LEADERSHIP

Gill Heart & Vascular Institute

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VP & Chief Clinical Operations Officer

Mark D. Birdwhistell
VP for Administration & External Affairs

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Welcome to the 2018 edition of State of the Heart, UK Gill Heart & Vascular Institute’s annual report.

We at Gill are extremely proud to be leading the fight against cardiovascular disease and stroke in Kentucky, where these problems plague many of our communities.

Our approach to this fight is comprehensive, because we believe attacking the problem from every angle is the best path to success. From wellness to advanced treatments for disease – up to and including transplant, our approach encompasses patient-centered care, research, education and collaboration. This approach has earned us recognition that places us among the top centers in the nation.

Our expert team includes physicians and scientists who draw from disciplines of cardiovascular medicine, cardiac and vascular surgery, radiology, anesthesiology, pharmacy, physiology, pharmacology, biomedical engineering and more. We have established a fully integrated service line with constant collaboration/communication between cardiology, vascular and cardiothoracic surgery. This multidisciplinary approach facilitates more effective patient care, better outcomes and new discoveries.

Continuing to grow
Our network of community-based affiliates continues to grow, broadening access to advanced care across the Commonwealth, and allowing us to provide education and leadership to other providers statewide.

As the state’s top teaching and research center, supported by the NIH-funded UK Center for Clinical and Translational Science, our bench-to-bedside approach ensures that patients benefit from scientific advances nearly as fast as they happen.

This booklet highlights our services and showcases some of our accomplishments of the past year, all of which are a demonstration of our commitment to improving the future of heart health in Kentucky and beyond.

We invite you to take a look.
Your doctor chooses the treatment with the best long-term outcome, and you live a longer and healthier life.

Two University of Kentucky researchers are working to make this experience a reality for the 5.7 million adults in the U.S. with heart failure.

Combining physiology and engineering, Jonathan Wenk, PhD, and Kenneth Campbell, PhD, are developing computer software to deliver better therapies for patients with life-threatening heart failure. The National Institutes of Health recently awarded the team a $3 million five-year grant to create a computer model of the heart that can be customized to individual patients and predict long-term results.

“This model will have tremendous predictive power, meaning it will change and adapt in response to treatment or disease,” says Wenk, an associate professor of mechanical engineering and Gill Professor in Engineering. “For doctors, this is another tool that could guide them in their decision process.”

The computer model would take MRI or genetic data of a patient and build a multi-scale simulation of his or her heart, leading to more personalized treatment plans. The model could also serve as a screening tool for scientists and drug companies that are trying to develop new therapies.

“If you gave a patient a drug, how would their heart beat in the next second? Folks are pretty good at predicting that, but we’re trying to predict how their heart will grow over months and years after taking a pill or having a genetic mutation,” explains Campbell, associate professor of physiology and cardiovascular medicine.

Virtual Heart Could Lead to Better Long-Term Outcomes

Picture this: You’re battling heart failure and meeting with your doctor to discuss treatment. Before prescribing anything, the doctor pulls up a virtual model of your heart on her computer and “treats” it with several possible treatments. A few moments later, she can see how your heart would be doing five years down the road and compare those results for each treatment.
Only a handful of teams in the world are working in this area, and few are as collaborative as this one. With Wenk’s engineering skills and proficiency in organ-level function and Campbell’s expertise in medicine and molecular-level function, they are among the first – if not the first – to incorporate the effects of genetic mutations into a model of the heart.

The computer technique is virtually the same used for classic engineering applications, such as simulating a bridge or a car crash.

“Whether it’s a heart or a piece of steel, as long as we understand their governing equations, we can harness them to develop a better design,” Wenk says.

The team, which includes collaborators at Michigan State University and Pennsylvania State University, will specifically aim to better understand familial hypertrophic cardiomyopathy, a genetic mutation and the most frequently inherited heart defect, which affects about 700,000 Americans.

Wenk – in addition to working with physiologists and biophysicists – holds a joint appointment in UK’s Department of Surgery, where he applies engineering concepts to surgical approaches.

With this project and others, the researchers are aiming to develop a top-tier computational cardiology team at UK. If computers can be used to model better bridges, they can also be used to model healthier hearts.
Precision medicine is the new frontier of healthcare, and this highly specialized program is proud to be the first of its kind in Kentucky – and the region. We are the only dedicated cardiogenetics program in Kentucky and the only provider in Kentucky seeing adults with heritable connective tissue disorders.

The charge of the program is threefold: We provide clinical genetic service to inpatients and outpatients, facilitate and engage in clinical genetics and genomics research, and promote the genetic and genomic education of faculty, staff and students.

Our clinicians and researchers work to understand the role genetics play in cardiovascular disease on both the individual and the societal level.

We offer a full array of genetic testing, including:
- Single gene analysis (sequencing and deletion/duplication analysis).
- Next generation sequencing multigene panels.
- Whole exome sequencing.
- Whole genome sequencing.
- SNP-microarrays.
- Metabolic testing.
- Pharmacogenomics testing.

In clinical service, the team provides evaluation and management recommendations based on the genomic status of patients with familial and unknown etiology heart disorders such as cardiomyopathy, heart failure, arrhythmias and channelopathies, connective tissue disorders and coronary artery disease.
The American Heart Association has awarded UK and Baylor University $3.7 million to study aortic disease in a research partnership.

UK and Baylor were one of four teams nationwide to receive the honor, which coincides with the establishment of the American Heart Association’s Vascular Research Disease Network.

The grant will underwrite the work of the UK-BCM Aortopathy Research Center (UK-BCM ARC), which will focus on the impact of sex differences related to aortic diseases. Aortic disease can cause the expansion and rupture of a vessel wall in the chest or abdominal area, leading to potentially deadly internal bleeding.

**ADDITIONAL PROJECTS**

At the UK College of Medicine, two research programs will be launched during this partnership. The first, led by Alan Daugherty, PhD, DSc, director of the Saha Cardiovascular Research Center, will investigate how sex hormones, including testosterone and estrogen, impact development of thoracic aortic disease in mouse models. Lisa Cassis, PhD, vice president for research, will lead a team to explore how sex chromosomes affect the development and progression of aortic diseases in both thoracic and abdominal aortas using unique mouse models in which sex chromosomes are manipulated.

In addition to these research projects, the center will support a training program for research fellows led by Nancy Webb, PhD, director of nutritional sciences. This program will recruit and train basic science and clinical postdoctoral research fellows who will be associated with the three projects.

“The study of vascular disease is a vitally important enterprise, as its prevalence is expected to increase dramatically as our population ages.”

Alan Daugherty, PhD, DSc
Director, Saha Cardiovascular Research Center

“Our Association is excited about this newly funded research network targeting vascular diseases,” said Joey Maggard, executive director of the Lexington Division of the American Heart Association.

“The American Heart Association is able to continue to fund such cutting-edge, academic-research-facility-based projects like this one right here in Central Kentucky because of the ongoing generous donations in support of our mission.”
ADVANCEMENTS IN CLINICAL CARE

Our clinical services at Gill include general cardiology, 10 cardiology subspecialties, vascular medicine and surgery, and cardiothoracic surgery. Our team specializes in collaboration, bringing together physicians from all areas of cardiovascular services to assist in individualized diagnosis and treatment programs for each patient.

