MEMORIAL HERMANN HEART & VASCULAR

'24 annual report

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Heart & Vascular

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SERVICE LINE ADMINISTRATION LEADERS

Kyle Price
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Service Lines
Memorial Hermann Health System

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Heart & Vascular Service Line
Memorial Hermann Health System

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Welcome to the 2024 Memorial Hermann Heart & Vascular Annual Report. This report shines a spotlight on our accomplishments over the past year, with a focus on quality outcomes and the innovative approaches we take to treat heart and vascular diseases and conditions.

Since the merger between Memorial Healthcare System and Hermann Hospital in 1997, Memorial Hermann has focused on building high-quality cardiovascular services with pioneering physicians, industry-leading innovation and breakthrough research aimed at discovering new and better ways to care for patients with cardiovascular conditions.

Our success relies on the broad perspectives of experienced and knowledgeable physicians from within Memorial Hermann and our affiliated specialists and research partners. We've also developed a network approach that spans Memorial Hermann's hospitals and affiliate facilities, so no matter where patients in Greater Houston need cardiovascular care, they will receive consistent, high-quality care fueled by evidence-based practice and cutting-edge research throughout our network.

Memorial Hermann, one of the nation's largest not-for-profit health systems, has been recognized by Becker's Hospital Review in 2023 as a top-100 hospital and health system with a great heart program. Memorial Hermann comprises more than 33,000 employees, more than 260 care delivery sites, 14 owned and operated hospitals and three joint-venture hospital facilities. It also operates one of the country's busiest Level I trauma centers at Memorial Hermann-Texas Medical Center and numerous specialty programs and services throughout Greater Houston.

Memorial Hermann has also achieved several milestones in cardiovascular services in 2023. This year, affiliated physicians at Memorial Hermann-TMC performed the 600th transcatheter edge-to-edge repair (TEER) to treat mitral valve regurgitation. The hospital also received a three-star rating—the highest rating possible—for transcatheter aortic valve repair (TAVR) from the Society of Thoracic Surgeons (STS) and the American College of Cardiology's (ACC's) TVT Registry™, which publicly reports outcomes for cardiovascular procedures. And several Memorial Hermann sites earned recognition as Blue Cross Blue Shield Blue Distinction+ and Blue Distinction for Cardiac Care. At Memorial Hermann, our goal is to be on the leading edge of high-quality cardiovascular care in our community and beyond.

We also remain committed to training the next generation of physicians and clinical staff. Memorial Hermann continues to offer premier continuing education opportunities, such as the Houston Aortic Symposium and the Houston Shock Symposium.

CARDIAC SURGERY

Today heart surgery encompasses more than traditional open-heart surgery. At Memorial Hermann, we offer a full spectrum of options for cardiac surgery, including traditional open-heart surgery, minimally invasive surgery and robotic surgery.

We employ multispecialty collaboration and focus on quality, which are the cornerstones of our commitment to successful patient outcomes, as we develop the cardiac surgery of tomorrow through pioneering research and innovating new techniques and technology.

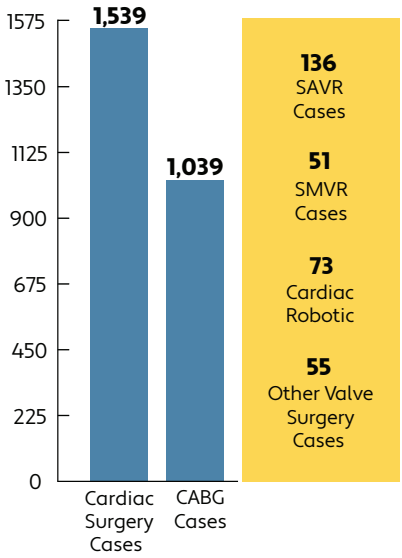
Full-Spectrum Cardiac Surgery

Over the past year, our affiliated surgeons performed 2,990 cardiac surgeries. Forty-two percent of these were traditional open procedures, including valve repairs and replacements, coronary artery bypass grafts and septal repairs. Fifty-four percent were minimally invasive surgeries to correct problems with aortic valves, mitral valves and left atrial appendages. Four percent were surgeries performed using a surgical robot.

Based on factors such as co-morbidities and disease processes, traditional open-heart surgery may be the best option for some patients who require cardiac surgery. The affiliated team of surgeons, perfusionists, anesthesiologists and surgical assistants along with our nurses are experienced in caring for patients during heart surgery. Additionally, clinical staff in the Cardiovascular Intensive Care Unit (CVICU) are skilled in post-operative care for cardiac surgery patients.

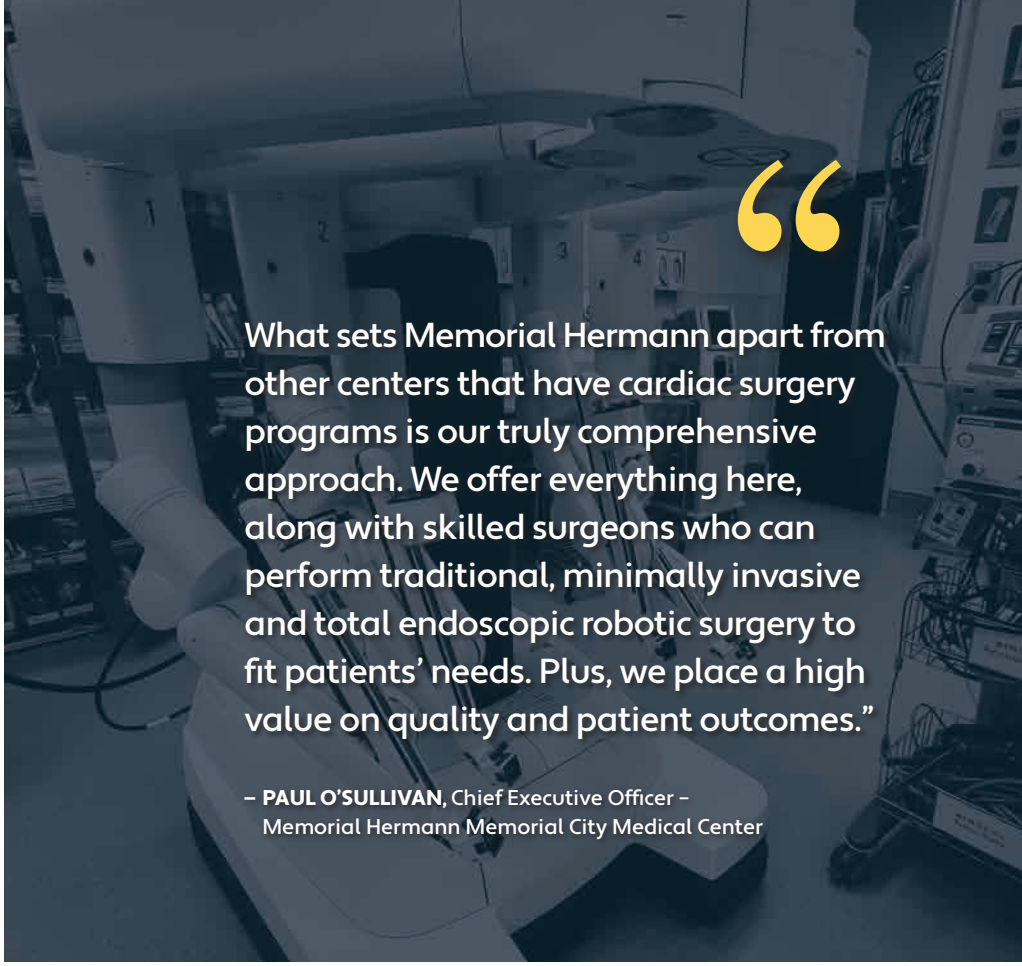
Minimally invasive surgery performed at Memorial Hermann includes transcatheter aortic valve replacement (TAVR), transcatheter edge-to-edge repair (TEER) of the mitral valve and left atrial appendage occlusions. Our affiliated heart surgeons also take the minimally invasive approach, when appropriate, to perform coronary artery bypass grafts, septal myectomies, cardiac ablations, maze procedures for atrial fibrillation, tumor resections and lead placements for pacemakers. With smaller incisions, patients undergoing minimally invasive surgeries tend to recover more quickly and have a lower risk for complications,

FY23 VOLUMES



Source: Memorial Hermann internal data. July 1, 2022–June 30, 2023

such as blood loss and infection. While many cardiac programs include robotic cardiac surgery, less than 5% of cardiac surgeons in the United States have been trained to perform the full complement of cardiac surgical procedures using robotic techniques. At Memorial Hermann, we offer total endoscopic robotic surgery, using precision instruments and small incisions to perform procedures that have traditionally been done through large open incisions or laparoscopically. Very few programs offer this comprehensive list of procedures, all done through incisions that are less than an inch long and without spreading the ribs in a traditional thoracotomy. Patients benefit from the less invasive nature of robotic cardiac surgery which tends to result in fewer complications, such as blood loss, and often go home in less than three days—even the next day—with minimal pain and a shortened recovery period. With access to surgical robots at Memorial Hermann Memorial City Medical Center and Memorial Hermann-Texas Medical Center, we're on the leading edge of meeting our patients' preference for high-quality surgical options, such as robotic cardiac surgery.



Commitment to Quality and Innovation

Memorial Hermann's commitment to quality cardiac surgical care is evidenced by our partnership with Vizient®, a leading health care performance improvement company, and by benchmarking our outcomes against similarly sized programs through the Society of Thoracic Surgeons (STS) Adult Cardiac Surgery Database (ACSD), the STS/ACC TVT Registry™ and the National Cardiovascular Data Registry (NCDR) Left Atrial Appendage Occlusion (LAAO) Registry.

In 2023, the Vizient Mortality Index Ranking for cardiac surgery at Memorial Hermann-TMC was No. 8 among cardiac surgery programs that are comparable in size and in patient morbidity. This is, in part, attributable to the implementation of pre-operative risk assessments, administered to patients by our clinical teams to determine the possibility of complications following coronary artery bypass grafts. Through these assessments, we have reduced morbidity by 3.3% and mortality by 2%, according to Memorial Hermann's Tableau data.

Also, our participation in clinical trials demonstrates Memorial Hermann's desire to further evolve cardiac surgery. We currently serve as a trial site for the MitraClip Repair MR Study, which is comparing the clinical outcomes of the MitraClip™ device versus surgical repair of mitral valve regurgitation. The surgical repair component of this trial is being done robotically at Memorial Hermann Memorial City.

Memorial Hermann's cardiac surgery program is leading the way now into the future of cardiac surgery, offering more innovative solutions for the most complex cases.

MULTIDISCIPLINARY COLLABORATION

A unique component of Memorial Hermann's cardiac surgery program is our team approach to cardiac care and the collaboration of our affiliated cardiologists, electrophysiologists, cardiothoracic and vascular surgeons and anesthesiologists. Multidisciplinary conferences bring together heart and vascular physicians, along with a variety of other specialists, to discuss cases, allowing each specialty to weigh in on the best management and treatment options. This cooperation leads to better overall patient care. Moreover, the experience and specialization of the clinical teams, including nurse practitioners and hospitalists who care for the patients before, during and after their surgery, add to our quality outcomes.

THORACIC SURGERY

Memorial Hermann offers a complete range of thoracic services, from diagnostic procedures to innovative minimally invasive surgical options designed to improve outcomes for patients with diseases of the chest, airway and esophagus.

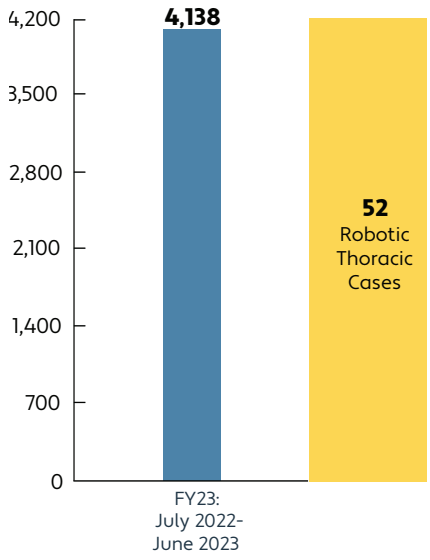
***U.S. NEWS & WORLD REPORT* HIGH PERFORMING HOSPITALS**

Memorial Hermann Hospital received High Performing Hospital awards by *U.S. News & World Report* for Pulmonology & Lung Surgery and Lung Cancer Surgery.

Our nationally recognized team of affiliated surgeons has specialized expertise in esophageal resections for both benign and malignant disease, colon interposition for total esophageal replacement, bronchial sleeve resections and related bronchoplasty procedures, and tracheal sleeve resections. The team performs both open and minimally invasive pulmonary resections, including video-assisted thoracoscopic surgery (VATS) and robot-assisted thoracic surgery (RATS).

Regardless of where a patient enters the Memorial Hermann system, the patient's treatment options are never limited to the treatment modalities an individual surgeon or a particular group of surgeons performs. Should a patient presenting at a Memorial Hermann facility need a higher level or different type of care, the patient may be transferred to another Memorial Hermann facility, one equipped with the technology and expertise to provide the appropriate care. In short, all of our patients benefit from a full spectrum of traditional, minimally invasive and robotic surgeries and the collaboration of the renowned

LOW-DOSE CT LUNG CANCER SCREENING GROWTH (FY23)



Source: Memorial Hermann internal data.

specialists and subspecialists trained to perform them.

