was the first health care provider in the state to implant the Total Artificial Heart and UK’s transplant program has also performed combined heart-kidney transplants, and we have the only combined heart-lung transplant program in the Commonwealth.

**Pulmonary Hypertension Program**

The Institute provides the region’s only expertise in the management of pulmonary hypertension. Many of our patients are referred from other area hospitals for treatment. Our program includes a multidisciplinary team of cardiologists, transplant surgeons and pulmonologists, and nurse practitioners who work together to help patients who suffer from this condition. For those who do not respond sufficiently to treatment, referral to our lung transplant specialists is provided.

Led by cardiologist Dr. David C. Booth, the aim of the Gill pulmonary services is to provide compassionate, patient-centered care to individuals with all types of pulmonary hypertension, endeavoring to provide accurate diagnosis, modify and continuously improve care processes, and offer the latest and emerging therapies in pulmonary hypertension.

**Advancing ECMO**

UK is one of only a few centers in the U.S. to offer ambulatory extracorporeal membrane oxygenation (ECMO) utilizing a double-lumen cannula. Extracorporeal membrane oxygenation uses an artificial lung device that provides cardiac and/or pulmonary support to patients whose heart and/or lungs are so severely damaged that they can no longer function without assistance. Serving as a bridge to transplant, ECMO allows patients to not only survive, but to be physically rehabilitated prior surgery.

Department of Surgery Chairman, Joseph B. Zwischenberger, MD, and Director of the Artificial Organ Laboratory, Dongfang Wang, MD, PhD, received FDA approval of a bi-caval double lumen catheter inserted to perform ECMO. The Avalon Elite™ Bi-Caval Double Lumen Catheter is manufactured and offered by Avalon Laboratories Inc. The high-performance DLC accomplishes total gas exchange for patients of all sizes with lung disease.

Dr. Charles W. Hoopes is focused on the advances in ECMO technology to bridge patients for lung transplantation. Using the Avalon cannula, Dr. Hoopes places patients on veno-venous ECMO and rehabilitates patients awaiting transplant. Research done by Dr. Hoopes and others shows that by reconditioning patients prior to surgery, there is less risk of complications after transplant as well as an improvement in their overall outcome.

In recognition of our exceptional care, training and education, as well as achieving optimal levels of performance, innovation, satisfaction, and quality, UK has been designated as a Center of Excellence with receipt of the Excellence in Life Support Award from the Extracorporeal Life Support Organization. UK is one of only five medical centers in the U.S. to receive a triple designation for its comprehensive ECMO treatment of neonatal, pediatric and adult patient populations.
Faculty

**Charles W. Hoopes, MD**
Associate Professor of Surgery
Director, Transplant Center
Director, Mechanical Circulatory Support
- Artificial heart mechanical devices
- Artificial lung mechanical devices
- End-stage lung disease
- Heart transplantation
- Lung and multi-organ transplantation

**David C. Booth, MD**
Endowed Professor of Medicine
Director, Pulmonary Hypertension Services
Chief, Cardiology, Lexington VAMC
- Pulmonary hypertension
- Acute cardiac disease
- Heart and lung transplantation

**Harish Seethamraju, MD**
Associate Professor of Surgery
Medical Director, Lung Transplantation Program
- Lung and multi-organ transplantation
- End-stage lung disease management
- Airway stents and management of complex airway lesions management
- Diaphragmatic dysfunction
- Pulmonary hypertension

**Navin Rajagopalan, MD**
Assistant Professor of Medicine
Director, Advanced Heart Failure Program
Medical Director, Cardiac Transplantation
- Cardiomyopathy
- Congestive heart failure
- Heart transplantation
- Pulmonary hypertension

**Roh Yanagida, MD**
Assistant Professor of Surgery
Heart and Lung Transplant Team
- Extracorporeal membrane oxygenation (ECMO)
- Heart and lung transplantation
- Ventricular assist devices (VADs)