Our clinical programs target the high incidence of heart disease in Kentucky, while the research and teaching programs work to advance cardiovascular care throughout the world. Our goal is to provide every patient with exceptionally compassionate care in the safest and most appropriate manner possible based on the best evidence and the latest technological advances.
The primary goal of UK Cardiac Imaging is always strive to find that one best imaging test for the one best patient circumstance, resulting in the one best possible outcome. Providing the best test for the patient initially results in higher first-line testing quality, subsequently fewer repeat diagnostic tests, reduced time to clinical diagnosis, potentially shorter hospital stays, greater patient satisfaction and lower overall costs.

To accomplish this objective, Cardiac Imaging has created an Imaging Director’s Council in which the medical directors meet regularly to learn from one another, recognizing that there are many commonalities across these diagnostic tools. The directors have combined their insights into a real-time imaging dashboard that will help them monitor programs.

In the end, this group hopes to create a series of optimal care pathways focusing on improving the management of the state’s dominant cardiovascular conditions through greater efficiency and safety, lower costs and improved consumer satisfaction.

Working together across multimodality imaging arenas provides our imaging experts the best chance to determine these optimal care pathways. By then matching these pathways to the newly created dashboards, UK hopes to become a lead institution in demonstrating a conclusive link between imaging and clinical outcomes.
MAKING STRIDES IN PERIPHERAL ARTERIAL DISEASE TREATMENT

It’s no secret that Supervised Exercise Training (SET) benefits patients who present with symptoms of PAD, or peripheral artery disease. Studies have shown for decades that PAD patients who participate in supervised exercise can experience dramatic increases in walking duration and lower reported levels of pain.

PAD patients typically present with intermittent claudication, which is when patients have reproducible leg pain when they exercise that goes away when they rest.

“Typically, a patient will say, ‘I can walk 100 feet, and then my calf starts aching and hurting up to the point that I have to stop walking and rest,” said Nathan Orr, MD, a vascular surgeon at UK HealthCare.

“We know from decades of research that exercise therapy is the most effective first-line treatment for patients who present with claudication,” Orr said.

Now CMS has recognized the value of SET for PAD patients by making it a covered benefit for patients with Medicaid and Medicare. And there’s a reason for that.

“The outcomes last longer than a vascular surgery,” said Jacob Stone, who leads the SET program.

“It’s cheaper, it lasts longer and it’s non-invasive.”

In addition to Stone, who has a master’s degree in exercise physiology and has worked with cardiopulmonary rehabilitation patients since 2010, the SET program is staffed by three full-time dedicated patient care providers.

“We’re monitored, supervised exercise. We’re going to work on controllable risk factors and do a lot of education with patients on those controllable risk factors. We’re going to improve medication adherence,” Stone said.

Monitoring is critical. Patients have generally been inactive because of their pain, so once they start moving, there’s the potential to uncover other cardiovascular issues.

“There’s some danger in telling a PAD patient who hasn’t exercised in years and years and years to go walk on their own, unsupervised, because there’s potential for rate-related arrhythmias or other cardiac issues to occur,” Orr said.

With expert supervision and monitoring, however, patients can exercise at a high enough level to improve their cardiovascular fitness without putting themselves in danger, and with the assurance of knowing there are medical professionals on hand if an event does occur.
After performing CPR on a patient in the intensive care unit for an hour, Wayne Lipson, MD, chief physician executive at Baptist Health-Madisonville made a call to the extracorporeal membrane oxygenation (ECMO) transport team at UK Albert B. Chandler Hospital.

In the meantime, Lipson’s medical team connected the patient to the hospital’s ECMO device. Lipson knew a swift transport to the resources and expertise at UK HealthCare gave his patient at least a slim chance at survival.

“For us and the patient, it was absolutely the best-case scenario,” Lipson said.

Doctors throughout the Ohio Valley Region transfer patients on ECMO or in need of ECMO to UKHC for advanced subspecialty cardiovascular care or respiratory intervention. Michael Sekela, MD, a cardiovascular surgeon and director of Mechanical Circulatory Support at UKHC, assembled the ECMO transport team to fill this need for patients around the region.

“Once the knowledge of this service is widespread, we may become one of the premier centers in the country.”

Michael Sekela, MD

The team consists of a lead nurse with intensive ECMO training in the CVICU, a paramedic, a perfusionist and an EMT. In some cases, the surgeon travels with the team to intervene if complications arise during transport.

Another advantage offered by the UK ECMO transport team is the ability for referring doctors to communicate information to the transport unit. Third-party transport units did not provide a direct line of communication between the referring hospital and UK. With a perfusionist on hand, the ECMO transport team is able to connect the patient to UKHC’s ECMO device rather than taking the referring hospital’s equipment on board. The team also facilitates connecting a patient to ECMO for hospitals that don’t have the technology.

Currently, UK is one of only two adult ECMO programs in Kentucky. The team is also working toward an air transport service.

Lipson later learned the heart failure patient he sent with the UK ECMO transport team was eventually able to make a full recovery. Knowing he has a reliable partnership with UK’s ECMO transport team, he doesn’t hesitate to use his hospital’s ECMO device in an effort to save a patient.
The UK Gill Heart & Vascular Institute has taken a lead role regionally in a national study that has shown when EMS and hospitals use a standardized procedure, they can reduce the time it takes to get a heart attack patient the necessary treatment.

“With every minute that passes, more heart muscle gets damaged, and you can’t get it back,” says Gill’s clinical chief of cardiology, Khaled Ziada, MD, FACC, FSCAI, who is the Central and Eastern Kentucky region’s principal investigator for the study Accelorator-2. “And the longer time passes, the higher the risk of death.”

The best treatment for heart attack patients is to open the blocked artery causing the heart attack using a balloon angioplasty procedure and to support the opened blockage with a metallic stent within 90 minutes of first contact between the patient and the emergency responders. The study’s objective was to reach that goal in at least 75 percent of heart attack patients.

Under the umbrella of the American Heart Association (AHA), Ziada and his team collaborated with providers from 13 other medical facilities throughout Central and Eastern Kentucky, regions high with prevalence of heart disease. Cardiologists from all hospitals involved agreed on a protocol adapted from AHA guidelines.

Ziada said they also provided ECG training for paramedics in the region. “We asked EMS to make the diagnosis using the ECG, let us know they were coming so we get the team ready, and transport the patient as quickly as possible,” he said. “We gave them Plan A and Plan B.”

Plan A is to get to the nearest hospital that offers emergency angioplasty for heart attacks. Plan B, if they are too far, is to go to the nearest hospital for a clot-busting medicine or to be set up for transfer.

“We created an algorithm that shows which is better to use at which time,” Ziada said. “They had it in their hands, and we empowered them to just implement the plan.”

The next step was to reduce “dwell time,” or the time it takes from arrival at the hospital to undergoing the angioplasty, by bypassing the emergency department and delivering patients directly to the catheterization lab.

Each participating hospital has a STEMI coordinator who collects the data, gives performance feedback to EMS, and sends the information to a national database. “With the data, we can show them, and ourselves, where the weaknesses are,” Ziada said. “Shorter times indicate that your process is working better.”

Gill provides feedback to EMS, emergency departments and transferring hospitals, in addition to transmitting data to the national databases and receiving benchmarking and feedback reports.

Nationally, at the beginning of the project, 67 percent of the patients met the first contact-to-balloon goal of 90 minutes; at the end, it was 74 percent. The study demonstrated that the rate of death in the hospital was reduced by cutting the time it takes to activate the catheterization laboratory.

“Regionally, we were achieving the goal 64 percent of the time and were able to improve to 77 percent. Our region was able to exceed the national goal.”