Diagnosing and Treating Esophageal Disorders

The Memorial Hermann Esophageal Disease Center provides streamlined care for patients with conditions affecting the upper GI tract, including gastroesophageal reflux disease (GERD), swallowing disorders, such as achalasia, hiatal hernia and cancers of the esophagus or stomach. One of the first of its kind in the region, the Center is equipped with the most advanced tools for making accurate diagnoses. A multidisciplinary team of gastroenterologists, radiologists, pathologists and surgeons collaborates to discuss complicated cases, develop plans of care and ensure patients receive high-quality, specialized care, tailored to their needs. When surgery is necessary, the team uses minimally invasive laparoscopic procedures that prevent reflux disease and result in faster recovery and earlier return to daily activities.

Minimally Invasive and State-of-the-Art Robotic Options for Lung Care

The dedicated Memorial Hermann Lung Nodule team utilizes the latest technologies, including advanced robotic navigational techniques for diagnosing smaller lung nodules early. They also use endobronchial ultrasound (EBUS) for lung cancer diagnosis and staging. If surgery is required, surgical options for early-stage lung cancer include video-assisted and robotic-assisted thoracoscopic wedge resections, lobectomies and segmentectomies. Patients undergoing these procedures typically have shorter hospital stays, shorter time to recover at home, smaller scars and a lower likelihood of requiring blood transfusions.

The team also utilizes robotic-assisted bronchoscopy to diagnose lung nodules, including early-stage lung cancers. This minimally invasive technique allows physicians to reach and sample previously hard-to-reach nodules in the periphery of the lungs. It is particularly safe and useful in diagnosing early-stage lung cancer in patients with co-existing emphysema, a condition which puts them at higher risk for lung collapse. In some cases, diagnosis and treatment can be performed in the same visit, under the same anesthesia, sparing the patient from undergoing two separate procedures.

Lung cancer patient cases are reviewed by a multidisciplinary tumor board whose members discuss treatment options, create individualized treatment plans, coordinate each patient's care and provide access to a wide array of support resources.

Thoracic Conditions Treated

Swallowing Problems
- GERD
- Hiatal Hernia
- Barrett's Esophagus
- Reflux-Related Adult-Onset Asthma
- Peptic Esophageal Stricture
- Previous Failed Anti-Reflux Surgery

Esophageal Motility Disorders
- Achalasia
- Scleroderma
- Diffuse Esophageal Spasm
- Nutcracker Esophagus
- Hypertensive Lower Esophageal Sphincter
- Eosinophilic Esophagitis
- Other Esophageal Diseases
- Tracheoesophageal Fistula
- Zenker's Diverticulum
- Schatzki's Ring

Cancers in the Chest
- Esophageal Cancer
- Lung Cancer

Treatments For Thoracic Conditions

- Lung Cancer Surgery
- Lung Transplant
- VATS
- Esophageal Cancer Surgery
- Heller Myotomy (laparoscopic esophagomyotomy)
- Laparoscopic Anti-Reflux Surgery
- Pulmonary Resection
- Esophageal Resection
- Colon Interposition
- Bronchial Sleeve Resection
- Bronchioplastic Procedures
- Tracheal Sleeve Resection

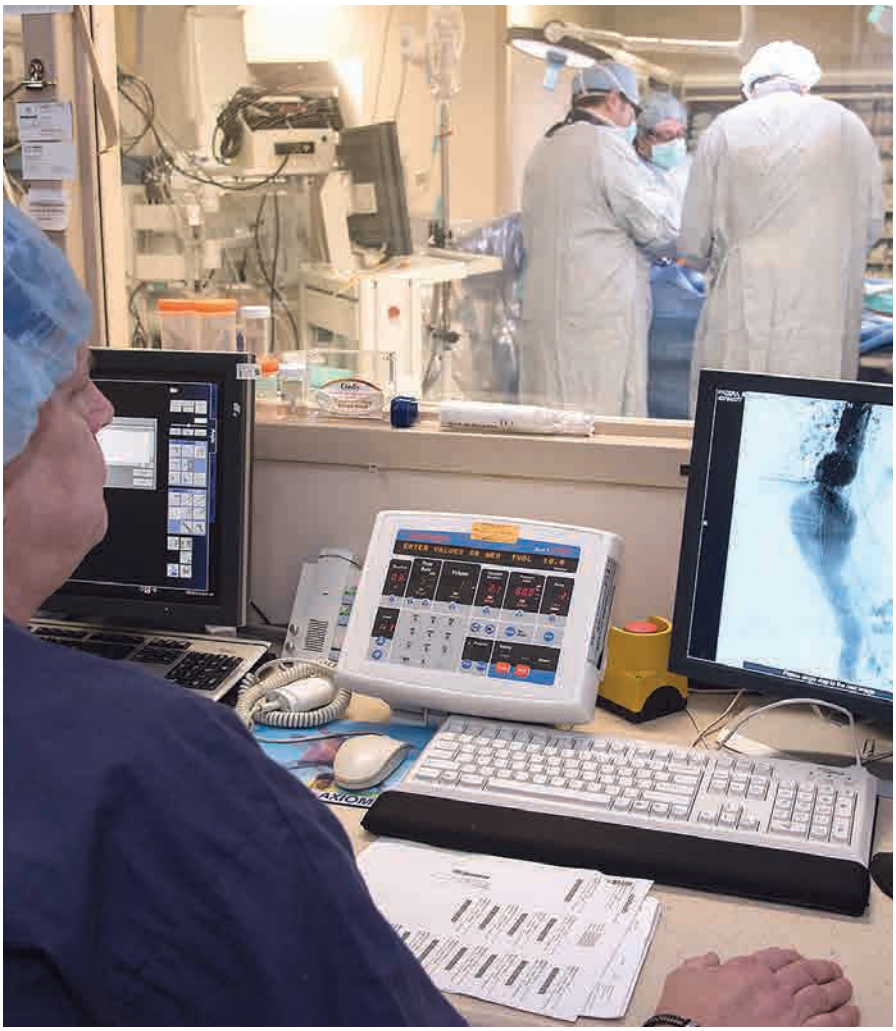
Memorial Hermann offers a full complement of vascular and endovascular care to patients with venous and arterial diseases.

Advanced Clinical Practice

We continue to advance clinical practice, using the latest techniques and technology to treat peripheral vascular disease (PVD), carotid artery stenosis, aneurysms, vascular malformations and thromboembolic complications, as well as superficial and deep venous diseases that require interventions and revascularization. Our vascular specialists collaboratively review cases and complications to keep the entire clinical team updated on the latest evidence-based care and practice.

We have built a robust endovascular infrastructure, including specially trained vascular surgeons, interventional cardiologists and radiologists utilizing next-generation endovascular suites and hybrid operating rooms equipped with the latest imaging technology. A simulation lab at Memorial Hermann-TMC allows for pre-procedure planning to improve outcomes and captures data on fluoroscopy time, radiation exposure and total operating time to enhance patient and staff safety.

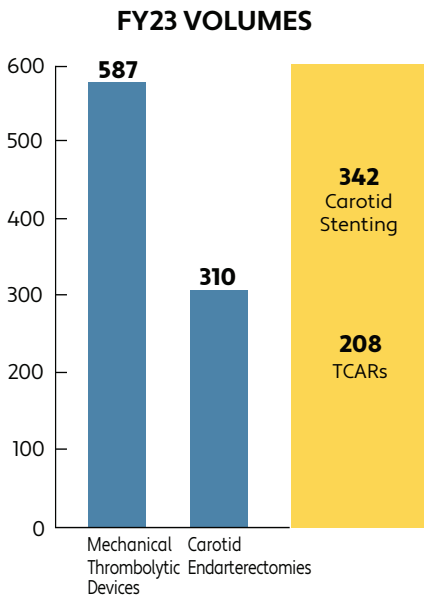
Additionally, Memorial Hermann's team of affiliated vascular surgeons has excelled in using mechanical thrombectomies to treat deep vein thrombosis and pulmonary emboli. In 2023, nearly 600 mechanical thrombectomies were performed throughout the system.



While endovascular interventions have increased due to their minimally invasive nature, open vascular surgery remains relevant and necessary to treat some of the most complex vascular conditions. Patients are often referred to Memorial Hermann for complex cardiothoracic and vascular procedures, such as coronary endarterectomy. While relatively few surgeons in the U.S. are experienced and specialize in performing this procedure, when performed well,

“We have built a vascular surgery program that blends clinical excellence, research and education with a focus on optimizing patient outcomes.”

– **AMY HARBERG,** Vice President – Memorial Hermann Heart & Vascular



Source: Memorial Hermann internal data.
July 1, 2022–June 30, 2023

it has been shown to produce excellent outcomes for patients with severe diffuse coronary disease. Similarly, for PVD and chronic limb-threatening ischemia that may lead to amputation, our experienced and skilled vascular surgeons may opt to perform open surgery to ensure optimal outcomes. Also, as a Level I trauma center—one of the busiest in the United States—Memorial Hermann-TMC is equipped and staffed to handle vascular trauma, such as from motor vehicle accidents, where open surgery remains standard.

Memorial Hermann's affiliated team of industry-leading physicians is helping to develop care innovations and teaching the next generation of caregivers.

Vascular surgeons affiliated with Memorial Hermann routinely perform hybrid procedures that enable them to minimize the amount of major surgery performed while achieving high-quality outcomes. The surgeons are also boosting post-surgery surveillance to increase long-term patency.

Memorial Hermann also supports diabetes and nephrology care by offering procedures to create access for dialysis and to repair these fistulas, if necessary. And over the past year, we have expanded options to treat thoracic outlet syndrome and median arcuate ligament syndrome, which calls for a specialized knowledge and multidisciplinary collaboration.

Our commitment to improve the quality, safety, effectiveness and cost of vascular health care is evident in our participation in the Society for Vascular Surgery® Vascular Quality Initiative® (SVS VQI) clinical registry. As registry members, we subject our cases and outcomes to expert scrutiny and share our best practices with other institutions, paving the way for enhanced clinical practice, driving the standard of care and improving efficiency. In 2023, Memorial Hermann Memorial City Medical Center, Memorial Hermann Greater Heights Hospital, Memorial Hermann Katy Hospital and Memorial Hermann Northeast Hospital achieved three-star recognition—the highest rating—from SVS VQI for participating in this registry.

Women's Cardiovascular Health Focus

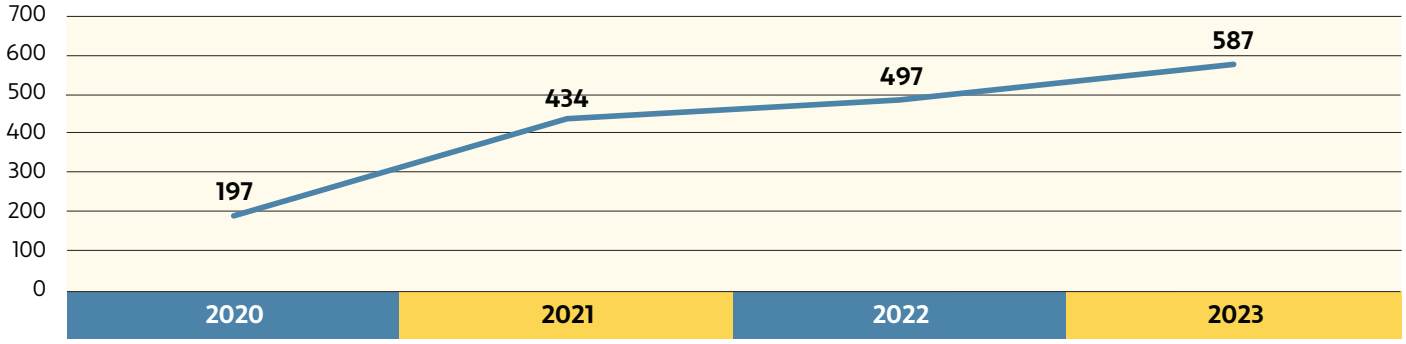
Because cardiovascular disease is among the top causes of women's mortality, Memorial Hermann has established the Women's Vascular & Cardiac Health Interdisciplinary Program to manage women's cardiovascular health. This program, which brings together specialists from vascular surgery, cardiology, genetics and maternal-fetal medicine, strives to become ground zero for research related to managing cardiovascular disease during pregnancy and gender disparities that lead to poorer outcomes for women. Memorial Hermann is leading the way in this research to ensure that women's cardiovascular health remains a prominent focus.

Academic Excellence

With an eye on the future of vascular care at Memorial Hermann, we partner

Growth in Mechanical Thrombectomy Procedures

Across the system, Memorial Hermann continues on a positive trajectory in mechanical thrombectomy growth, reaching over 1,700 since FY20.



Source: Memorial Hermann internal data, July 1, 2019 - June 30, 2023

closely with McGovern Medical School at UTHealth Houston faculty to help train the next generation of vascular specialists. A two-year Vascular Surgery Fellowship and five-year Integrated Vascular and Endovascular Surgery Residency allow fellows and residents to work alongside experienced affiliated surgeons to gain knowledge and proficiency with evidence-based practices while using the latest equipment, devices and techniques.

Additionally, Memorial Hermann has become an international training site for physicians who travel to Houston to learn how to manage complex aortic and peripheral vascular diseases.

Research Prowess

Our affiliated vascular surgeons stay abreast of the latest evidence-based practices and actively participate in clinical trials to bring advanced technology, techniques and new ways of approaching vascular surgery to the bedside at Memorial Hermann.

We have been a clinical trial site for the now-completed BEST-CLI study, sponsored by the National Heart, Lung and Blood Institute (NHLBI), to compare endovascular treatment with surgical revascularization in patients with critical limb ischemia. We also served as an observational study site that evaluated Varithena (Polidocanol 1%) as a treatment for venous leg ulcers caused by chronic venous insufficiency.