**Mechanical Circulatory Support and Transplant Coordinators**

**Mark Bradley, RN**
Mechanical Circulatory Support Coordinator

**Donna Dennis, RN, CCTC**
Heart Transplant Coordinator

**Thomas A. Tribble**
Mechanical Circulatory Support Technician

**Not Pictured**

**Dorothy Lockhart, RN, BSN, CCTC**
Service Line Director
Heart and Lung Transplant/MCS
Clinical Trials

Biologic commonalities associated with degeneration in function of cardiac skeletal and respiratory muscles in patients with heart failure
Principal Investigator: Charles W. Hoopes, MD

Extracorporeal membrane oxygenation (ECMO) support compared to mechanical ventilation for acute respiratory failure: a pilot study
Principal Investigator: Charles W. Hoopes, MD

Ex-Vivo lung perfusion (lung in the box) study
Principal Investigator: Charles W. Hoopes, MD

CentriMag right ventricular assist system (RVAS) post-approval study (PAS)
Principal Investigator: Charles W. Hoopes, MD

SynCardia Freedom™ Driver system study (Syncardia)
Principal Investigator (site): Charles W. Hoopes, MD

SynCardia temporary total artificial heart™ (TAH-t) Post-market Surveillance Study
Principal Investigator (site): Charles W. Hoopes, MD

NIH: Immune activation and myocardial recovery in peripartum Cardiomyopathy
Principal Investigator: Navin Rajagopalan MD

Left atrial pressure monitoring to optimize heart failure therapy (LAPTOP-HF)
Principal Investigator (site): John C. Gurley, MD

PASS 2: Effects of combination of bosantan and sildenafil versus sildenafil monotherapy on morbidity and mortality in symptomatic patients with pulmonary arterial hypertension – a multicenter, double-blind, randomized, placebo-controlled phase IV study
Principal Investigator (site): David C. Booth, MD

Inhaled nitric oxide/INOpulse DS for pulmonary arterial hypertension (IKARIA)
Principal Investigator (site): David C. Booth, MD

The innovative valve surgeon, Dr. Frank Spencer, served as the founding chief of cardiothoracic surgery at UK.

Dr. Spencer authored one of the first papers describing mechanical assist devices, commenting:

“Total replacement of the heart with a pump has captured popular fancy and undoubtedly ultimately will be feasible for the irretrievably damaged or congenitally deformed heart ... The appeal is so great, however, that many investigators are trying to land on Mars before they even reach the moon!”

(Annual Review of Medicine, Volume 17, 1966).
Publications


Diaz-Guzman E, Hoopes CW, Zwischenberger JB. The evolution of extracorporeal life support as a bridge to lung transplantation. ASAIO J. 2013 59:3-10.


Working in partnership with the Gill Heart Institute is the Dr. Sibu and Becky Saha Cardiovascular Research Center, where physicians and scientists pursue their research interests alongside basic and translational science researchers. The Saha CVRC also teaches and trains scientists of the future.

Led by director Dr. Alan Daugherty, the Saha CVRC faculty, fellows, staff and students, work on an array of research related to the prevention, diagnosis and treatment of cardiovascular disease. The ranks of Saha CVRC faculty include physicians and scientists drawn primarily from the fields of cardiology, nutrition, endocrinology, physiology and pharmacology. Many faculty hold joint appointments with the Center for Muscle Biology, the Barnstable Brown Diabetes and Obesity Research Center, the Graduate Center for Nutritional Sciences, the College of Medicine, and other areas across the healthcare campus, which exemplifies the university’s commitment to interdisciplinary research.

In the most recent fiscal year, the Saha CVRC totaled $4.1 million in NIH funding, $321,000 in American Heart Association Awards, $163,876 in American Diabetes Association Awards, and an additional $150,000 from other sources, making it a powerhouse in the field of cardiovascular research.

In 2012, the American Heart Association appointed Alan Daugherty, Ph.D., D.Sc., as editor-in-chief of *Arteriosclerosis, Thrombosis, and Vascular Biology*, the premier journal in the field. Other Saha CVRC faculty serve on committees and editorial review boards for major scientific journals. Members of the core Saha CVRC faculty have published more than 90 papers in the past year, and also presented at numerous national and international conferences.