Khaled Ziada, MD, FACC, FSCAI
Even after visiting two cardiologists, failing a stress test and undergoing a heart catheterization, the otherwise healthy Lexington, Ky., resident had been sent home with nothing more than a prescription. The heart catheterization had revealed no coronary artery blockage.

But her symptoms continued and so did Stevenson’s conviction something was wrong with her heart. She began researching women and heart disease, leading her to the Gill Heart & Vascular Institute’s director of women’s heart health, Gretchen Wells, MD, PhD, in early 2018.

In March, the severity of Stevenson’s symptoms took her to the ER, where they abated soon afterward. Wells, though, was ready to take the next step with a new procedure, Volcano ComboMap testing, that could delve deeper into Stevenson’s heart and its micro vessels to check for non-obstructive coronary disease.

A large NHLBI study, Women’s Ischemia Syndrome Evaluation, found that a majority of women who had undergone a clinically indicated heart catheterization that uncovered no coronary obstruction did, in fact, have blockages in their micro vessels.

In light of this finding, Gill’s leadership obtained the testing technology and expertise to become the only site in the region that routinely checks for microvascular heart disease.

“Men can get this, too; it’s just far more common in women,” Wells said, adding that left untreated, it can also lead to heart failure.

“We need to get the word out – not just to patients but physicians as well – that if someone has an abnormal stress test or symptoms and a cardiac catheterization shows no obstructive disease, that does not mean that all is well,” Wells said.
The UK Gill Heart & Vascular Institute is one of only five facilities in Kentucky to offer the WATCHMAN implant, an innovative device that lowers the risk of stroke for patients with atrial fibrillation (Afib) not caused by a heart valve problem.

For patients with non-valvular Afib, stroke-causing clots that come from the heart are often formed in the left atrial appendage, or LAA. The WATCHMAN implant addresses this problem by closing off the LAA to keep blood clots from escaping. WATCHMAN is a permanent heart implant that allows patients to stop long-term use of warfarin, a common blood thinner used to treat Afib.

John Gurley, MD, director of the Structural Heart Program at GHVI, notes that, “patients and physicians finally have a good alternative to oral blood thinners to protect patients from stroke without the risk of bleeding.”

Jennifer Vissing, nurse coordinator of the Structural Heart Program, said being able to offer the WATCHMAN implant to patients at GHVI has been beneficial for everyone involved. “WATCHMAN gives our patients that are at a high risk for bleeding while taking oral anticoagulants another option to treat their condition and lower their risk of stroke,” she said. “In addition, it allows us to participate in clinical trials that provide other LAA therapies to our patients, which helps us better understand the treatment options that will work best for our patients.”

Gill completed its first WATCHMAN implant in November 2016 and has now performed 60 procedures, including 31 in 2017 alone. Gill is on pace to nearly double that output in 2018 and currently ranks No. 11 in the nation for implant volumes.
In 2017, the UK Cardiac Surgery team performed more than 700 cardiac surgical procedures, more than had been done in any given year since the inception of UK’s cardiac surgical programs.

More impressive than this record number, however, was the observed-to-expected mortality ratio of 0.66.

Scores considered “acceptable” by the Society of Thoracic Surgeons, which created the database, generally range from 1.3-0.85, with lower scores being better. This STS database is considered the gold standard by which quality in cardiac surgery programs is measured.*

“The fact that UK’s score is so much better than the scores at comparable institutions implies that this is not just a ‘glitch,’ but a true dramatic improvement in the quality of the work being done at UK,” said Michael Sekela, MD, Chief of the Division of Cardiothoracic Surgery.

In 2014, the UK Cardiac Surgery team began an intensive effort to make improvements to its quality metrics, which were already well within the acceptable range.

“We felt we could do better,” Sekela said.

So the team created a plan broken down into the phases of cardiac surgical care: preoperative evaluation, intraoperative management, post-op intensive care management, post-intensive care in-hospital management, and early home management.

Each phase was addressed separately and improvements made at every phase.

As a final step, the team created a 72-page protocol of care covering the time from the moment patients entered the hospital until they left. The document is made available to every staff member playing a role in cardiac patient care, ensuring consistent, high-quality care for every patient.

The dramatic improvement in scores over just three years is a monumental achievement for the program, and a boon for its patients.

“The fact that UK’s score is so much better than the scores at comparable institutions implies that this is... a true dramatic improvement in the quality of the work being done at UK.”

Michael Sekela, MD

* At 0.66, our observed-to-expected ratio verifies that our surgical results are significantly better than those of most STS-reporting programs in the United States.
THE GILL HEART & VASCULAR INSTITUTE is delving into two cutting-edge technologies that have the potential to provide a better quality of life for a population of advanced heart failure patients that had scant, if any, options to treat their symptoms.

The BeatHF and FIX-HF-5CA studies were driven by the absence of implantable device treatments for advanced heart failure patients who have maxed out their medications, according to Aaron Hesselson, MD, director of Electrophysiologic Services at Gill.

Clinical research coordinator Laura True, BSN, RN, CCRN, says these patients fall into a middle ground because they are symptomatic but not to the point where they need a heart transplant or a more in-depth device.

“This is a really specific group of patients who still need some heart failure relief but don’t have any options out there right now for treatment,” she says.

Hesselson says the BeatHF device works by resetting to the proper autonomic balance. In turn, this can aid other neurohormonal mechanisms that may be upset in heart failure.

While both devices are implanted and look like pacemakers, the BeatHF device attaches to the carotid artery in the neck. “It helps with the baroreceptors there to tell the body, ‘hey, you are not doing your job; we need you to work a little bit better,’” True said. “It kind of tricks the brain into working better to help manage heart failure systems.”

The FIX-HF-5CA device works differently. “It works directly on the heart by improving cellular calcium availability necessary for the contraction-coupling mechanism. This stimulation seems to also reverse genetic mechanisms that adversely affect calcium in heart failure,” Hesselson said.

The FIX-HF-5CA device goes into the heart and actually helps to make the heart a better pump, True said. “It is working with the contractility of the heart similar to a medication out there called milrinone, but that requires a continuous IV infusion of that drug, and a lot of patients don’t really want that burden.”

Both devices are in expedited approval process by the FDA in an attempt to make them commercially available sooner and give these patients an option, Hesselson said.

“In fact, the BeatHF study was the first ever to be granted expedited status,” he said.

These treatments, if deemed viable and approved by the FDA, have the potential for significantly improving the patient’s quality of life and decreasing healthcare costs.
EXPERIMENTAL HEART VALVE UTILIZED TO TREAT MANCHESTER WOMAN

It’s been a year since Priscilla Riley’s life changed forever.

Riley, now 71, had been plagued with heart problems for most of her life. As a small child growing up in Eastern Kentucky, she’d had a problem with her aortic valve, the valve that connects the heart to the rest of the body.

“My oldest brother used to carry me down the holler to see the doctor,” she said. “He told my family I would not live very long.”

Riley survived, but she was never the same. When other kids would run and play, she could only sit and watch – a memory that still brings a tear to her eye.

Her heart problem became something she just lived with, making adjustments as she could.

In 1993, she had the Ross procedure, which is an open-heart surgery. In this operation, the aortic valve is replaced with the patient’s pulmonary valve, the valve that connects the heart to the lungs. The pulmonary valve is then replaced with an artificial valve.

Recovery was difficult: Riley spent several weeks in the hospital and two months getting over the surgery. But the procedure was successful and for a while she felt better.

Gradually, though, the problems returned. The artificial pulmonary valve was leaking. Riley began suffering from congestive heart failure – a potentially life-threatening condition in which the heart can’t pump enough blood to meet the body’s needs.