The entire Memorial Hermann Health System network, organized in a hub-and-spoke fashion that works together in the interest of patients, recognizes the interconnectivity of the vascular system with the rest of the body. That's why the management of vascular diseases and conditions employs a multidisciplinary approach, supported by innovation and a continuing focus on delivering safe, high-quality care.

AORTIC SURGERY

Since the earliest aortic reconstructions, Memorial Hermann has been at the center of innovation in aortic surgery, research and educating others about aortic care.

Today, through the Aortic Center of Excellence at Memorial Hermann Heart & Vascular Institute at Memorial Hermann-Texas Medical Center and its experienced affiliated vascular surgeons, patients with simple to complex aortic conditions have access to the latest treatment options, including evidence-based surgical and endovascular therapies and cutting-edge interventions that are available through clinical trials.

Multidisciplinary Care

Our team-based care model has resulted in improved outcomes for patients with aortic dissections, aortic aneurysms, aortic trauma and aortic stenosis. Specialists from multiple disciplines, along with our team of advanced practice providers, including specialized nurse practitioners and physician assistants, work as a comprehensive team to determine the most appropriate treatment, whether through endovascular or surgical interventions, to ensure optimal outcomes for our patients. Each specialist brings a unique perspective, clinical experience and plan of care that enhances the overall quality of care.

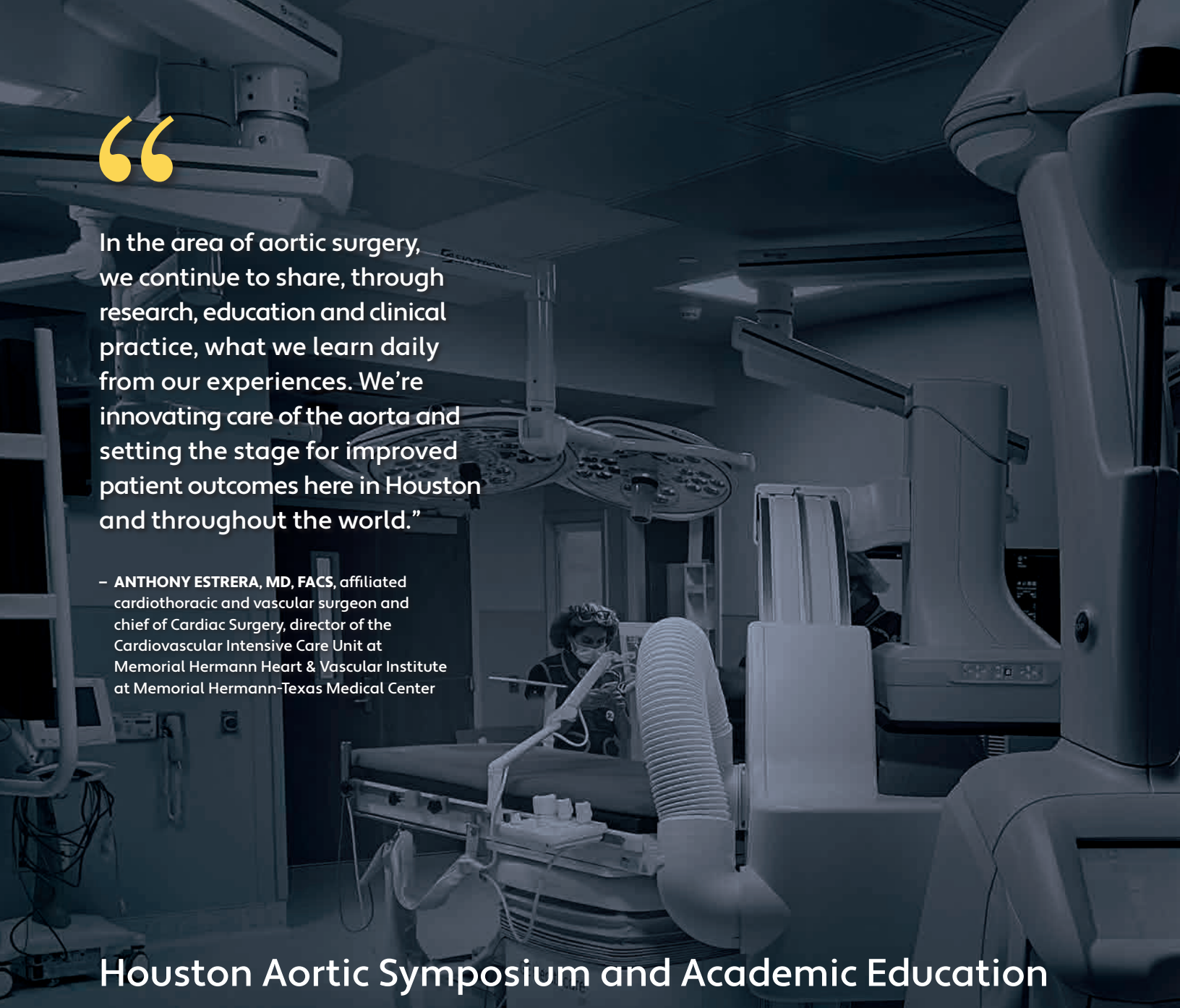
State-of-the-Art Technology

Memorial Hermann has made significant investments in the newest technology to care for complex aortic disease. Aortic procedures take place in Memorial

Hermann's hybrid operating rooms, outfitted with state-of-the-art imaging equipment that allows for optimal visualization of critical structures, including the spinal cord, that must be protected during aortic surgery. A novel surgical positioning system reduces the need for contrast materials during imaging, minimizing radiation exposure for patients and the entire OR team. Moreover, surgeons use an onsite simulation lab to plan their procedures to further reduce fluoroscopy time and radiation exposure.

High-Volume Aortic Program

Because of this advanced technology and knowledgeable affiliated vascular surgeons, Memorial Hermann's aortic surgery volumes have climbed to levels considered by Vizient data to be high, compared with other aortic surgery programs. Vizient is the nation's leading health care performance improvement company. In FY23, our affiliated vascular specialists performed both open and endovascular repairs of aortic aneurysms located in the chest (thoracic) and in the abdomen. Over 230 open thoracic



> In the area of aortic surgery, we continue to share, through research, education and clinical practice, what we learn daily from our experiences. We're innovating care of the aorta and setting the stage for improved patient outcomes here in Houston and throughout the world."
>
> – **ANTHONY ESTRERA, MD, FACS,** affiliated cardiothoracic and vascular surgeon and chief of Cardiac Surgery, director of the Cardiovascular Intensive Care Unit at Memorial Hermann Heart & Vascular Institute at Memorial Hermann-Texas Medical Center

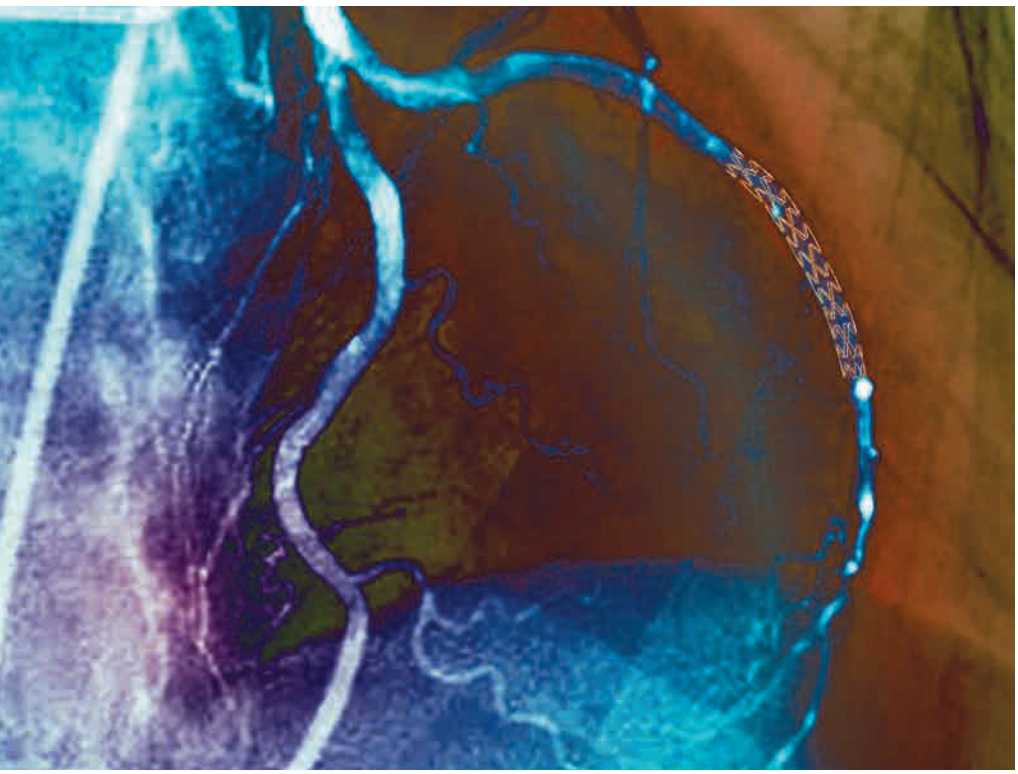
Houston Aortic Symposium and Academic Education

Investing in the next generation of aortic care specialists is a core component of our Heart and Vascular Service Line.

The Houston Aortic Symposium, held annually in the spring, presents the latest in diagnosis and treatment for aortic and structural heart disease, along with current peer-reviewed literature, national data and clinical guidelines. The symposium draws more than 500 vascular and cardiothoracic surgeons, interventional radiologists, cardiologists, anesthesiologists, physician assistants, perfusionists and other health care professionals who are involved in the care and treatment of patients with aortic diseases, from around the world. It also includes a nursing component, designed to keep nurses and nurse practitioners updated on the latest aortic treatment and diagnostic protocols.

Moreover, UTHealth Houston offers both an advanced endovascular aortic fellowship and an advanced open surgical aortic fellowship to broaden the knowledge of vascular and cardiac surgeons about treating aortic disease. This highly competitive program accepts up to four post-graduate clinical research fellows who work under the mentorship of the program director.

By blending advanced, evidence-based clinical practice with innovative research and a focus on spreading understanding of aortic disease and therapy to the next generation of vascular surgeons and aortic specialists, Memorial Hermann is continuing its legacy as an innovator in aortic care.



aortic aneurysm repairs were performed at Memorial Hermann over the past year. Comparatively, our affiliated aortic specialists performed over 350 endovascular aortic aneurysm repairs, using a minimally invasive catheter-based technique called TEVAR (thoracic endovascular aneurysm repair). Similarly, more than 75 open abdominal aortic aneurysm (AAA) repairs were performed, while the endovascular approach was employed for over 180 endovascular aortic repairs (EVARs). These high volumes have also elevated our program to be sought out by patients needing this type of treatment.

Research

In the treatment of aortic aneurysms that involve both the chest and the abdomen, thoracoabdominal aortic aneurysms (TAAAs), Memorial Hermann-TMC has been one of only 10 sites in the United States to be granted physician-sponsored investigational device exemption (PS-IDE) protocols to evaluate the use of fenestrated and/or branched stent-grafts to repair these complex aneurysms endovascularly. Under these protocols, principal investigator and affiliated cardiovascular surgeon Gustavo Oderich, MD, director of the Aortic Center of Excellence at Memorial Hermann Heart & Vascular Institute at Memorial Hermann-Texas Medical Center, places these custom-made or off-the-shelf stents endovascularly into qualifying patients' aortas using a catheter instead of through a traditional TAAA open surgical repair, which carries the risk of injury to the spinal cord and paralysis.

2023 VOLUMES

TEVARs	360
Total Open Thoracic	236
EVARs	181
Total Open Abdominal (AAA)	72

Source: Memorial Hermann internal data. July 1, 2022–June 30, 2023

More than 573 patients have been treated by fenestrated-branched endovascular aortic repair as part of this study. The 30-day or in-hospital mortality rate for these patients is 1%. By comparison, of 9,972 Medicare beneficiaries treated for this type of aneurysm by conventional open surgical repair, the average mortality is 15%.

This important research, along with its positive outcomes, is bolstered by the technology available at Memorial Hermann and the expertise and experience of Dr. Oderich and our other affiliated vascular surgeons and specialists.

Another clinical trial underway at Memorial Hermann, the TAMBE trial, is testing another endovascular device to repair thoracoabdominal and pararenal aortic aneurysms. Memorial Hermann is also involved as the Global Principal Investigator site for two upcoming device trials for complex aneurysms, the Cook ZFEN+ and Thoraco+ clinical trials.

Additionally, genetic researchers at UTHealth Houston have pioneered the identification of specific genes that increase the risk for aortic dissection, which can be a life-threatening occurrence. Our affiliated vascular surgeons are performing aortic root replacement surgery in individuals with these genes to minimize the risk of a dissection. This innovative research has led to screening protocols and education about available preventive treatment options.

Memorial Hermann is also the site of a clinical trial underway to compare outcomes of medical therapy alone with endovascular repair plus medical therapy to treat acute aortic dissections.

Memorial Hermann has the resources to take on even the most complex structural heart cases.

With our team of elite subspecialists, the latest minimally invasive, cutting-edge tools and techniques, and access to all major structural heart clinical trials, we have a reputation for taking on the toughest cases.

Memorial Hermann Heart & Vascular offers a full array of treatment options for structural heart disease—catheter-based, surgical, including minimally invasive, and even tools under development through our involvement in groundbreaking clinical trials. We've expanded our catheter-based technologies to five campuses, enabling us to treat an exponentially larger number of patients. Similarly, by expanding clinical trial access to key centers throughout our system, we are seeing skyrocketing enrollment in landmark trials.