In 2011, the NIH awarded UK’s Center for Clinical and Translational Science $20 million to move research discoveries to health care solutions more quickly. Awarded through the NIH’s institutional Clinical and Translational Science Awards, this designation makes UK’s Center for Clinical and Translational Science a part of a select national biomedical research consortium.
Goals of the University of Kentucky Saha Cardiovascular Research Center:

• To develop a nationally and internationally recognized center of excellence in cardiovascular research.
• To provide an environment for the development and retention of productive faculty.
• To facilitate the training of students, including postdoctoral fellows, graduate students, medical students and residents
• To encourage the development of translational and clinical research with funding from federal agencies and industry.

The ranks of Saha CVRC faculty include physicians and scientists drawn primarily from the fields of cardiology, nutrition, endocrinology, physiology and pharmacology.

Publications


continued on page 64
Faculty

**Alan Daugherty, PhD, DSc**  
*College of Medicine Senior Associate Dean for Research  
Gill Foundation Chair in Preventive Cardiology  
Professor of Medicine and Physiology  
Director, Saha Cardiovascular Research*

**Marcielle de Beer, PhD**  
*Associate Professor  
Physiology*

**Dennis Bruemmer, MD, PhD**  
*Associate Professor  
Medicine and Nutritional Sciences*

**Zhenheng Guo, PhD**  
*Assistant Professor  
Internal Medicine*

**Lei Cai, PhD**  
*Assistant Professor  
Endocrinology, Internal Medicine*

**Victoria L. King, PhD**  
*Assistant Professor  
Medicine and Nutritional Sciences*

**Frederick C. de Beer, MD**  
*Dean, College of Medicine  
Vice President for Clinical Academic Affairs*

**Zhenyu Li, MD, PhD**  
*Assistant Professor  
Medicine and Nutritional Sciences*
Andrew J. Morris, PhD  
Professor of Medicine  
Molecular Pharmacology

Denys R. van der Westhuyzen, PhD  
Professor  
Biochemistry and Nutritional Sciences

Preetha Shridas, PhD  
Assistant Professor  
Medicine and Nutritional Sciences

Nancy Webb, PhD  
Professor  
Medicine and Nutritional Sciences

Venkat Subramanian, PhD  
Assistant Professor  
Internal Medicine

Not Pictured

J. Anthony Brandon, PhD  
Richard Charnigo, PhD  
Sangderk Lee, PhD  
Ryan Temel, PhD

Faculty pictured elsewhere: 
Ahmed Abdel-Latif, MD, PhD  
Brandon Fornwalt, MD, PhD  
Susan S. Smyth, MD, PhD  
Moriel Vandesburger, PhD

Lisa Tannock, MD  
Associate Professor  
Medicine and Nutritional Sciences  
Chief, Division of Endocrinology and Molecular Medicine
Saha Cardiovascular Research Center

**Publications, continued**

continued from page 61


Findeisen HM, Bruemmer D. Response to Lack of evidence to support a beneficial role for glutathione depletion on body weight or glucose intolerance. *Obesity (Silver Spring).* 2013 Jan;21(1):3-4.


continued on page 66


Publications, continued


The Cardiovascular Fellowship Program at the University of Kentucky is an accredited three-year program. Fellows receive superb clinical training in an active academic medical center, the affiliated Veterans Administration Hospital, and a community experience at the UK Good Samaritan Hospital. The program is geared towards assuring an exceptional educational experience that prepares fellows to provide quality medical care in whatever arena they ultimately pursue. The fellowship provides:

- Dedicated didactic lecture series covering the core curriculum of cardiovascular diseases.
- Specialized lecture series that complement the core curriculum in electrophysiology, EKG interpretation, cardiac imaging, cardiac catheterization, research skills and statistics, and prevention.
- Exposure to state-of-the-art patient care.
- Professionalism in all aspects of patient care, education and research.
- Development of outstanding communication skills with patients, their families, and other health care professionals.
- Team-based approach within a multifaceted health care system to optimize patient care.
- And, most importantly, how to continue the self-learning process well beyond the completion of their fellowship training.