At one point, doctors removed 60-70 pounds of fluid from Riley’s slight body. She’d feel better, but then the fluid would begin to build up again. It was a cycle that happened over and over.

Because of her age and previous surgery, Riley was not a candidate for traditional surgery. Doctors feared she would not survive.

By April 2017, Riley was so ill it looked like she might not make it. That’s when she came to UK and met Dr. Andrew Leventhal, an interventional cardiologist at the Adult Congenital Heart Clinic, part of the UK Gill Heart & Vascular Institute.

Leventhal is a co-principal investigator for a pulmonic valve research study using a transcatheter heart valve. He realized Riley might be a candidate.

“’The doctors have done it again. I’m going to make it again.’”

Priscilla Riley
The trial, known as COMPASSION S3, tests the efficacy of the Sapien 3 transcatheter heart valve as a replacement for a diseased pulmonary valve. The Sapien 3 valve has already been approved for replacement of the aortic valve in patients at intermediate risk or higher for surgical valve replacement.

“The COMPASSION S3 Trial is an excellent example of technology that may help bridge the gap for adults with congenital heart disease who still need specialized follow-up care,” Leventhal said.

Instead of open-heart surgery, the replacement valve is inserted through a vein in the patient’s leg and threaded up to the heart. The incision in Riley’s leg required only a single stitch.

The procedure went exactly as doctors had hoped, and Riley was on her way home two days later. “If it hadn’t been for a small problem with her blood pressure being low, a problem she’d had before this procedure, she could have gone home the very next day,” said her friend and pastor Anthony Lovett, who accompanied Riley to the procedure.

“It still blows my mind,” Lovett said. “The recovery was minimal – no recovery, really. Get her blood pressure regulated and head on home, no problem.”

And unlike the open heart surgery she had in 1993, Riley felt better almost immediately. She was cooking and helping her son with his laundry within days, she said happily.

Other patients are enrolling in the research study, Leventhal said. “If this valve is approved, that would expand the number of patients who can be treated percutaneously,” he said.

A year after her surgery, Riley is going strong and feeling good. “I haven’t felt as good in my life as I do now,” she said.
In 2017, the UK Transplant Center performed its 400th heart transplant, marking a major milestone for a heart transplant program that has been transforming lives since 1991. Additionally, our physicians performed 43 of the 3,244 heart transplants that occurred in the United States in 2017.

Our highly trained doctors and nurses specialize in the complex medical needs of heart transplant patients, while our social workers, pharmacists, nutritionists and support staff offer personalized plans to help patients and families through the entire transplant process.

UK is the only full-service transplant center serving Central and Eastern Kentucky. Many patients travel from other states to see our experts. Patients are provided with a multidisciplinary approach to evaluation, treatment and management of advanced heart failure. “There’s a lot of heart disease in the area, and we need to make sure that patients are getting good care as close to home as possible,” said Navin Rajagopalan, MD, medical director for heart transplantation.

As an advanced center, UK also performs dual-organ transplants. UK’s heart-kidney transplant program serves a critical need, allowing doctors to tackle higher-risk cases where a patient may have kidney dysfunction or disease that must be addressed to promote better outcomes.

“Since 2011, we have had an active program of heart and kidney transplantation, which is very important, because heart failure patients will often have kidney dysfunction as well,” Rajagopalan said. From 2011 to July 2018, UK performed 15 heart-kidney transplants, with four of those happening in 2017.

The expertise of UK’s heart and abdominal surgeons and the strong collaboration between transplant teams have been key to the program. “Our success rate has been fairly remarkable,” Rajagopalan said. “Patients have gotten a good quality of life, they have good heart function, and most have very close to normal kidney function, and they do quite well.”
UK Vascular & Endovascular Surgery is dedicated to treating all aspects of vascular disease for the people of Kentucky and surrounding areas. The program provides comprehensive care for patients with arterial and venous disease, offering the full spectrum of diagnostic, endovascular and surgical procedures. The program also focuses on aortic pathology by performing complex thoracic, thoracoabdominal and abdominal aortic aneurysms and dissections. The program at UK HealthCare has developed leading-edge techniques to treat aortic disease. In addition to superb patient care, Vascular & Endovascular Surgery is also dedicated to advancing the field through publications and leadership positions in regional, national and international vascular surgery societies.

Since 2015, Vascular & Endovascular surgery has seen a significant growth in patient volume. During that time, outpatient encounters have risen 69 percent and inpatient admissions have risen 73.1 percent. OR cases have had the most growth at 273.1 percent. Along with increasing volumes, our treatment for carotid disease has been recognized nationally.

Vascular and Endovascular Surgery participates in the Vascular Quality Initiative (VQI). The purpose of the VQI is to analyze hospital outcomes to improve patient care.
The UK Gill Heart & Vascular Institute provides the region’s only expertise in the management of pulmonary hypertension (PH). Many of our patients are referred from other area hospitals for treatment.

Our program includes an expert team of cardiologists, pulmonologists and nurse practitioners who work together to help patients who have the condition across all five groups delineated by the World Health Organization:

- Pulmonary arterial hypertension.
- PH secondary to disease of the left side of the heart.
- PH due to chronic lung disease and resultant low oxygen levels.
- Chronic thromboembolic pulmonary hypertension.
- PH due to other miscellaneous causes.

Through collaboration with other units across Gill, our multidisciplinary team utilizes heart catheterization, echocardiogram and lung functioning tests to efficiently and accurately obtain a diagnosis. The most common course of treatment is medication therapy; however, for those who do not respond sufficiently to treatment, our program is able to facilitate transition to the UK Transplant Center to identify good candidates for lung or lung/heart transplantation.

Our team remains at the forefront of medical therapy by participating in a range of clinical trials. This ensures that we are able to provide the most advanced medical care to our sickest patients.
The Gill Heart & Vascular Institute has grown dramatically over the past decade to meet the health needs of patients across the Commonwealth. We offer many clinical and support services and have been recognized numerous times for our top-quality medical care. The following are UK HealthCare’s accreditations and recognitions, which demonstrate our commitment to providing the highest standard of care.

**AWARDS**

**The Best Doctors in America®**

**BEST DOCTORS IN AMERICA**
14 cardiovascular physicians named for 2017-2018

- David Booth, MD
- Eric Endean, MD
- John Gurley, MD
- Steve Leung, MD
- Adrian Messerli, MD
- David Minion, MD
- David Moliterno, MD
- Michael Sekela, MD
- Mikel Smith, MD
- Susan Smyth, MD, PhD
- Vincent Sorrell, MD
- Gretchen Wells, MD, PhD
- Thomas Whayne Jr., MD, PhD
- Khaled Ziada, MD
ACCREDITATIONS

U.S. NEWS & WORLD REPORT
No. 1 Hospital in Kentucky and the Bluegrass Region.