Through our Heart Team approach, we determine the most appropriate treatment options for each patient with input from our experienced, affiliated cardiovascular subspecialists. Every patient who walks through our doors throughout Greater Houston has access to this level of subspecialized care. At Memorial Hermann, we don't compete; we collaborate—to do what is right for each patient.

Vizient National Peer Comparison Dashboard Mortality Index Rank–Memorial Hermann

Specialties	National Rank
Vascular Surgery	#5
Cardiology	#9
Cardiac Surgery	#9
Thoracic Surgery	#12
Cardiac Surgery, Cardiology, Thoracic Surgery, Transplant Services, Vascular Surgery combined	#10
Heart and Lung Transplant; VAD	#12

Source: Vizient Peer Comparison Dashboard: Mortality Index Rank-Memorial Hermann Tableau Server; July 2022 – June 2023

Mitral Valve Regurgitation

We offer every patient the full gamut of treatment options, including transcatheter end-to-edge repair (TEER), offered at three Memorial Hermann facilities, and surgical treatment, including minimally invasive robotic mitral valve repair. For patients who are not candidates for those types of procedures, we have access to tools being developed in clinical trials.

This year, doctors at Memorial Hermann-TMC performed the 600th TEER to treat mitral valve regurgitation.

In 2022, Memorial Hermann Memorial City Medical Center was the highest volume center in the region and the second highest in the state for both TEER with MitraClip and left atrial appendage closure.

Memorial Hermann-TMC and Memorial Hermann Memorial City are high volume TAVR procedure facilities by NCDR® standards.

Source: TVT

This year, Memorial Hermann-TMC received a three-star rating–the highest rating possible–for TAVR from the Society of Thoracic Surgeons (STS) and the American College of Cardiology's (ACC's) TVT registry, which publicly reports outcomes for cardiovascular procedures.

2023 VOLUMES

TAVR	622
Mitral	129

Source: TVT NCDR Registry
July 1, 2022 - June 30, 2023

Memorial Hermann Tableau Server
July 2022 – June 2023

Again, our affiliated Heart Team works hand in hand to determine the most appropriate treatment for each patient.

Memorial Hermann continues to be one of the highest-volume percutaneous mitral valve repair/replacement systems in the U.S. We have played a leading role in the structural heart revolution, having long been instrumental in the testing and implementation of new valvular devices. We were the fifth system in the U.S. and the first in Texas to implant the MitraClip™ device in a patient with severe mitral regurgitation (MR). We were a top enrolling site in the Endovascular Valve Edge-to-Edge Repair (EVEREST I) study. And we participated in the Cardiovascular Outcomes Assessment of the MitraClip Percutaneous Therapy for Heart Failure Patients With Functional Mitral Regurgitation (COAPT) trials. This year, doctors at Memorial Hermann-TMC performed the 600th TEER to treat MR.

We continue to lead the way. We recently became one of the highest active enrollers in the REPAIR MR trial, an important clinical trial comparing the MitraClip transcatheter mitral valve repair system to traditional surgical mitral valve repair in intermediate risk patients with severe primary MR. The surgical repair component of this trial is being performed robotically at Memorial Hermann Memorial City. The findings of this study could potentially help physicians evaluate transcatheter mitral valve repair as an option for patients with primary MR who are candidates for surgery.

LEADERS IN STRUCTURAL HEART RESEARCH

The Memorial Hermann Structural Heart Program offers patients access to all pivotal structural heart studies underway:

Mitral Studies
- CLASP IID/F
- REPAIR MR
- APOLLO
- SUMMIT

Aortic Studies
- PROGRESS
- ACURATE IDE
- ALLIANCE AVIV
- ALIGN-AR

Tricuspid Studies
- Triscend
- CLASP TR

Patent Foramen Ovale Studies
- PFO-PAS
- OCCLUFLEX

Maximizing Minimally Invasive Tools

With a full complement of minimally invasive tools and subspecialists, doctors affiliated with Memorial Hermann can treat complex heart conditions—that have typically required big surgeries—with multiple minimally invasive procedures. This reduces patient risk and recovery time.

Such was the case of an out-of-town male patient in his eighties who was referred to Memorial Hermann after being turned away elsewhere. The patient suffered from severe aortic and mitral valve leakage, obstructive coronary artery disease (CAD) and a dilated heart. After being evaluated, the patient's case was discussed at a multidisciplinary valve team conference. Given the patient's advanced age and condition, the team created a plan to address the patient's problems one by one using minimally invasive procedures, starting with multivessel percutaneous coronary intervention (PCI) via the radial artery to address his CAD followed by TEER with MitraClip to address his severe MR. After he stabilized with these catheter-based therapies, he was offered minimally invasive, robotic aortic valve replacement. In all, through three minimally invasive procedures, the patient spent only four nights in the hospital and experienced complete restoration of his CV status while being spared a traditional sternotomy. The patient fully recovered and is back in his hometown with a new lease on life.

Similarly, a 77-year-old male patient presented with severe aortic stenosis and multivessel coronary disease with a severe calcified left anterior descending (LAD) lesion. He was referred to Memorial Hermann for evaluation. Instead of performing a full sternotomy, doctors performed a TAVR followed by a minimally invasive left internal mammary artery (LIMA) LAD procedure. Using an innovative hybrid approach, the patient received the full benefit and potential durability of a well-performed LIMA to LAD and was spared a sternotomy, long hospitalization and months of recovery.

Aortic Stenosis

Memorial Hermann was instrumental in developing the TAVR procedure, participating in the groundbreaking PARTNER trials and the Sentinel Study. At Memorial Hermann, TAVR has become the default therapy for the treatment of severe aortic valve stenosis.

Since performing the first commercial TAVR in Texas and one of the first in the country, we have become one of the highest-volume TAVR programs in the U.S., each year performing nearly 600 TAVRs across our five centers offering the procedure.

For some patients, aortic valve replacement (AVR) remains the best option. If our team determines AVR is the better choice, we can perform it utilizing the minimally invasive robotic AVR approach. Since launching our robotic program in 2022, it has become the fastest growing robotic surgery program in Texas.

Atrial Fibrillation

Stroke from atrial fibrillation (AFib) continues to be a leading cause of morbidity and mortality in the U.S. Understanding that many patients cannot tolerate oral anticoagulation for AFib, we have pushed the field forward when it comes to development of tools for left atrial appendage occlusion. Doctors at five Memorial Hermann facilities perform over 600 left atrial appendage occlusion (LAAO) procedures a year, making Memorial Hermann Heart & Vascular one of the busiest left atrial appendage closure programs in the country.

Our program has been at the forefront of LAAO device research and development. We were a leader and top enroller in the Amplatzer™ Amulet™ LAAO vs. NOAC (CATALYST) trial, and we were the site of the first randomized implantation of the device in the world. For the rare patients whose anatomies are unfavorable for our current FDA approved devices, we can offer surgical options for LAA closure, including robotic, minimally invasive techniques.

Congenital Heart Defects

Memorial Hermann is a leader in percutaneous treatment options for patients with congenital heart disease, including closure of atrial septal defects (ASD), such as patent foramen ovale (PFO). For patients with anatomies not ideal for catheter-based closure, we offer minimally invasive surgical repair of their ASD.

A pioneer in the treatment of cryptogenic stroke, Memorial Hermann-TMC was one of the two highest-enrolling sites in the RESPECT trial, the results of which led to FDA approval of the Amplatzer™ PFO occluder, the first device approved for the treatment of cryptogenic stroke.

And through collaboration across medical specialties, Memorial Hermann patients with cryptogenic stroke and suspected PFO-related stroke are provided streamlined access to clinical settings for expedited diagnoses and improved, shared decision-making among neurologists, cardiologists and patients.

Hypertrophic Cardiomyopathy

Memorial Hermann Heart & Vascular employs a complete array of surgical tools, catheter tools and medications to treat patients with hypertrophic cardiomyopathy (HCM). Treatments range from minimally invasive surgical myomectomy (and potential associated mitral valve repair) to traditional alcohol septal ablation and even coil embolization, an innovative technique pioneered by one of our affiliated specialists.

ENSURING QUALITY

Memorial Hermann participates in national registries to support its commitment to high-quality standards, including the American College of Cardiology's National Cardiovascular Data Registries (NCDR®): CathPCI Registry®, Chest Pain - MI Registry™, STS/ACC TVT Registry™ and LAAO Registry™.

Additionally, Memorial Hermann participates in the Vizient® Clinical Data Base (CDB) and The Society for Vascular Surgery® Vascular Quality Initiative® (STS VQI).

Across Memorial Hermann, affiliated interventional cardiologists are employing new and emerging catheter-based techniques to treat the spectrum of atherosclerotic heart disease.

As a result, communities throughout the Greater Houston area have access to high-quality, community-based cardiac care.

At Memorial Hermann, we offer a wide range of percutaneous options for patients with coronary artery disease (CAD), from state-of-the-art STEMI care and routine angioplasty to complex coronary interventions in patients with chronic total occlusions (CTO), inoperable coronary artery disease (CAD), left ventricular failure and multivessel involvement.

Our specialists have the tools and experience to maximize the chances of successful revascularization without compromising patient safety. Our 42 cath labs are equipped with the latest technologies. We've implemented use of intravascular lithotripsy (IVL) across the Memorial Hermann Health System to treat problematic calcified lesions in high surgical risk patients with CAD. And we frequently serve as an investigational site for national and international clinical trials, the results of which will shape the future of interventional cardiology and pave the way for improved patient outcomes.

Coronary Revascularization in Complex High-Risk Indicated Patients (CHIP)

Symptomatic patients with complex multivessel coronary artery disease who are not candidates for coronary artery bypass graft (CABG) surgery now have percutaneous options to achieve coronary revascularization.

Dedicated interventional cardiologists affiliated with Memorial Hermann routinely perform CHIP procedures, which allow them to treat high surgical risk patients with CAD with advanced technologies, such as atherectomy, laser and lithotripsy, in addition to angioplasty and stent implantation.

CATH LAB STAFF FELLOWSHIP PROGRAM

To prepare nurses and radiology technologists for the unique rigors of working in one of Memorial Hermann's 42 cath labs, Memorial Hermann created a special Cath Lab Staff Fellowship Program. Mirroring the Nurse Residency Program, the four- to six-month program features a mix of in-person classes, hands-on training and online training through multiple vendor academies.

Seven in-person classes, taught by different specialists from the cath labs, teach participants everything from basic anatomy to medication and which supplies are used during a case. Hands-on training incorporates the use of a computerized mannequin to simulate various scenarios, including V-Fib. The program also features a megacode scenario in the cath lab. Precepts look for quickness, ease of transition and overall patient care.

Teamwork in the cath lab is essential. The program emphasizes that individuals are not alone when working in the cath lab, helps participants recognize when to ask for help and reaffirms that asking for help is not a sign of weakness.

Since the program was introduced in 2019, 32 participants have graduated, representing a 90% graduation rate. Retention among graduates has been exceptionally high.

Many patients with complex CAD have left ventricular failure, which further adds to the risk of any intervention. Our facilities are equipped with the latest mechanical support devices, enabling our interventional cardiologists to perform these CHIP procedures with advanced precision. The use of innovative technologies and techniques allows many of our patients to achieve the degree of revascularization needed to recover their cardiovascular function and improve their symptoms of angina or congestive heart failure. Most patients experience a marked improvement in their quality of life and are able to resume their usual activities without a prolonged interruption.

Chronic Total Occlusion (CTO) Intervention

A CTO is defined as a coronary artery that has been completely blocked for at least three months, often much longer. CTOs are common and are found in approximately 20% of patients diagnosed with CAD during angiography. While symptomatic patients with a CTO benefit from revascularization, until recently, CABG was the only option for such individuals. However, technological advances have made it possible to treat many CTOs using catheter-based interventions with high success and low complication rates.

The Memorial Hermann CTO program is the busiest CTO program in Houston, performing over 100 interventions in patients with CTOs last year using the latest tools and technologies. Many referrals come from cardiologists in the Greater Houston area as well as the surrounding states. Each patient is evaluated by a team of specialists to determine the best course of treatment for the CTO. Most patients can go home within 24 hours of the CTO PCI (percutaneous coronary intervention).

Patients who benefit the most from CTO intervention are those who have lifestyle-limiting symptoms despite optimal medical therapy. PCI is the preferred option in CTO patients who do not have enough disease to qualify for coronary bypass, or patients in whom bypass grafts have failed. For patients in the latter category, percutaneous revascularization is often a safer and more durable solution than treating the diseased graft or performing bypass surgery revisions.

STEMI Care

Since leading the Pre-hospital Administration of Thrombolytic Therapy With Urgent Culprit Artery Revascularization (PATCAR) clinical trials which laid the groundwork for contemporary STEMI management, affiliated physicians at Memorial Hermann have led STEMI research and care in Texas and nationally. And we have continued to innovate and employ techniques that improve STEMI patient outcomes.

A current area of focus is reducing time to definitive care. We work closely with our EMS partners to ensure that pre-hospital EKGs are interpreted in real time and shared with our activated STEMI response teams while patients are in route to the ER. We have also implemented systemwide processes to enable STEMI patients arriving by Memorial Hermann Life Flight® or EMS to be taken directly to the cath lab, bypassing the ER altogether.

Breaking New Ground in Invasive Cardiology

Interventional cardiologists affiliated with Memorial Hermann frequently serve as principal investigators in national and international clinical trials which promise to positively impact clinical outcomes in patients with coronary artery disease.

COSIRA-II (Efficacy of the COronary SInus Reducer in Patients With Refractory Angina II) (NCT05102019)
COSIRA-II is a clinical trial designed to evaluate the safety and effectiveness of the Neovasc Reducer™ device in treating patients with chronic refractory angina who are not candidates for further revascularization surgery.