Annually, there are six or seven general cardiovascular fellowship positions, two interventional fellowship positions, two cardiovascular imaging fellowship positions, one clinical cardiac electrophysiology fellowship position, and several fellows gaining in-depth exposure to research.

The University is fortunate to have secured highly competitive extramural support for trainees in the cardiovascular area, including:

- The University of Kentucky T32 Interdisciplinary Cardiovascular Training Program for graduate students – Alan Daugherty, PhD, Program Director
- The University of Kentucky T32 Training Program for fellows in Cardiovascular Science – Susan S. Smyth, MD, PhD, Program Director.
One of only 36 institutions to receive funding from Society for Cardiovascular Angiography and Interventions

“For house staff and trainees, UK offers more than 50 specialty and subspecialty areas of medicine. Our faculty are exceptional educators, dedicated to teaching in an ambiance of collegiality and respect.”

Frederick C. de Beer, MD
Dean, College of Medicine
Vice President for Clinical Academic Affairs
Professor of Internal Medicine
University of Kentucky

Select Fellow and Faculty Publications


Fellows

Cardiology Fellows

Sam Aznaurov, MD
Mana Keihanian, MD

Jordan Brewster, MD
Andrew Kolodziej, MD

Dennis Bruemmer, MD, PhD
John Kotter, MD

Vedant Gupta, MD
Brian Lea, MD
Damien Marycz, MD

Michael Mikolaj, MD

Kevin Parrott, MD

Martin Rains, MD

Ernesto Ruiz-Rodriguez, MD

Matthew White, MD

Ryan Wilson, MD

Paul Zellers, DO

Not Pictured

Arash Seratnhaei, MD
Anthony Voelkel, MD
Fellows, continued

Interventional Cardiology Fellows

Wael ElMallah, MD

Michael Faulkner, MD

Nishant Kalra, MD

Eric Wallace, DO

Electrophysiology Fellow
Yousef Darrat, MD

Cardiothoracic Surgery Fellow
Nathan Kister, MD

Integrated Six-Year Surgery Resident

Michael Bolanos, MD – PGY1

Imaging Fellow

Vrinda Sardana, MD

Not pictured: Ahmed Asfour, MD

Vascular/Endovascular Surgery Fellows

Nathan Orr, MD

Kathryn Davis
In 1956, ground was broken in a Lexington, Kentucky cornfield for a new teaching hospital and college of medicine at the University of Kentucky. It was to be named the Albert B. Chandler Hospital, due to the governor’s unwavering commitment to establish an institution to “serve the poor people of Eastern Kentucky.” Until the building was completed seven years later, the founding dean, William R. Willard, MD, worked from a converted farmhouse that stood on the former UK experimental agriculture farm. He would later joke that he was the only dean in the United States to preside over a cornfield.

The Albert B. Chandler Medical Center, a 454,426-square-foot hospital complex, was finally completed in 1962, and it featured 400 inpatient beds, 50 beds for newborns and premature infants, 95 beds for ambulatory care, and a 25-bed rehabilitation unit. The first patient admitted was a child treated by Dr. Jacqueline Noonan for patent ductus arteriosis, a congenital heart defect that appears soon after birth. Dr. Noonan, who continues to teach at the UK College of Medicine and treat patients at regional clinics, is internationally known for her description of Noonan Syndrome, a genetic disorder characterized by distinct facial traits, short stature, and congenital heart defects.

Dr. Willard recruited Dr. Edmund D. Pellegrino of Yale University to be the first Chairman of the Department of Medicine. The Division of Cardiovascular Medicine was soon established with the appointment of its first two faculty members, Dr. John T. Reeves, who later established the first cardiac catheterization laboratory, and Dr. Alberto Mazzoleni, who was recruited from Beth Israel in Boston. Dr. Mazzoleni served as director of medical education until his retirement in 2003.