High-performing in:

• Aortic Valve Surgery
• Heart Bypass Surgery
• Heart Failure

GET WITH THE GUIDELINES
Awarded Gold by the American Heart Association for resuscitation.
# By the Numbers 2017

## Patient Volume

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<tbody>
<tr>
<td><strong>Inpatient</strong></td>
<td><strong>4,155</strong></td>
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<tr>
<td>Cardiac Surgery</td>
<td>715</td>
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<tr>
<td>Cardiology</td>
<td>2,504</td>
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<td>Vascular</td>
<td>936</td>
</tr>
<tr>
<td><strong>Outpatient</strong></td>
<td><strong>29,634</strong></td>
</tr>
<tr>
<td>Cardiac Surgery</td>
<td>1,093</td>
</tr>
<tr>
<td>Cardiology</td>
<td>24,814</td>
</tr>
<tr>
<td>Vascular</td>
<td>3,727</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>33,789</strong></td>
</tr>
</tbody>
</table>

## CATH and EP Lab Volumes

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic</td>
<td>3,794</td>
</tr>
<tr>
<td>Interventional</td>
<td>828</td>
</tr>
<tr>
<td>EP</td>
<td>1,247</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>5,869</strong></td>
</tr>
</tbody>
</table>

## Procedures

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CABG</td>
<td>316</td>
</tr>
<tr>
<td>Peripheral Vascular Intervention</td>
<td>170</td>
</tr>
<tr>
<td>Valve</td>
<td>144</td>
</tr>
<tr>
<td>ECMO</td>
<td>105</td>
</tr>
<tr>
<td>Carotid Artery Stent</td>
<td>72</td>
</tr>
<tr>
<td>TAVR</td>
<td>71</td>
</tr>
<tr>
<td>Thoracic and Complex EVAR</td>
<td>52</td>
</tr>
<tr>
<td>Heart Transplant</td>
<td>41</td>
</tr>
<tr>
<td>WATCHMAN</td>
<td>31</td>
</tr>
<tr>
<td>VAD</td>
<td>30</td>
</tr>
<tr>
<td>MAZE</td>
<td>9</td>
</tr>
</tbody>
</table>
OVERALL

AMI performance composite

98.8%
of our patients met eligible opportunities of performance measure opportunities – the U.S. average for hospitals is 96.7%.

Defect-free care

92.8%
of our patients received “perfect care” based upon eligibility for each performance measure – the U.S. average for hospitals is 81.3%.

Researching Funding
≈$9.2 MILLION
(NIH and AHA two largest grantors)

50 CLINICAL TRIALS

112 PUBLICATIONS
INTERVENTIONAL SERVICES

It is our goal at Gill to provide transparency to our interventional and catheterization quality. We follow PCI standards dictated by the American College of Cardiology and CMS, and we report to the CathPCI registry to gauge our current quality and note areas of improvement.

Overall PCI Risk-Adjusted Mortality
Lower is better

Appropriateness of PCI Procedures - 2017
Higher is better
ACS Patients
Non-ACS Patients

Median Time to Primary PCI (D2B)
Door to Balloon Time (minutes)
Lower is better

UK HealthCare 59
CathPCI Registry Aggregate Data 60

Implantable Cardioverter-Defibrillator (ICD) Registry Data

91%
of our patients that received ICD in 2017 fulfill class I, IIa or IIb guideline indications – the U.S. average for hospitals is 83.1%.

96.4%
of our ICD patients received the appropriate medications on discharge – the U.S. average is 88.9%.

98.8%
of our STEMI patients met eligible opportunities of performance measure opportunities – the U.S. average is 98%.
HEART FAILURE

Heart disease is the 2nd leading cause of death in Kentucky. We record, review and report quality metrics to ensure that we pinpoint potential areas of improvement and continue to provide the highest quality care to our sickest patients.

One year graft and patient survival

LVAD Outcomes
Percent free from device malfunction and/or thrombosis

<table>
<thead>
<tr>
<th>Months after device implant</th>
<th>Intermacs</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>96.2%</td>
<td>100%</td>
</tr>
<tr>
<td>3</td>
<td>91.7%</td>
<td>92.7%</td>
</tr>
<tr>
<td>6</td>
<td>88.8%</td>
<td>88.3%</td>
</tr>
<tr>
<td>12</td>
<td>83.1%</td>
<td>82.8%</td>
</tr>
</tbody>
</table>

Percent free from infection

<table>
<thead>
<tr>
<th>Months after device implant</th>
<th>Intermacs</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>83.8%</td>
<td>100%</td>
</tr>
<tr>
<td>3</td>
<td>75.6%</td>
<td>86.1%</td>
</tr>
<tr>
<td>6</td>
<td>68.8%</td>
<td>81.3%</td>
</tr>
<tr>
<td>12</td>
<td>60.4%</td>
<td>69.3%</td>
</tr>
</tbody>
</table>

Three year graft survival
Estimated probability of our patients surviving with a functioning graft 3 years

90.62%
– the U.S. average for hospitals is 84.25%

Intermacs Quality Assurance Quarterly Report (1-16 – 9-17)
Our cardiovascular specialists and experts provide the region’s most comprehensive services, diagnostic assessment and therapeutic strategies at multiple locations in Kentucky and West Virginia. Working closely with local physicians and hospitals, we help broaden treatment options by providing access to the latest therapeutic advances, whether it’s providing a much-needed specialist in the local community, remote interpretation of a test through telemedicine or accepting the transfer of a critically ill patient at UK HealthCare in Lexington.

Working with Affiliate Network hospitals, experts from GHVI:
- Provide cardiovascular-specific education and training programs for community doctors, nurses and staff to ensure the most up-to-date cardiovascular information is available to providers.
- Assist cardiovascular programs in achieving and maintaining subspecialty accreditations, which recognizes hospitals for achieving high-quality cardiovascular care.
- Provide access to programs and services not available in local communities.

In addition to our offices at the UK HealthCare campus in Lexington, Gill experts provide care at 10 outreach sites across the Commonwealth. These outreach clinics offer comprehensive diagnosis and treatment for heart and vascular conditions, bringing advanced cardiac care to communities across the state.
COMMUNITY OUTREACH

Heart Walk
Gill teams up with the Kentucky Neuroscience Institute to provide cardiac and stroke risk screenings at the American Heart Association Heart Walk.

CPR Olympics
Gill teams up with Operation Heart. Gill staff and specially-trained pharmacy students teach hands-only CPR and conduct basic health screenings at a local mall.

Go Red for Women
Gill Goes Red for Women at the Healthy Hearts for Women symposium.

Feeding Your Heart and Soul
A Heart Health Event. Plant-based diet expert Jane Esselstyn presents a keynote address and food demonstration as part of a full-day event promoting women’s heart health.
RESEARCH

Research is at the heart of what we do. With our strength and commitment to clinical trials and basic science research, we uncover new and innovative approaches to heart and vascular challenges. We increase understanding and knowledge about these conditions and provide state-of-the-art treatments to our patients.

CLINICAL RESEARCH

Through the UK Gill Heart & Vascular Institute Clinical Research Organization, we enroll patients in clinical trials to study various cardiovascular conditions and help find potential treatments and even cures. Our multidisciplinary process fosters collaboration within Gill as well as UK HealthCare to enroll patients and provide high-quality care throughout the study. In addition to being highly skilled in clinical research practices, our faculty, fellows and Gill staff are passionate about and committed to providing their patients and their patients’ families with access to the most advanced treatment options for their heart and vascular conditions.

Through the Gill Clinical Research Organization, the Appalachian Translational Research Network, and participation in other multi-site trials, we strive to offer several cutting-edge clinical research opportunities for our patients to ensure that they have the most options to choose from when it comes to cardiovascular care. Our clinical research offerings cover the entire spectrum of heart and vascular care, including heart failure, pulmonary hypertension, heart rhythm abnormalities, ischemic heart disease (history of heart attack), congenital heart disease, regenerative medicine, and hypertension.

RESEARCH CENTER

The Saha Cardiovascular Research Center (SCVRC) is responsible for producing our most important basic science research. Through extramurally funded programs, SCVRC physician-scientists and researchers work in the laboratory studying fundamental functions of the cardiovascular system, such as atherosclerosis and aneurysm, cardiac imaging, bioactive lipid mediators, platelet function and thrombosis, and stem-cell biology. Their research creates the building blocks for our clinical trials to better understand and uncover cures for various cardiovascular conditions.