ECLIPSE (Evaluation of Treatment Strategies for Severe CaLcIfic Coronary Arteries: Orbital Atherectomy vs. Conventional Angioplasty Technique Prior to Implantation of Drug Eluting StEnts) (NCT03108456)
The ECLIPSE trial will evaluate orbital atherectomy compared to conventional balloon angioplasty technique for the treatment of severely calcified lesions prior to implantation of drug-eluting stents.

RADIANCE CAP (RADIANCE Continued Access Protocol (RADIANCE CAP): A Study of the ReCor Medical Paradise System in Clinical Hypertension) (NCT05017935)
RADIANCE CAP is a non-randomized study designed to allow for continued access to ultrasound renal denervation therapy via the Paradise System, and to allow for the ongoing collection of safety and effectiveness data in subjects with uncontrolled hypertension despite the prescription of antihypertensive medications.

1,152
STEMI Volume*

*Inpatient cases with STEMI diagnosis, excludes N-STEMI

2,601
PCI Volume

3,033
Chest Pain MI

Source: Inpatient and outpatient volumes, July 1, 2022 - June 30, 2023
Source: Memorial Hermann internal data

*Memorial Hermann acute care hospitals are STEMI-receiving facilities and Chest Pain certified.**

* The Joint Commission or The American College of Cardiology

To refer a patient to the Memorial Hermann Heart & Vascular Program, scan this QR code or click here. Your information will be directed to the appropriate physician or clinician who will respond to you quickly.

CHEST PAIN - MI REGISTRY FROM THE AMERICAN COLLEGE OF CARDIOLOGY

PLATINUM
Memorial Hermann Memorial City Medical Center
Memorial Hermann Sugar Land Hospital

GOLD
Memorial Hermann Southeast Hospital

SILVER
Memorial Hermann-Texas Medical Center
Memorial Hermann The Woodlands Medical Center
Memorial Hermann Greater Heights Hospital
Memorial Hermann Cypress Hospital

ELECTROPHYSIOLOGY

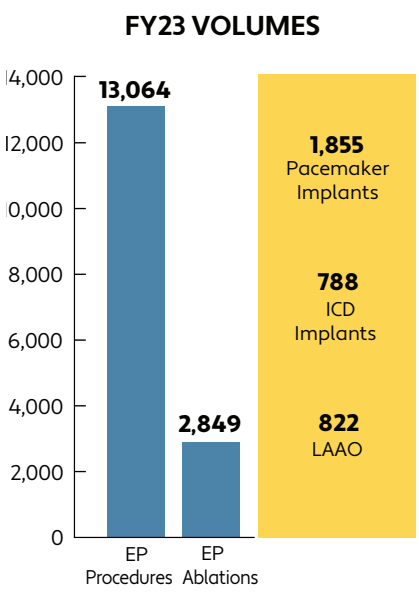
Memorial Hermann is among the leaders in the field of cardiac electrophysiology (EP). We have attracted top cardiac electrophysiologists and this has supported breakthrough research and technology that has repeatedly translated into cutting-edge care at the bedside.

Innovative Technology

Due to our increasing volumes of patients with heart rhythm disorders, including atrial fibrillation, atrial flutter and ventricular tachycardia, Memorial Hermann has made a significant investment in the EP program. With 14 EP/catheterization labs located in our hospitals throughout Greater Houston, we can provide a full spectrum of EP care to patients close to where they live. In the past year, we have opened three EP/catheterization labs and a hybrid operating room at Memorial Hermann-TMC, which allows for seamless conversions if a patient requires surgical intervention. We also added a second dedicated EP Labs at both Memorial Hermann Memorial City Medical Center and Memorial Hermann Southwest Hospital. All of these rooms have the latest generation of electrophysiology technology and allow interventional cardiologists and cardiac surgeons to work alongside EP specialists to optimize patient outcomes.

Our affiliated specialists have pioneered some of the latest advancements in device-based therapies, leading to commercial availability. As a clinical trial site for the testing of a dual chamber leadless pacemaker and the first in Texas to successfully implant it, we paved the way for FDA approval of this innovative device, which minimizes complications from leads and allows for greater communication and coordination between the upper and lower chambers of the heart.

Memorial Hermann also served as a trial site to test new ablation technology to treat atrial fibrillation, leading to a better



Source: Memorial Hermann internal data.
July 1, 2022–June 30, 2023

understanding of the latest ablative equipment and techniques. For example, we were the first in Texas and the second in the United States to use the newly introduced TactiCath™ Contact Force Ablation Catheter, Sensor Enabled™.

This advanced catheter technology features easy maneuverability, a mean accuracy of 0.3 grams and automated guidance of lesion marking for optimal consistency.

We're also using advanced mapping, which allows us to identify the source of arrhythmias down to 0.5 millimeters. And we have begun to use the QDOT MICRO™ Catheter to perform radiofrequency ablation in only four seconds, as compared with previous high-energy ablation that required 20 seconds or longer.

Leading the Field

Currently, our affiliated EP specialists are involved in an international trial to test advanced ablation technology for treating ventricular tachycardia. The experience of our affiliated specialists led the device manufacturer to choose Memorial Hermann as its preferred trial site.

Memorial Hermann remains the largest lead extraction center in Houston, with more than 1,000 lead extractions performed with a 97.3% success rate.

The collaboration between EP specialists and cardiac surgeons and their ability to work together in specially designed hybrid ORs has expanded the ability to perform these procedures more frequently, leading to an even larger volume of lead extractions in 2023.

We also remain a high-volume center for left atrial appendage closure (LAAC) procedures to prevent stroke and as a result were in the top five clinical trial sites to test the WATCHMAN™ device. Recently, we began using an LAAO device with a deflectable sheath to improve patient safety during this complex procedure.

For more information about clinical trials in electrophysiology, see Clinical Trials, page 33.

Focusing on Patients

Memorial Hermann-Texas Medical Center cath lab/EP department remains open seven days a week to best serve our patients.

Coupled with our EP specialists is a cardiac-focused multidisciplinary team that regularly collaborates to offer their experience and provide high-quality patient care. Together, cardiac electrophysiologists work with cardiologists, cardiac surgeons, interventional cardiologists, interventional heart failure specialists, device manufacturer representatives and mapping software specialists to care for patients' electrophysiology needs. And Memorial Hermann has invested in equipment and technology that allows our teams to come together quickly for that purpose.

With Memorial Hermann's commitment to innovative technology, multidisciplinary collaboration and patient-centered care, our cardiac electrophysiology program is a leader in patient experience, quality and service.

HEART TRANSPLANTS AND HEART FAILURE MANAGEMENT

Doctors at Memorial Hermann-Texas Medical Center began transplanting hearts in 2012.

Since then, Memorial Hermann has produced a robust mechanical circulatory support infrastructure and has created the innovative Center for Advanced Heart Failure at Memorial Hermann-TMC to serve the people of Greater Houston. It also has invested in expanding knowledge about cardiogenic shock and novel treatments for heart failure.

Multidisciplinary Team

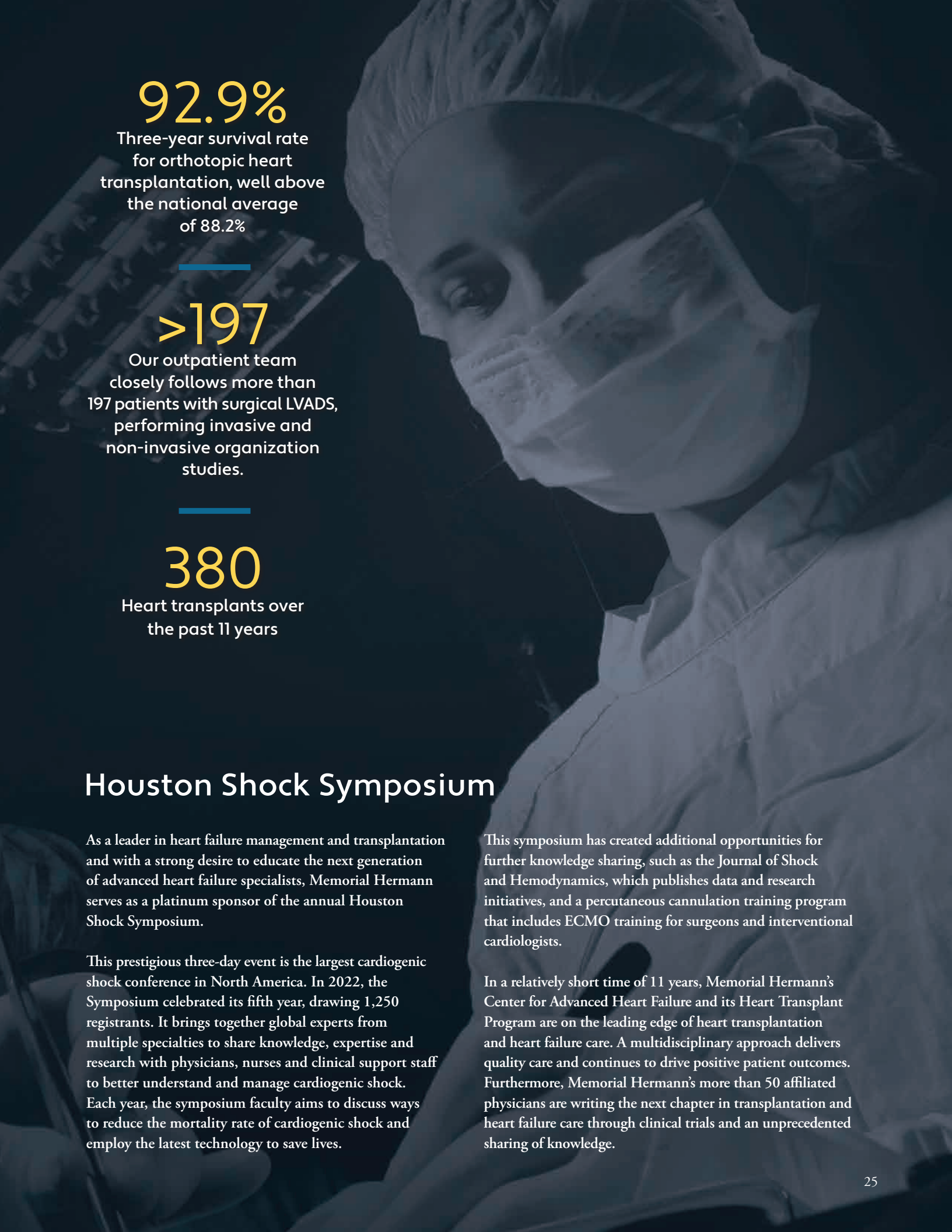
Key to the success of our comparatively new program is the foundational multidisciplinary approach to treating heart failure and cardiogenic shock. Built and co-directed by a cardiothoracic and vascular surgeon and an interventional cardiologist, the program is comprised of a team of more than 50 board-certified physicians affiliated with Memorial Hermann who specialize in cardiothoracic surgery, advanced heart failure management, mechanical assist devices, video-assisted surgery, coronary intervention and heart transplantation.

The emphasis on collaboration between multiple specialties benefits patient care. Patients meet simultaneously with surgeons and heart failure cardiologists at their initial appointments, so they better understand the options that the doctors recommend for them. Additionally, these specialists collaborate with others, including primary care physicians, nurses, pharmacists, substance abuse therapists, dietitians, physical therapists, inpatient navigators and case managers, tapping into community resources to formulate a plan of care that best suits the patients' needs and improves their overall health and quality of life.

Heart Failure Management

Our comprehensive heart failure management program encompasses inpatient and outpatient services, backed by evidence-based practice across the continuum of care. We have built our program to include all available treatment options, from medication management to cardiac rehabilitation to mechanical circulatory support to transplantation. And we work closely with Social Services, Case Management and Palliative Care to ensure patients have access to a comprehensive support system. We even work with community partners, such as local grocery stores, to drive nutrition management and educate the public about preventing heart failure in the first place.

Our scores from the Interagency Registry for Mechanically Assisted Circulatory Support (INTERMACS) reveal that even the sickest patients at Memorial Hermann have better outcomes than less sick patients at other facilities in Texas and throughout the U.S.



92.9%
Three-year survival rate for orthotopic heart transplantation, well above the national average of 88.2%

>197
Our outpatient team closely follows more than 197 patients with surgical LVADS, performing invasive and non-invasive organization studies.

380
Heart transplants over the past 11 years

Houston Shock Symposium

As a leader in heart failure management and transplantation and with a strong desire to educate the next generation of advanced heart failure specialists, Memorial Hermann serves as a platinum sponsor of the annual Houston Shock Symposium.

This prestigious three-day event is the largest cardiogenic shock conference in North America. In 2022, the Symposium celebrated its fifth year, drawing 1,250 registrants. It brings together global experts from multiple specialties to share knowledge, expertise and research with physicians, nurses and clinical support staff to better understand and manage cardiogenic shock. Each year, the symposium faculty aims to discuss ways to reduce the mortality rate of cardiogenic shock and employ the latest technology to save lives.

This symposium has created additional opportunities for further knowledge sharing, such as the Journal of Shock and Hemodynamics, which publishes data and research initiatives, and a percutaneous cannulation training program that includes ECMO training for surgeons and interventional cardiologists.

In a relatively short time of 11 years, Memorial Hermann's Center for Advanced Heart Failure and its Heart Transplant Program are on the leading edge of heart transplantation and heart failure care. A multidisciplinary approach delivers quality care and continues to drive positive patient outcomes. Furthermore, Memorial Hermann's more than 50 affiliated physicians are writing the next chapter in transplantation and heart failure care through clinical trials and an unprecedented sharing of knowledge.