During his 40 years at the university, Dr. Mazzoleni trained more than 150 cardiology fellows. In 2010, the Alberto Mazzoleni Professorship in Cardiology was created and awarded to Dr. Mikel D. Smith.

Dr. Borys Surawicz was named the first chief of cardiology in 1962 and held the position until 1981. Dr. Surawicz later became the first UK faculty to serve as the President of the American College of Cardiology (from 1978 to 1980). In its 50 years of existence, the UK cardiology program has produced a number of famous names. Perhaps one measure of the accomplishments of its faculty is to realize that there have been three Presidents of the American College of Cardiology who have practiced here. This includes Drs. Surawicz, Anthony N. DeMaria, and Steven Nissen.

The creation of the UK Cardiovascular Fellowship program was established with support from an NIH training grant in 1963. Since that time, more than 200 clinical trainees and 100 research fellows have completed...
training here. Throughout the years, UK has been continuously recognized as providing excellence in state-of-the-art training in all aspects of clinical cardiology.

In 1981, Dr. Anthony DeMaria was recruited to serve as the Director of the Division of Cardiology. During his tenure at UK, he served as President of the American College of Cardiology and the American Society of Echocardiography. After leaving the university, he became Professor of Medicine and Chief of Cardiology at the University of California-San Diego School of Medicine. Under Dr. DeMaria’s attentive stewardship, cardiovascular medicine thrived at UK.

The first thrombolytic trials for myocardial infarction in Kentucky were performed by Dr. Cindy L. Grines, an interventional cardiologist now at Detroit Medical Center, and others.

In 1991 the cardiology group also published one of the first reports on the use of intravascular ultrasound to assess coronary dimensions and wall morphology. Steven Nissen, who completed his cardiology fellowship at UK in 1983 and currently serves as the Chair of Cardiovascular Medicine at the Cleveland Clinic, has championed quantitative coronary angiography and intravascular ultrasound of coronary atherosclerosis.

Dr. Michael Sekala, who trained under famed heart surgeon Dr. Michael E. DeBakey, performed the first heart transplant in Lexington in 1991. (UK is still the only hospital east of Louisville to perform heart transplants in the Commonwealth.)

The recruitment of Drs. Frederick de Beer and Alan Daugherty, established a reputation for excellence in atherosclerosis research at UK. In collaboration with Dr. Lisa Cassis, Daugherty developed one of the first preclinical models of aortic aneurysm. Dr. de Beer, (now Dean of UK College of Medicine), together with Daugherty and Cassis, built a program that has made fundamental contributions to the understanding of the cellular and molecular underpinnings of atherosclerosis, aneurysm, and inflammation.

Construction of the $25 million Linda and Jack Gill Heart Institute Building was completed in 2004. The five-level, 108,000-square-foot structure houses clinics, diagnostic areas, six catheterization and electrophysiology laboratories with associated support services. Dr. David J. Moliterno, an interventional cardiologist widely recognized for his involvement with clinical trials, was recruited from the Cleveland Clinic to serve as Medical Director of the Gill and Chief of Cardiology.

In 1997, Linda and Jack Gill donated $5 million to establish a comprehensive academic program in cardiovascular science, including establishment of the Gill Heart Institute and endowed professorships.

The founding principles of the Gill Heart Institute were to unite high quality clinical heart care with leading-edge heart health research and to become one of the Top 10 public cardiovascular facilities in the nation.

In 2010, the Cardiovascular Research Center was named in recognition of an endowment made by Dr. Sibu P. Saha and his wife, Becky Saha. The Saha CVRC serves as a major center for research of cardiovascular diseases, focusing on the prevention, diagnosis and treatment of diseases affecting the heart and blood vessels – including atherosclerosis, aneurysm, stroke, heart attack, obesity and hypertension.

In 2011, the new Albert B. Chandler Hospital and Pavilion opened, connecting the Gill Heart Institute to the new hospital. This new facility is evidence of our dedication to improving the health and well being of Kentuckians. In 2014, a new cardiovascular patient care floor will open.

What was once a cornfield has been transformed into one of the South’s most advanced medical centers.