Further, the SCVRC provides a unique, multidisciplinary training program that unites trainees across the disciplines of Medicine, Nursing, and Pharmacy with the goal of increasing the pipeline of clinical investigators and basic scientists who will bridge the gap bench to bedside. Specifically, we aim to:

1. Provide a rigorous and solid research education in the basic sciences related to cardiovascular research
2. Prepare new researchers for translational and clinical science in a highly interdisciplinary environment
3. Provide training in the efficient and ethical conduct of high quality laboratory management and science
4. Create an environment that incubates fellows and mentors with an innovative and nurturing structure of interlaced mentoring teams

The program is available to MD, RN, PharmD, and PhDs with clinical emphasis who are at the early post-doctoral stage of their careers. Upon completion of the program, we anticipate that the trainees will have the experience and capabilities necessary to initiate an independent career as clinical investigator.
Our Cardiovascular Biorepository contains a collection of tissue and blood samples, along with genetic and clinical information from patients with established CVD or at risk for developing CVD. Led by Kenneth Campbell, PhD; Ahmed Abdel-Latif, MD, PhD; Mary Sheppard, MD; Maya Guglin, MD, PhD, and other Gill staff, this team procures and stores samples for internal and external research.

Since 2008, we have procured over 7,000 samples from different regions of approximately 290 human hearts. Each year, we see over 550 donors/procedures that could potentially donate specimens to the project, and we’ve collaborated with more than 25 institutions over the past decade. Through this work, the biorepository has contributed to and accelerated cutting-edge cardiovascular research across the country that will lead to improved treatment options.
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 UK Good Samaritan Hospital. The program is geared toward assuring an exceptional educational experience that prepares fellows to provide high-quality medical care in whatever area they ultimately pursue.

**EDUCATION**

The fellowship provides:

- Dedicated didactic lecture series covering the core curriculum of cardiovascular diseases.
- Specialized lecture series that complements the core curriculum in electrophysiology, EKG interpretation, cardiac imaging, cardiac catheterization, cardiac and vascular surgery, 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 healthcare professionals.
- Team-based approach within a multifaceted healthcare system to optimize patient care.
- Guidance on continuing the self-learning process well beyond the completion of fellowship training.

**FELLOWS**

**Cardiology**

- Talal Alnabelsi, MBCh
- Karam Ayoub, MBBS
- Francis Benn, MD
- Bruce Bradley, MBCh
- Ashley Brunmeier, MD
- Joshua Duchesne, MBBS
- Joshua Eason, DO
- Mary Beth Fisher, DO
- Yared Hailemariam, MD
- Dustin Hillerson, MD
- Michael Jesinger, MD
- Brian Kauh, MD
- Andin Mullis, MD
- Gbolahan Ogumbayo, MBCh
- Suartcha Prueksaritanond, MD
- Matthew Rafn, MD
- Joshua Rutland, MD
- Julie Shelton, DO
- Gregory Sinner, MD
- Matthew Sousa, MD

**Heart Failure & Transplant**

- Marciano Lee, MD

**Cardiac Imaging**

- Patrick Hurley, DO
- Ahmad Elashery, MBCh

**Vascular Surgery**

- Daniel Badia, DO
- Cheryl Richie, MD

**Cardiothoracic Surgery Fellows**

- Sean Johnson, MD
- Mansi Shah, MD

**I-6 Residents**

- Michael Bolanos, MD
- Tyler Gunn, MD
- Thomas Marsden, MD
- Erin Ogburn, MD
- Rebecca Phillip, MD
- Peter Rodgers-Fischl, MD

**Interventional Cardiology**

- Christian Deutsch, MD
- Bennet George, MD
- Naoki Misumida, MD
LEADERSHIP

SUSAN S. SMYTH, MD, PhD
Director
Chief, Cardiovascular Medicine
Jeff Gill Professor of Cardiology

ERIC D. ENDEAN, MD
Deputy Director
Chief, Vascular Surgery
Gordon L Hyde Endowed Professor of Vascular Surgery

MICHAEL SEKELA, MD
Deputy Director
Chief, Cardiothoracic Surgery
Professor of Surgery
FACULTY

CLINICAL

Adult Congenital Heart Disease
Andrew Leventhal, MD
Douglas Schneider, MD
Mark Vranicar, MD

CARDIOLOGY
Melina Aguinaga Meza, MD
Craig Chasen, MD
Stephen Glasser, MD
Leo Horan, MD
Chien-Suu Kuo, MD
Rick McClure, MD
Michael McKinney, MD
Charles Salters, MD
Susan Smyth, MD, PhD, FACC
Joseph Thomas, MD
Gretchen Wells, MD, PhD
Thomas Whayne Jr., MD, PhD

CARDIOTHORACIC SURGERY
Maher Baz, MD
Cherry Ballard-Croft, PhD
Tessa London, MD

CARDIOVASCULAR IMAGING
Michael Brooks, MD
Vedant Gupta, MD
Stephen Hobbs, MD
John Kotter, MD
Steve Leung, MD
Elizabeth Oates, MD
Mikel Smith, MD, FACC
Vincent Sorrell, MD, FACC, FACP
Michael Winkler, MD
Marianna Zagurovskaya, MD

ELECTROPHYSIOLOGY
Yousef Darrat, MD
Samy-Claude Elayi, MD
Aaron Hesselson, MD

HEART FAILURE/MCS and TRANSPLANTATION
Paul Anaya, MD, PhD
Meenakshi Bhalla, MD, FACC
David Booth, MD
Maya Guglin, MD, PhD
Andrew Kolodziej, MD
Rajasekhar Malyala, MD
George Makdisi, MD
Navin Rajagopalan, MD
Michael Sekela, MD, FACS
Alexis Shafii, MD

INTERVENTIONAL
Ahmed Abdel-Latif, MD
Vikas Bhalla, MD
David Booth, MD
John Gurley, MD
Andrew Leventhal, MD
Adrian Messerli, MD
David Molinero, MD
Khaled Ziada, MD

PULMONARY HYPERTENSION
David Booth, MD
Andrew Kolodziej, MD

VASCULAR
Joseph Bobadilla, MD, FACS
Michael Bounds, MD
Eric Endean, MD, FACS
David Minion, MD, FACS
Nathan Orr, MD
Samuel Tyagi, MD
Eleftherios Xenos, MD, PhD, RVT, FACS
RESEARCH

Ahmed Abdel-Latif, MD, PhD
Paul Anaya, MD, PhD
Douglas A. Andres, PhD
Donna Arnett PhD, MSPH
Cherry Ballard-Croft, PhD
Maher Baz, MD
David C. Booth, MD
Kenneth S. Campbell, PhD
Lisa A. Cassis, PhD
Craig A. Chasen, MD
Misook Lee Chung, PhD, RN
Alan Daugherty, PhD, DSc
Frederick C. de Beer, MD
Maria C. de Beer, PhD
Brian P. Delisle, PhD
Eric D. Endean, MD, FACS
Victor M. Ferraris, MD, PhD
Bradley S. Fleenor, PhD
Ming Cui Gong, PhD, MD
Scott M. Gordon, PhD
Gregory Graf, PhD
Zhenheng Guo, PhD
John C. Gurley, MD
Robert W. Hadley, PhD
Bernhard Hennig, PhD
Stephen Hobbs, MD
Leo G. Horan, MD
Brian A. Jackson, PhD
Victoria L. King, PhD
Chien-Suu Kuo, MD
Sangderk Lee, PhD
Terry A. Lennie, PhD, RN
Steve Wah Leung, MD
Andrew R Leventhal, MD, PhD
Zhenyu Li, MD, PhD
Xiang-An Li, PhD
Robert A. Lodder, PhD
Analia Loria, PhD
Hong S. Lu, MD, PhD