Mechanical Circulatory Devices

Often, the pathway to transplantation involves mechanical circulatory support, offered by ventricular assist devices (VADs). Our affiliated advanced heart failure team utilizes these devices for advanced heart failure management and bridge-to-transplant therapy. As a result, we have achieved five-year survival rates that are above those reported by INTERMACS. Additionally, we have been recognized by The Joint Commission with its Gold Seal of Approval™ for the carefully managed use of ventricular-assist devices to achieve optimal heart function.

Platinum ELSO Awarded ECMO Program

Our Center for Advanced Heart Failure has also been designated as a Platinum Level Center of Excellence for Life Support by the Extracorporeal Life Support Organization (ELSO) for the second time in a row. We're able to achieve this designation, in part, due to the availability of Memorial Hermann Life Flight®, the only local air ambulance service equipped to transport cardiogenic shock patients and patients who need ECMO from a 150-mile radius to Memorial Hermann-TMC for care. We also have the use of Life Flight if needed to send a team of interventional cardiologists, surgeons, perfusionists and pulmonary critical care intensivists to patients experiencing cardiogenic shock in need of ECMO.

Transplants

When patients qualify for heart transplantation, our heart transplant team has the experience and resources to care for them. We partner with LifeGift, Greater Houston's organ procurement organization, to receive donor hearts. Our team has performed 380 heart transplants over the past 11 years and has achieved one-year transplant survival rates of 93.3%. Additionally, our three-year heart transplant survival rate is 92.9% and exceeds the national average of 88.2%, according to the Scientific Registry of Transplant Recipients (SRTR), administered by the Health Resources and Services Administration of the U.S. Department of Health & Human Services.

Clinical Trials

With our innovative approach to and strong infrastructure supporting heart failure and transplantation, Memorial Hermann is home to groundbreaking clinical trials related to heart failure management and cardiogenic shock therapies. One such trial, the PROTECT IV, is evaluating ECMO weaning following cardiogenic shock by using a temporary LVAD that is delivered percutaneously through an artery in the shoulder. This bridge from ECMO therapy could offer enough recovery time from cardiogenic shock to help clinicians determine whether a permanent LVAD is required before transplantation or utilized as a destination therapy.

We are also currently participating in the Surveillance HeartCare® Outcomes Registry (SHORE) trial to assess testing services to determine the risk of transplant rejection.

To learn more about heart failure and heart transplant clinical trials, see Clinical Trials, page 33.

To learn more about lung transplants at Memorial Hermann, please visit ***https://www.memorialhermann.org/services/treatments/lung-transplant***

Innovation

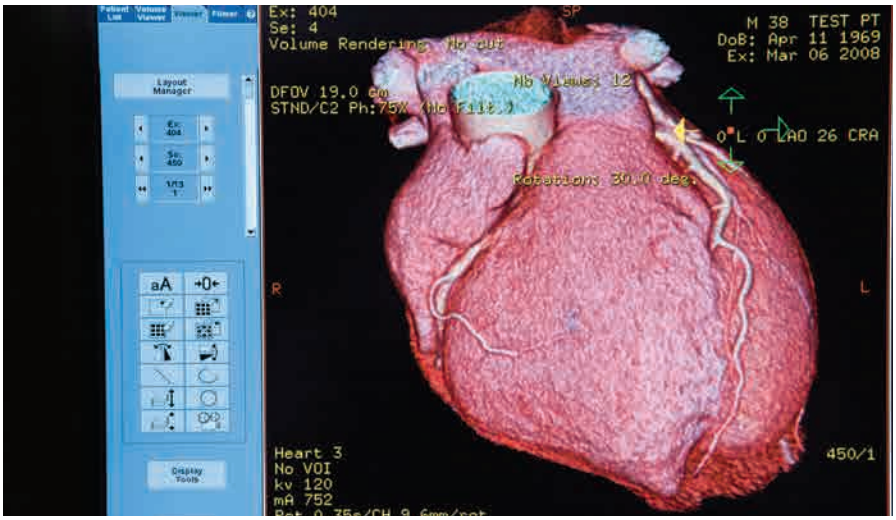
Memorial Hermann takes an innovative approach to helping patients with obesity overcome clearance barriers for transplantation. According to the latest statistics from Texas Health and Human Services, the percentage of adults who are obese in Greater Houston's Public Health Region (Region 6) is 37.4%. Patients with obesity are often not candidates for mechanical circulatory support because of the higher risks associated with obesity. Our affiliated cardiologists' experience with mechanical circulatory support and their collaboration with other specialists leads to treatment plans for patients who may benefit from VADs that otherwise may not be available to them.

Moreover, our multidisciplinary cooperation pairs bariatric surgeons with obese heart failure patients, who must reach a body mass index (BMI) below 35 to qualify for transplantation. Experienced bariatric surgeons can perform sleeve gastrectomies within days of patients receiving their VADs, which helps these patients reach the BMI goals for transplantation.

At Memorial Hermann, we are committed to utilizing the latest imaging technologies and to increasing access to superior imaging to providers and patients across the entire Memorial Hermann Health System.

Through our Center for Advanced Imaging Processing (CAIP), we're putting the most advanced imaging tools and informatics into physicians' hands for faster and better patient care, decision making, treatment planning and patient follow-up.

One of the greatest enablers of recent advances in heart and vascular care is innovation in imaging. With the significant rise in minimally invasive, catheter-based and robotic cardiovascular (CV) procedures, cardiac imagers have become essential partners to cardiovascular care providers.



Advanced Image Processing, Across the System

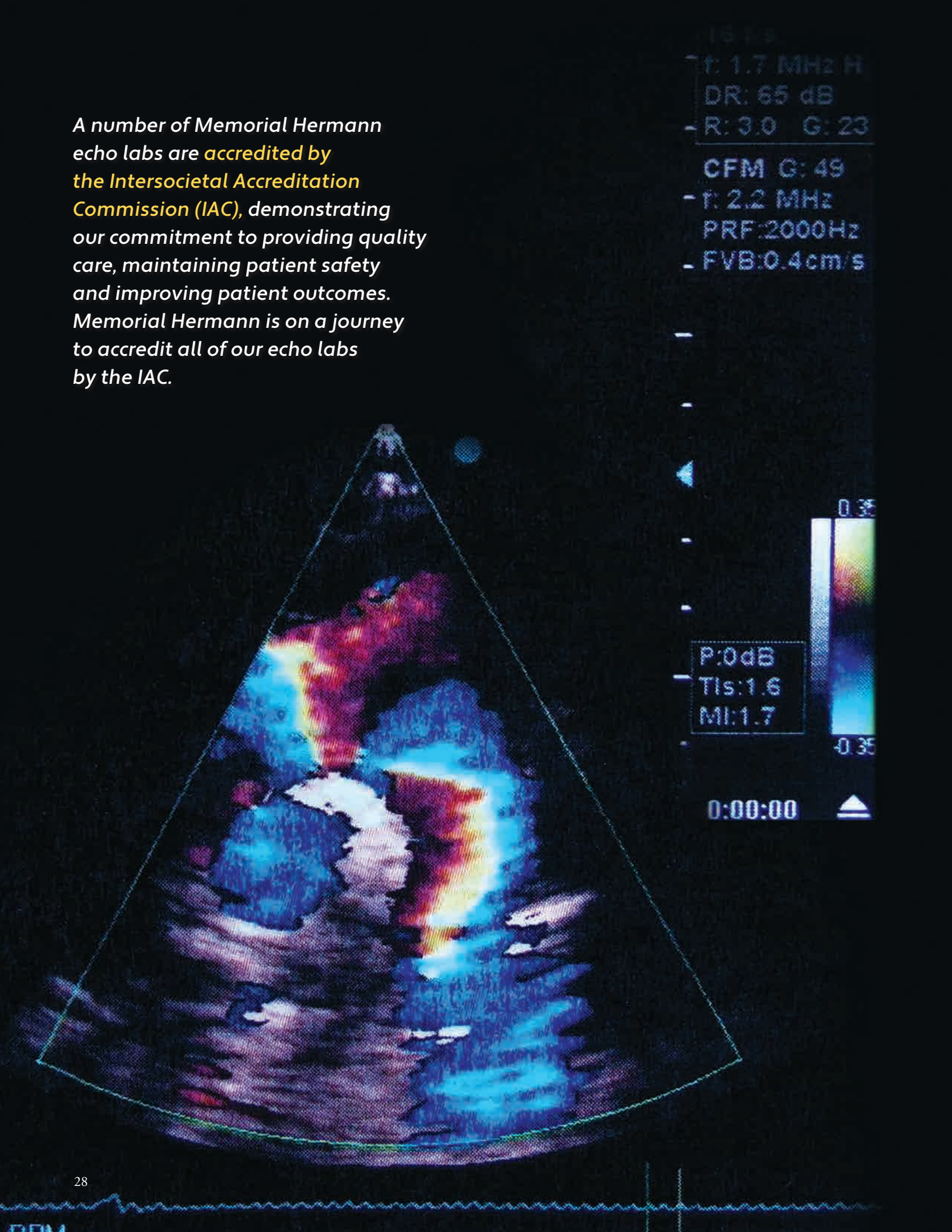
In 2020, Memorial Hermann Health System established the Center for Advanced Imaging Processing (CAIP), one of the largest post-processing centers in the U.S. While the Center is located centrally at Memorial Hermann-Texas Medical Center, CAIP's cloud-based platform and innovative software programs are available virtually to all affiliated physicians—even from within interventional suites—across the entire system.

CAIP's post-processing specialists have standardized processes for all leading-edge procedures, including cardiac CTs, cardiac MRIs, 4D MRI flow imaging and MR viability studies, to facilitate outcomes measurement and improvement. Our physician leaders help ensure our technologies and their utilization is cutting-edge.

The establishment of CAIP in 2020 marked the first time an institution has centralized the platforms of the main providers of CT and MR scanners. Through collaboration with these industrial partners, we are able to virtualize solutions in a secure VPN, deployed in a production and preproduction environment, allowing for testing of new solutions without disrupting production. In addition, CAIP's platforms are utilized to deploy third-party software, similar to an app store, making these third-party programs available across Memorial Hermann locations.

The Center's superior 3D images have been presented at some of the world's leading industry journals and conferences, including the annual meeting of the Radiological Society of North America. In 2021, the Center was awarded the prestigious Imaging Innovation Award by Radiology Business. The award recognizes five of the most innovative imaging organizations in the U.S.

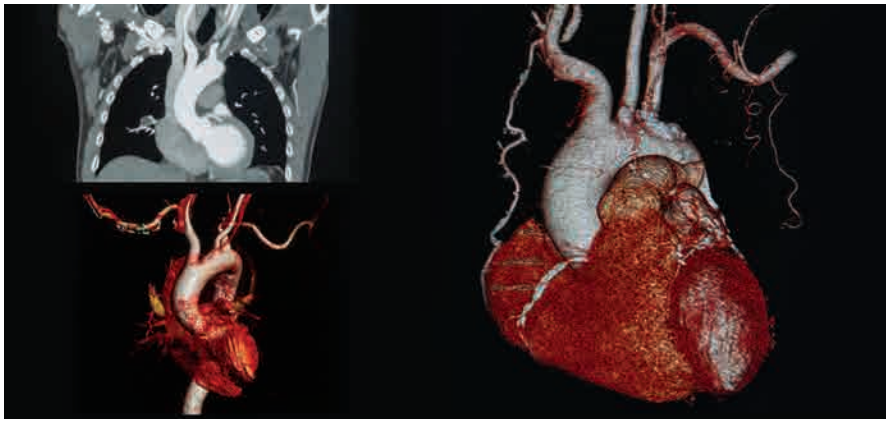
A number of Memorial Hermann echo labs are accredited by the Intersocietal Accreditation Commission (IAC), demonstrating our commitment to providing quality care, maintaining patient safety and improving patient outcomes. Memorial Hermann is on a journey to accredit all of our echo labs by the IAC.



Currently underway is the creation of a 3D printing center of excellence at Memorial Hermann, where physicians, Center specialists and engineers will collaborate to develop models to be utilized for surgical planning and training. The new printing center of excellence is being designed to positively impact patient care by lowering surgical times, facilitating surgical planning and improving patient and physician education.

With UDH, we're diagnosing stent fractures not apparent with standard imaging, even at high magnification. And UHD enables vascular surgeons to precisely deploy stents during highly complex interventions.

- We've invested in an intraoperative position system, or IOPS®, to help endovascular surgeons properly position patients to attain high-quality 3D images while reducing radiation.
- With our simulation lab, we're able to predict radiation exposure and total operating time, to ensure optimum outcomes with minimal radiation exposure.
- We continue to upgrade our cardiac computed tomography (CT) capability to ensure our CT scanners are fully equipped to provide the speed and resolution required for cardiac-specific scans. And we ensure these imaging advancements are supported by highly skilled imaging staff and processing capabilities.
- And we're investing in the expansion of our cardiac MRI capability, a valuable, high-resolution tool to assess heart function, etiology of heart failure, myocardial viability, congenital heart disease or cardiac masses. In addition, we're increasingly using cardiac MRI in tandem with cardiac pyrophosphate (PYP) scans to detect transthyretin (TTR) cardiac amyloidosis, a rare, historically underdiagnosed cause of heart failure.



Advanced Imaging Technology

Over the past six years, Memorial Hermann has invested in significant improvements in our imaging capabilities. We're giving physicians the tools they need to achieve the best outcomes with minimal risk.

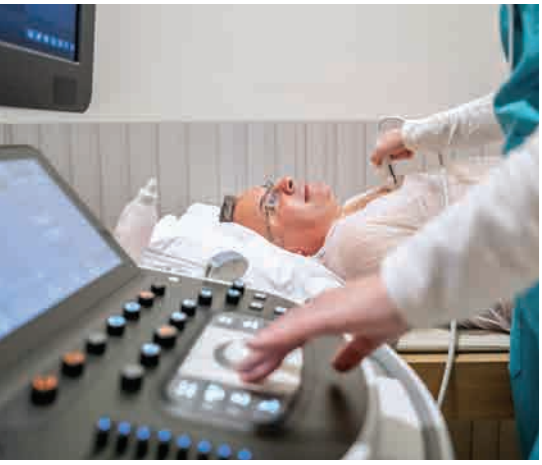
- We've equipped our 42 cardiac cath labs with the latest generation of low-radiation imaging technology, remarkably improving image acquisition while reducing radiation exposure to our patients and providers.
- Electrophysiologists and structural heart specialists at Memorial Hermann are using advanced intracardiac echocardiography devices, including 4D intracardiac echo (ICE), to provide radiation-free, high-quality visualization of heart valves and blood flow.
- We're using ultra-high definition (UHD) imaging to visualize blood vessels—less than 4 mm in diameter—in real time at a resolution of 76 microns.

Pioneering Cardiac Positron Emission Tomography (PET)

Memorial Hermann is a leader in cardiac PET, the most advanced imaging to guide management of coronary artery disease and myocardial disorders. Located on the Memorial Hermann-TMC campus, the Weatherhead PET Center, part of McGovern Medical School at UTHealth Houston, was the first to develop myocardial blood flow measurements for guiding stents and bypass surgery and continues to lead the world in this field. PET studies are also being used to aid physicians with monitoring the reversal of coronary artery disease in patients who follow diet, exercise and medication regimens.

Physicians at the Center recently concluded a five-year randomized trial, called the CENTURY trial, of PET-guided coronary interventions and intense lifestyle-medical management of chronic CAD. The results demonstrate that the comprehensive integrated CENTURY strategy significantly reduced mortality on average by 42.7%, MI or death by 37%, revascularization procedures by 35% and MACE by 31.4% compared to standard community care. The benefits were sustained and enhanced at 11-year follow-up. The CENTURY strategy is the first comprehensive integrated lifestyle-medical-intervention treatment strategy in CAD subject to randomized trial.

The cardiac and pulmonary rehabilitation program at Memorial Hermann continues to grow. This year, we added our seventh cardiac rehabilitation center. Patient satisfaction is high, and our program has never been stronger.



Memorial Hermann is a Pulmonary Fibrosis Foundation (PFF) Care Center, a distinction afforded to select interstitial lung disease (ILD) programs that provide high-quality care, engage in ILD research and work to educate the community about pulmonary fibrosis.

Memorial Hermann offers cardiac rehabilitation at seven locations across the Greater Houston area and offers pulmonary rehabilitation at Memorial Hermann-Texas Medical Center. Patients recovering from heart disease who participate in our 12-week cardiac and pulmonary rehabilitation programs show marked improvement in their physical and mental functioning, enabling them to enjoy a better quality of life.

One thing that sets our program apart is our relationship with our sister organization, TIRR Memorial Hermann. Continually recognized as one of America's Best Hospitals by *U.S. News & World Report*, TIRR Memorial Hermann is a national leader in medical rehabilitation and research. The hospital provides rehabilitation services to high acuity patients, including patients with acute or chronic heart failure.

For eligible patients, especially surgical patients who are ready to be discharged from the hospital but are not ready to return home and begin outpatient rehabilitation, TIRR Memorial Hermann may be an excellent option.

Offering inpatient and outpatient rehabilitation at locations throughout the Greater Houston area, TIRR Memorial Hermann can help patients regain the strength they need to successfully participate in cardiac rehabilitation.

Cardiac Rehabilitation

Just as heart disease affects patients more than just physically, cardiac rehabilitation involves more than exercise. Our cardiac rehabilitation program is a phased, multidimensional, medically supervised program designed to help patients recover as quickly as possible from heart disease. With a comprehensive focus on exercise, education and lifestyle changes (including nutrition and smoking cessation), the program is designed to improve our patients' overall physical and mental health.

Benefits of Cardiac Rehabilitation

Cardiac rehabilitation has been proven to improve patient outcomes and quality of life; however, the percentage of cardiac patients across the nation who undergo cardiac rehabilitation

23,249
Cardiac Rehabilitation visits in 2023

1,289
Pulmonary Rehabilitation visits in 2023

Our pulmonary rehabilitation program and five of our seven cardiac rehabilitation programs are certified by the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR).

In FY 2023, patient satisfaction across our cardiac rehabilitation centers was "Distinguished," as measured by Qualtrics, a leading research firm.

All Memorial Hermann cardiac rehabilitation centers are staffed with cardiac-trained nurses who leverage their experience to tailor the rehab experience for each patient.

TIRR is a registered trademark of TIRR Foundation.

has been historically low. That's why, at Memorial Hermann, we're making cardiac rehabilitation a routine part of cardiac care.

We're working with cardiologists to ensure that patients with appropriate cardiac diagnoses, such as heart attack, receive an order for cardiac rehabilitation upon discharge. The cardiologist's order triggers an evaluation by our cardiac rehabilitation team, which determines the best plan for the patient.

We also have worked to standardize our cardiac rehabilitation processes and operations across the Memorial Hermann system to ensure that if a patient needs to transfer from one facility to another, they will receive consistent, high-quality care adhering to system protocols.

Focus on Quality and Multidisciplinary Support

Memorial Hermann is committed to providing quality care and participates in national certifications and registries to share best practices and benchmark our performance against leading organizations. Our pulmonary rehabilitation program and five of our seven cardiac rehabilitation programs are certified by the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR). All of our centers are staffed with nurses with cardiac backgrounds who leverage their experience to tailor the rehab experience for each patient. Our cardiac rehab staff are Advanced Cardiovascular Life Support (ACLS) certified. And our exercise specialists have four-year degrees in exercise science.

Program completion is also important. Our cardiac rehabilitation teams make rehab entertaining and encouraging so patients want to stay. We provide our patients with mental and emotional support, giving them the tools to not only become more physically active, but to help alleviate their stress about their disease and recovery. We educate our patients about their conditions and treatment. And we encourage good medication management.

Our goal is for every patient, throughout the Greater Houston community, to be fully aware and 100% confident when they leave the program. If our latest patient satisfaction numbers are any indication, our approach is working. In our fiscal year 2023, patient satisfaction across our cardiac rehabilitation centers was "Distinguished," as measured by Qualtrics, a leading independent research firm.

Pulmonary Rehabilitation

In addition to our cardiac rehabilitation program, we offer a comprehensive pulmonary rehabilitation program designed to help patients with COPD and other types of chronic lung disease develop the skills and knowledge they need to better manage their disease and to improve their quality of life. Patients who participate in pulmonary rehabilitation can become stronger by increasing their fitness levels. They can become more active, enabling them to do the things they enjoy with loved ones. And pulmonary rehabilitation may also decrease the need for hospital visits.

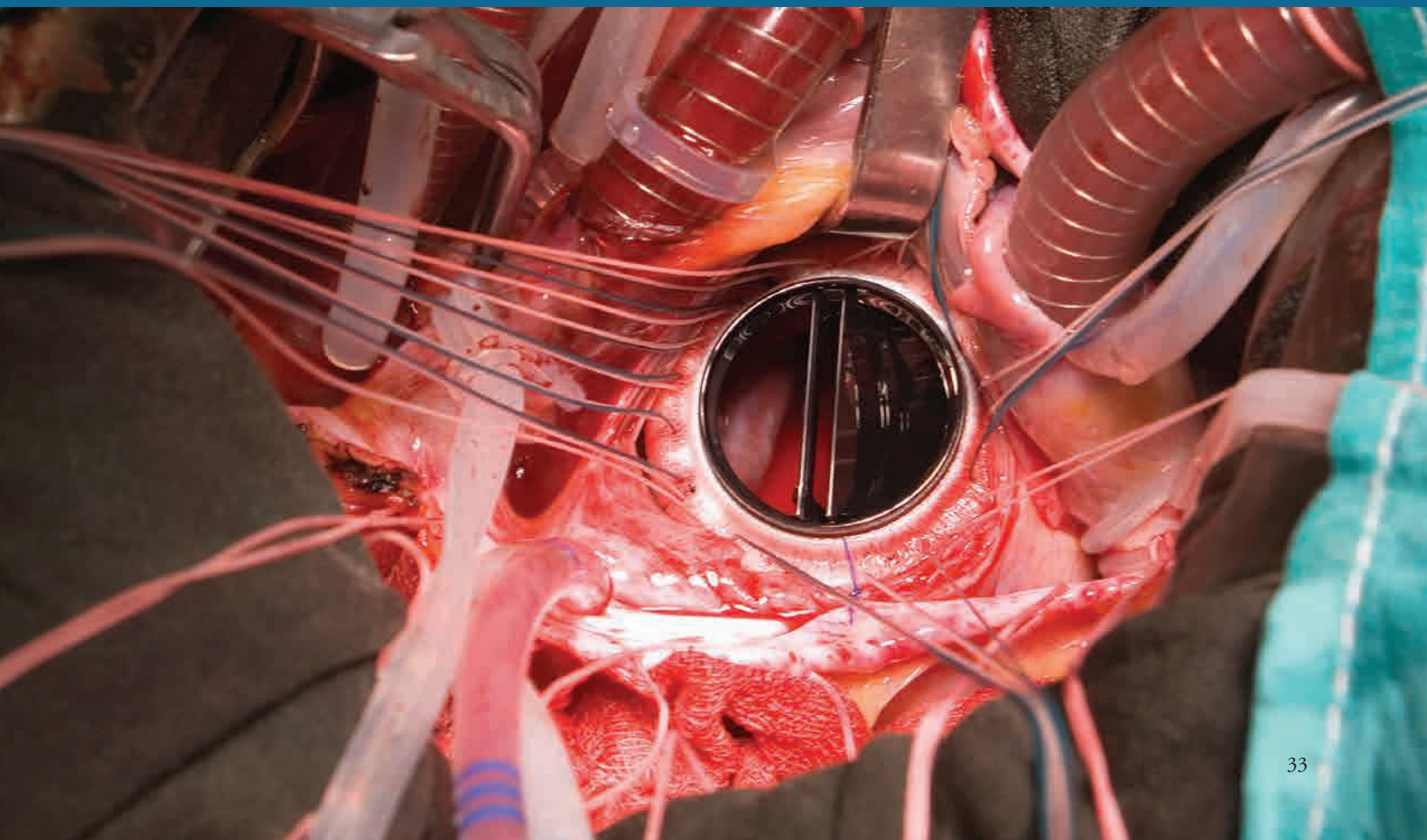
The pulmonary rehabilitation team, comprised of affiliated physicians, registered nurses, respiratory therapists, exercise specialists, occupational therapists, pharmacists and dietitians, creates a customized rehabilitation program to match each patient's specific needs and goals. Patients benefit from a comprehensive combination of exercise, education, counseling and meditation, which helps to reduce their anxiety and stress levels.

The Memorial Hermann pulmonary rehabilitation program is an integral part of the comprehensive range of lung treatments offered at Memorial Hermann, which also includes complex lung surgery, advanced mechanical ventilation support, lung transplant and ECMO support.

For decades, Memorial Hermann, in partnership with McGovern Medical School at UTHealth Houston, has led or been a top enroller in groundbreaking research studies that have shaped the future of cardiovascular medicine.

In keeping with Memorial Hermann's vision to create healthier communities, affiliated researchers are constantly testing new devices, exploring new techniques and identifying breakthrough therapies to prevent and treat heart disease, now and for generations to come.

Here is a subset of the clinical trials which are being performed at Memorial Hermann.



CARDIOVASCULAR SURGERY

Evaluation of the GORE® EXCLUDER® Thoracoabdominal Branch Endoprosthesis in the Treatment of Thoracoabdominal and Pararenal Aortic Aneurysms (TAMBE)

Prospective, non-randomized, multicenter study with two independent arms:

- **Primary Study Arm**–AAA and Pararenal aneurysms requiring only TAMBE System. Hypothesis-driven analysis.
  - o Up to 65 additional subjects may be implanted in Continued Access Phase under the Primary Study Arm only.
- **Secondary Study Arm**–TAAA requiring TAMBE System and CTAG Device(s). Non hypothesis-driven analysis.

NCT03728985, Principal Investigator: Saqib, Naveed

Evaluation of the GORE® TAG® Thoracic Branch Endoprosthesis (TBE Device) in the Treatment of Lesions of the Aortic Arch and Descending Thoracic Aorta (Zone 0/1) (SSB 11-02)

The objective of this study is to determine whether the GORE® TAG® Thoracic Branch Endoprosthesis is safe and effective in treating lesions of the aortic arch and descending thoracic aorta.