Rick R. McClure, MD
Adrian Messerli, MD
David J. Moliterno, MD
Andrew J. Morris, PhD
Debra Moser, PhD, RN
Gia Mudd-Martin, PhD, MPH, RN
Timothy Wm. Mullett, MD
Mariana Nikolova-Karakashian, PhD
M. Elizabeth Oates, MD
Fredrick Onyango Onono, PhD
Jeffrey L. Osborn, PhD
Sabire Ozcan, PhD
Kevin J. Pearson, PhD
Julie Pendergast, PhD
Todd Porter, PhD
Navin Rajagopalan, MD
David C. Randall, PhD
Sibu Saha, MD, MBA
Jonathan Satin, PhD
Nancy E. Schoenberg, PhD
Mary B Sheppard, MD
Mikel D. Smith, MD
Susan S. Smyth, MD, PhD
Vincent L. Sorrell, MD
Venkateswaran Subramanian, PhD
Lisa R. Tannock, MD
Ryan Temel, PhD
Sean Eric Thatcher, PhD
Mark Vranicar, MD
Shuxia Wang, MD, PhD
Christopher Mark Waters, PhD
Nancy R. Webb, PhD
Thomas French Whayne, Jr., MD, PhD
Sidney W. Whiteheart, PhD
Jeremy P. Wood, PhD
Changcheng Zhou, PhD
Khaled M. Ziada, MD
Joseph B. Zwischenberger, MD
PUBLICATIONS

2017


Chung CS, Hoopes CW, Campbell KS. Myocardial Relaxation is accelerated by Fast Stretch, not Reduced Afterload. *J Mol Cell Cardiol.* 2017. 103: 65-73.


Omar HR, Charnigo R, Guglin M. Prognostic Significance of Discharge Hyponatremia in Heart Failure Patients with Normal Admission Sodium (from the ESCAPE Trial). *Am J Cardiol.* 2017. 120:607-615.


Omar HR, Guglin M. Extent of Jugular Venous Distension and Lower Extremity Edema are the Best Tools from History and Physical Examination to Identify Heart Failure Exacerbation. *Herz.* 2017.


Omar HR, Guglin M. Mitral Annulus Diameter is the Main Echocardiographic Correlate of S3 Gallop in Acute Heart Failure. *Int J Cardiol.* 2017. 228:834-836.


Quinnessenza JA. It’s not about “can we” but “should we”. *J Thorac Cardiovasc Surg.* 2017. 154:1701-1702.


CLINICAL TRIALS

Adult Congenital Heart Disease

COMPASSION 3: Congenital Multicenter Trial of Pulmonary Valve Dysfunction Studying the SAPIEN InterventIONal THV
PI: Andrew Leventhal, MD, PhD
Sponsor: Edwards Lifescience

Pulmonary Hypertension

TDE-HF-301 A Multicenter, Randomized, Double-blind, Placebo-controlled Study to Evaluate the Safety and Efficacy of Oral Treprostinil in Subjects with Pulmonary Hypertension (PH) in Heart Failure with Preserved Ejection Fraction (HFpEF)
PI: David Booth, MD
Sponsor: United Therapeutics

ADAPT Registry: A Patient Registry of the Real World Use of Orenitram
PI: David Booth, MD
Sponsor: United Therapeutics

Opus Registry: Observational drug registry of Opsumit in new users
PI: David Booth, MD
Sponsor: Actilion

International Study of Comparative Health Effectiveness with Medical and Invasive Approaches (ISCHEMIA)
PI: David Booth, MD
Sponsor: New York University School of Medicine

A Double Blind Randomized Placebo Controlled Trial Evaluating the Efficacy and Safety of Nintedanib Over 52 Weeks in Patients with Progressive Fibrosing Interstitial Lung Disease (PF-ILD)1199
PI: Ketan Buch, MD
Sponsor: Boehringer Ingelheim

An Open Label Extension study of Inhaled Treprostinil in Subjects with Pulmonary Hypertension Due to Parenchymal Lung Disease
PI: Ketan Buch, MD
Sponsor: United Therapeutics Corporation

Regenerative Medicine

ALLSTAR: Allogenic Heart Stem Cells to Achieve Myocardial Regeneration
PI: Ahmed Abdel-Latif, MD, PhD
Sponsor: Capricor Incorporated

(Dream HF) A Double-blind, Randomized, Sham-procedure-controlled, Parallel-group Efficacy and Safety Study of Allogeneic Mesenchymal Precursor Cells (CEP-41750) in Patients with Chronic Heart Failure Due to Left Ventricular Systolic Dysfunction of Either
PI: Ahmed Abdel-Latif, MD, PhD
Sponsor: Mesoblast, Inc.

Clinical Trial of the On-X Valve Using Low Dose Anticoagulation Therapy
PI: Michael Sekela, MD
Sponsor: On X Life Technologies Incorporated

Cardiology

CALM-2: Controlling And Lowering Blood Pressure with the MobiusHD is a prospective, randomized, double-blind sham-controlled multi-center pivotal study.
PI: John Kotter, MD
Sponsor: Vascular Dynamics

TAFI/DS-1040b: A Phase 1b, Randomized, Double-Blind, Placebo-Controlled, Multi-Center, Single Ascending Dose Study to Assess the Safety, Efficacy, Pharmacokinetics, and Pharmacodynamics of DS-1040b when Added to Standard of Care Anticoagulation Therapy in Subjects with Acute Submassive Pulmonary Embolism.
PI: Susan Smyth, MD, PhD
Sponsor: Daiichi Sankyo

CT Surgery

An International, Multicenter Randomized, Double-blind, Placebo-controlled Phase 3 Trial Investigating the Efficacy and Safety of Rivaroxaban to Reduce the Risk of Major Thrombotic Vascular Events in Patients With Symptomatic Peripheral Artery Disease
PI: Sibu P Saha, MD, MBA
Sponsor: Covance

A Prospective, Randomized, Controlled study to Evaluate the Effectiveness and Safety of CELSTAT as an Adjunct to Hemostasis for Tissue Bleeding in Cardiothoracic General and Vascular Surgery
PI: Victor Ferraris, MD, PhD
Sponsor: Baxter Healthcare Co
A Single-Arm, Phase II Study of Thoracoscopic Lung Cancer Staging with the Use of Intraoperative Ultrasound at the Time of Definitive Resection
PI: Angela Mahan, MD
Sponsor: KY Lung Cancer Research Fund

Phase 1b/2a Safety and Pharmacokinetic Study of G1T28 in Patients with Extensive-Stage Small Cell Lung Cancer (SCLC) Receiving Etoposide and Carboplatin Chemotherapy
PI: Timothy W Mullett, MD
Sponsor: G1 Therapeutics Incorporated

KCTN Data Coordinator
PI: Timothy W Mullett, MD
Sponsor: KY Lung Cancer Research Fund

STTR: Phase 2: Hyperthermia-An Early Feasibility Study of Perfusion-Induced Hyperthermia for Metastatic Non-Small Cell Lung Carcinoma
PI: Jonathan Kiev, MD
Sponsor: Exatherm LLC

SBIR [Phase II]: Development of Percutaneous DLC for Total Cavo-Pulmonary Assistance
PI: Dongfang Wang, MD, PhD
Sponsor: W-Z Biotech LLC

CV Imaging
BMS CV002-004: A Longitudinal Evaluation of Disease and Fibrosis Biomarkers in Different Groups of Heart Failure Patients to Enhance the Early Clinical Development of Compounds with Anti-fibrotic Activity in the Heart
PI: Vincent L. Sorrell, MD
Sponsor: Bristol Myers Squibb Company

Evaluating Quality of Lung Cancer Screening Implementation
PI: Michael Brooks, MD
Sponsor: KY Lung Cancer Research Fund

Global CMR Registry Stress perfusion substudy (SPINS trial)
PI: Steve Leung, MD
Sponsor: Society for Cardiovascular Magnetic Resonance

An Observational Study to Determine the Incidence of Catheter-Related Venous Thrombosis When Using Arrow Peripherally-Inserted Central Catheters with Chlorag+ard Technology
PI: Michael Winkler, MD
Sponsor: Arrow International Incorporated

The Effect of the Use of Proximal vs. Distal Intravenous Access Devices for Power Injection of Iodinated Contrast Media on the Safety, Quality and Rapidity of Computed Tomography Angiography
PI: Michael Winkler, MD
Sponsor: Teleflex Medical Incorporated

Advanced Heart Failure and Transplant
Outcomes AlloMap Registry (OAR) Study and Donor-Derived Cell-Free DNA - Outcomes AlloMap Registry Sub-Study: Utility of Donor-Derived Cell-Free DNA in Association with Gene-Expression Profiling (AlloMap) in Heart Transplant Recipients
PI: Navin Rajagopalan, MD
Sponsor: CareDx Incorporated

INTELECT 2-HF: Investigation of Heartmate2 LVAD with Sensing CardioMEMs Technology in Heart Failure Patients
PI: Maya Guglin, MD, PhD
Sponsor: St Jude Business Services Incorporated

Anticoagulation Management in Patients with LVAD Undergoing Invasive Surgeries or Procedures
PI: Maya Guglin, MD, PhD
Sponsor: St Jude Medical Incorporated

CardioMEMS HF System PAS
Anticoagulation Management in Patients with LVAD Undergoing Invasive Surgeries or Procedures
PI: Maya Guglin, MD, PhD
Sponsor: St Jude Medical Incorporated

Interventional Cardiology
AMPLATZER Amulet Left Atrial Appendage Occluder
PI: John C Gurley, MD
Sponsor: St Jude Medical Incorporated

SHIELD II: Coronary InterventionS in Hlgh-Risk PatiEnts Using a Novel Percutaneous Left Ventricular Support Device
PI: John C Gurley, MD
Sponsor: St Jude Medical Incorporated

GORE HELEX Septal Occluder and Antiplatelet Medical Management for Reduction of Recurrent Stroke or Imaging-Confirmed TIA in Patients Foramen Ovale (PFO) (the REDUCE Study)
PI: John C Gurley, MD
Sponsor: W L Gore Association Inc

TWILIGHT Study: Ticagrelor with Aspirin or Alone in high risk patients after PCI
PI: David Moliterno, MD
Sponsor: Mount Sinai

Cardiovascular Inflammation Reduction Trial (CIrT)
PI: Adrian Messerli, MD
Sponsor: Brigham and Womens Hospital

FAME 3–Fractional Flow Reserve vs. Angiography for Multivessel Evaluation Trial
PI: Khaled Ziada, MD
Sponsor: Stanford University
CLINICAL TRIALS - 2017

SPYRAL HTN ON MEDS: Global Clinical Study of Renal Denervation with the Symplicity Spyral multi-electrode renal denervation system in patients with uncontrolled hypertension on standard medical therapy
PI: Khaled Ziada, MD
Sponsor: Medtronics Inc

SPYRAL HTN OFF MEDS: Global Clinical Study of Renal Denervation with the Symplicity Spyral multi-electrode renal denervation system in patients with uncontrolled hypertension on standard medical therapy
PI: Khaled Ziada, MD
Sponsor: Medtronics Inc

Electrophysiology
SJM Brady MRI Post Approval Study
PI: Samy claude Elayi, MD
Sponsor: St Jude Business Services Incorporated

Evaluating the Effectiveness of the LifeVest Defibrillator and Improving Methods for Determining the Use of Implantable Cardioverter Defibrillators (The VEST/PREDICTS Study)
PI: Samy claude Elayi, MD
Sponsor: University of California San Francisco

FIX-HF-5CA: Continued Access Protocol for the Evaluation of the OPTIMIZER Smart System in Subjects with Moderate-to-severe Heart Failure with Ejection Fraction between 25% and 45%.
PI: Aaron Hesselson, MD
Sponsor: Impulse Dynamics

BeAT HF: Barostim Neo - Baroreflex Activation Therapy for Heart Failure
PI: Aaron Hesselson, MD
Sponsor: CVRx

Vascular and Endovascular Surgery
Expanding Patient Applicability with PoLymer SEaling OVATion Alto StEnt Graft IDE Study
PI: David J Minion, MD
Sponsor: Endologix Incorporated

PRESERVE-Clinical Study to Evaluate the Safety and Effectiveness of the Zenith Branch Endovascular Graft-Iliac Bifurcation
PI: David J Minion, MD
Sponsor: Cook Incorporated
GORDON L. HYDE LECTURESHIP IN VASCULAR SURGERY

The UK Vascular Surgery program established the Gordon L. Hyde Lectureship in Vascular Surgery in 2016 as a tribute to the surgeon who founded the specialty at the UK HealthCare.

“Dr. Hyde is well known nationally for his academic and research contributions to the field. But on a more personal note, when I first came to UK as a member of its faculty, Dr. Hyde was a mentor and a friend.”

Eric Endean, MD
Chief, Vascular Surgery

Past honored speakers

2018: Dr. John (Jeb) Hallett
Professor of Surgery, Medical University of South Carolina
“What does curiosity have to do with being a surgeon?”

2017: Dr. Jack Cronenwett
Professor of Surgery, the Dartmouth Institute for Health Policy and Clinical Practice
“Sharing data to improve the quality of vascular health care”

2016: Dr. Allen Lumsden
Medical Director, Methodist DeBakey Heart & Vascular Center
Department of Cardiovascular Surgery
“Imaging and Navigation in Complex Cardiovascular Pathologies”

INAUGURAL DR. NANCY C. FLOWERS AND DR. LEO G. HORAN LECTURESHIP IN CARDIOLOGY

Dr. Nancy Flowers and Dr. Leo Horan were an integral part of Gill Heart & Vascular Institute. When Dr. Flowers passed from this life in 2016, her family established this lectureship in hopes that her legacy will continue to inspire cardiologists and drive breakthrough research.

Honorary Speaker
Kim Eagle, MD, MACC
University of Michigan
Only through private support can we fully realize our potential as a state-of-the-art, comprehensive academic cardiovascular center. Despite being the No. 1 cardiovascular service line in Central Kentucky, more work must be done as we tackle Kentucky’s No. 1 public health crisis in the Commonwealth: cardiovascular disease.

By using an integrated and comprehensive treatment approach, our patients have improved outcomes, while maintaining a strong sense of self and balance even in the most trying of times. Heart and vascular disease touches all of us, and only through a tireless pursuit of innovation can we unlock the answers to treating the human condition—at its heart.

For more information about investment opportunities at the Gill Heart & Vascular Institute, its services, and ongoing needs, please contact:

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