NCT02777528, Principal Investigator: Estrera, Anthony

AlloSure Lung Assessment and Metagenomics Outcomes Study (ALAMO)

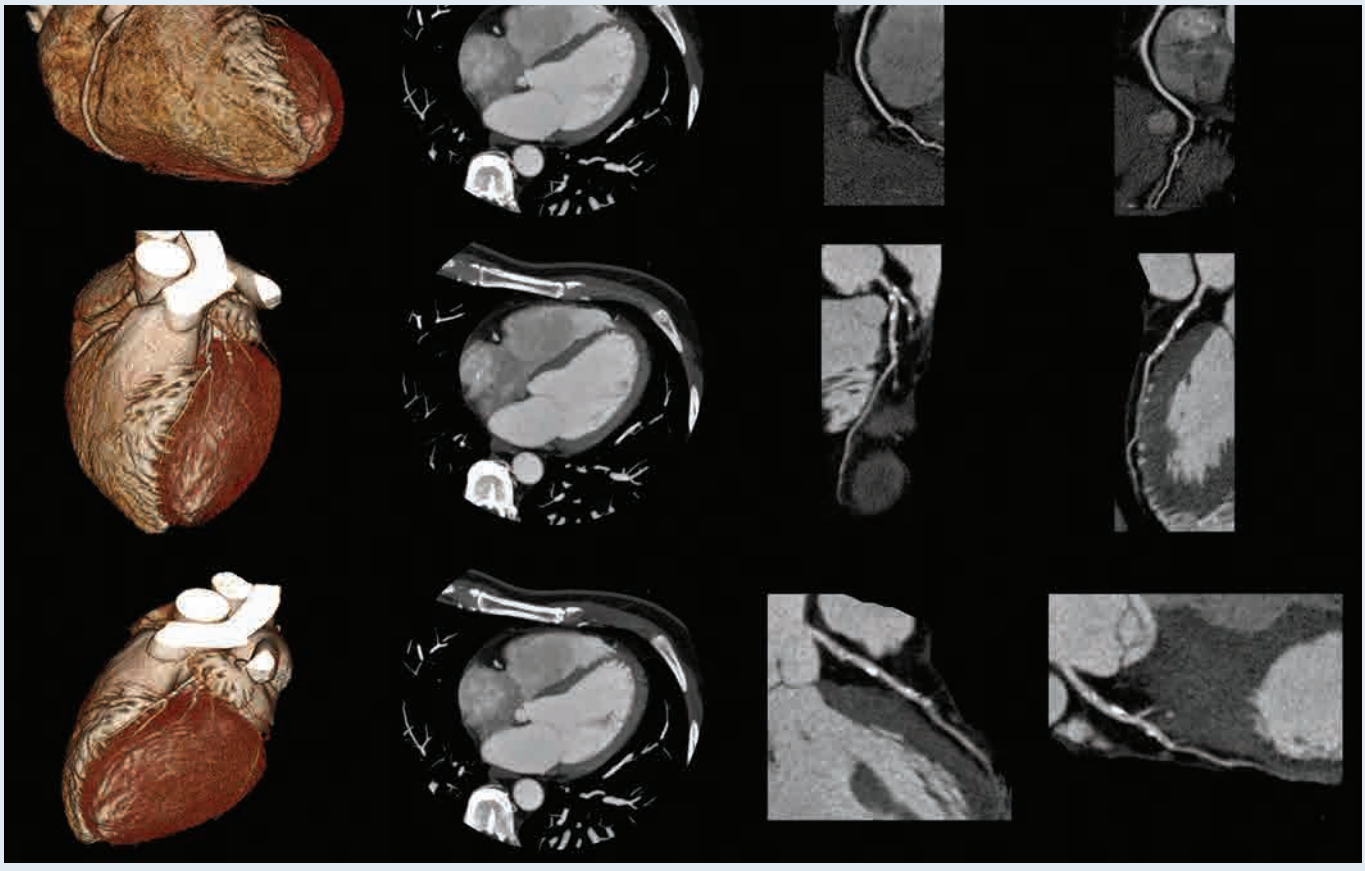
ALAMO is a prospective, multicenter, perspective, registry of patients receiving LungCare™ (AlloSure®-Lung, AlloMap Lung, AlloID™, iBox, HistoMap, and AlloHeme) for surveillance post-transplant. This study aims to investigate the clinical utility of AlloSure®-Lung for surveillance of the spectrum of rejection and infection events in concert with standard of practice (SOP) post-transplant medical care in a robust lung transplant population. The AlloID™ metagenomics NGS plasma test will be collected and performed for research to validate this molecular diagnostic tool versus SOP microbiologic techniques for detection of allograft infection events.

NCT05050955, Principal Investigators: Jyothula, Soma; Hussain, Rahat

Tocilizumab in Cardiac Transplantation

The purpose of this research study is to see if a study drug called tocilizumab will, when given with standard anti-rejection medicines, lead to better heart transplantation outcomes at one year after the transplant. Specifically, the investigators will evaluate whether taking tocilizumab leads to less rejection, less development of unwanted antibodies, and better heart function.

NCT03644667, Principal Investigator: Nathan, Sriram



Zenith® Fenestrated+ Clinical Study

The Zenith® Fenestrated+ Endovascular Graft Clinical Study will assess the safety and effectiveness of the Zenith® Fenestrated+ Endovascular Graft (ZFEN+) in combination with the BeGraft Balloon-Expandable FEVAR Bridging Stent Graft System (BeGraft) for the treatment of patients with aortic aneurysms involving one or more of the major visceral arteries.

NCT04875429, Principal Investigator: Oderich, Gustavo

ADVANCED HEART FAILURE

Reducing Lung Congestion Symptoms in Advanced Heart Failure (RELIEVE-HF)

The objective of the RELIEVE-HF study is to provide reasonable assurance of safety and effectiveness of the V-Wave Interatrial Shunt System by improving meaningful clinical outcomes in patients with New York Heart Association (NYHA) functional Class II, Class III, or ambulatory Class IV heart failure (HF), irrespective of left ventricular ejection fraction, who at baseline are treated with guideline-directed drug and device therapies.

NCT03499236, Principal Investigator: Kumar, Sachin

Impella®-Supported PCI in High-Risk Patients With Complex Coronary Artery Disease and Reduced Left Ventricular Function (PROTECT IV)

The purpose of this study is to assess if using the Impella® CP (or Impella® 2.5) device during high-risk PCI in patients with reduced left-sided heart function will result in an improvement in symptoms, heart function and health after a heart procedure compared to the current standard of care.

NCT04763200, Principal Investigator: Kumar, Sachin

Safe Surveillance of PCI Under Mechanical Circulatory Support With the Saranas Early Bird Bleed Monitoring System (SAFE-MCS)

The objective of this study is to establish the safety of complex high-risk percutaneous coronary intervention (PCI) using mechanical circulatory support (MCS) and surveillance with the Saranas Early Bird Bleed Monitoring System (EBBMS).

NCT05077657, Principal Investigator: Kar, Biswajit

Clinical Evaluation of the AccuCinch® Ventricular Restoration System in Patients Who Present With Symptomatic Heart Failure With Reduced Ejection Fraction (HFrEF): The CORCINCH-HF Study

Prospective, randomized, open-label, international, multicenter clinical study to evaluate the safety and efficacy of the AccuCinch Ventricular Restoration System in patients with heart failure and reduced ejection fraction (HFrEF).

NCT04331769, Principal Investigator: Jumean, Marwan

Flow Regulation by Opening the SepTum in Patients With Heart Failure; a Prospective, Randomized, Sham-controlled, Double-blind, Global Multicenter Study (FROST-HF)

The purpose of this clinical study is to assess the safety and effectiveness of the Atrial Flow Regulator in the treatment of subjects, 18 years of age or older, who have symptomatic heart failure with preserved ejection fraction (HFpEF) or heart failure with reduced ejection fraction (HFrEF) while on stable guideline directed medical therapy (GDMT) as outlined in the Guidelines for the Management of Heart Failure.

NCT05136820, Principal Investigator: Dhoble, Abhijeet

Assessment of CCM in HF With Higher Ejection Fraction (AIM HIGHer)

The AIM HIGHer Clinical Trial will evaluate the safety and efficacy of Cardiac Contractility Modulation (CCM) therapy in patients with heart failure with LVEF ≥40% and ≤60%.

NCT05064709, Principal Investigator: Bhardwaj, Anju

VALVE AND STRUCTURAL HEART

Triscend II Pivotal Study
Pivotal trial to evaluate the safety and effectiveness of the Edwards EVOQUE tricuspid valve replacement system.
NCT04482062, Principal Investigator: Dhoble, Abhijeet

Edwards PASCAL Transcatheter Valve Repair System Pivotal Clinical Trial (CLASP II TR)
To establish the safety and effectiveness of the Edwards PASCAL Transcatheter Repair System in patients with symptomatic severe tricuspid regurgitation who have been determined to be at an intermediate or greater estimated risk of mortality with tricuspid valve surgery by the cardiac surgeon with concurrence by the local Heart Team.
NCT04097145, Principal Investigators: Dhoble, Abhijeet; Smalling, Richard; Kar, Biswajit

ACURATE IDE: Safety and Effectiveness Study of ACURATE Valve for Transcatheter Aortic Valve Replacement
To evaluate safety and effectiveness of the ACURATE Transfemoral Aortic Valve System for transcatheter aortic valve replacement (TAVR) in subjects with severe native aortic stenosis who are indicated for TAVR.
NCT03735667, Principal Investigator: Dhoble, Abhijeet

AMPLATZER PFO Occluder Post Approval Study (PFO PAS)
The purpose of this single arm, multi-center study is to confirm the safety and effectiveness of the AMPLATZER™ PFO Occluder in the Post Approval Setting.
NCT03309332, Principal Investigator: Smalling, Richard

The ENCIRCLE Trial (ENCIRCLE)
This study will establish the safety and effectiveness of the SAPIEN M3 System in subjects with symptomatic, at least 3+ mitral regurgitation (MR) for whom commercially available surgical or transcatheter treatment options are deemed unsuitable.
NCT04153292, Principal Investigator: Kar, Biswajit

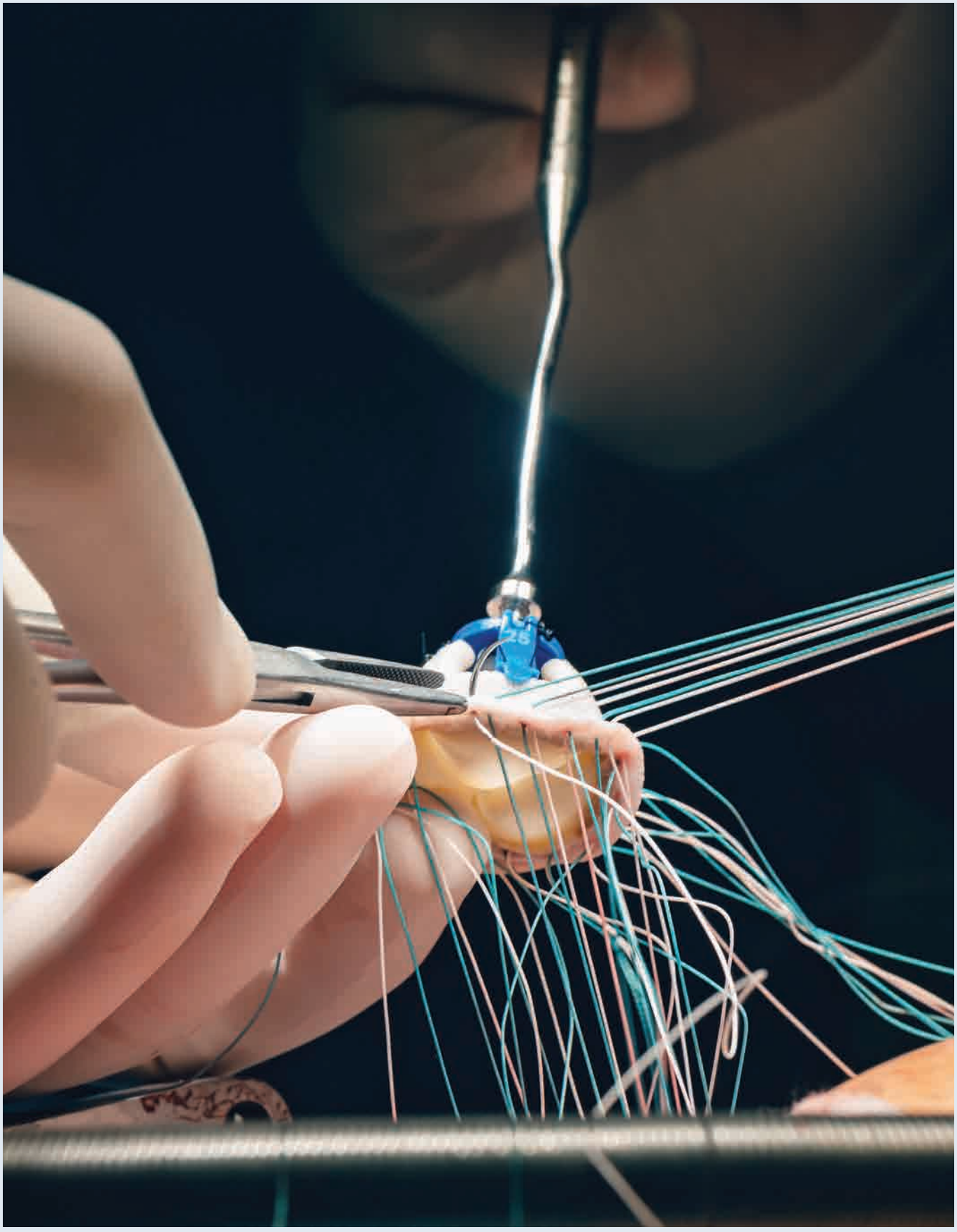
Clinical Trial to Evaluate the Safety and Effectiveness of Using the Tendyne Transcatheter Mitral Valve System for the Treatment of Symptomatic Mitral Regurgitation (SUMMIT)
Prospective, controlled, multicenter clinical investigation with four trial cohorts: Randomized, Non-repairable, Severe Mitral Annular Calcification (MAC) and Severe Mitral Annular Calcification Continued Access Protocol (MAC CAP). Subjects in the Randomized cohort will be randomized in a 1:1 ratio to the trial device or to the MitraClip system. Subjects in the Non-repairable, Severe MAC, and Severe MAC CAP cohorts will receive the trial device.
NCT03433274, Principal Investigator: Basra, Sukhdeep

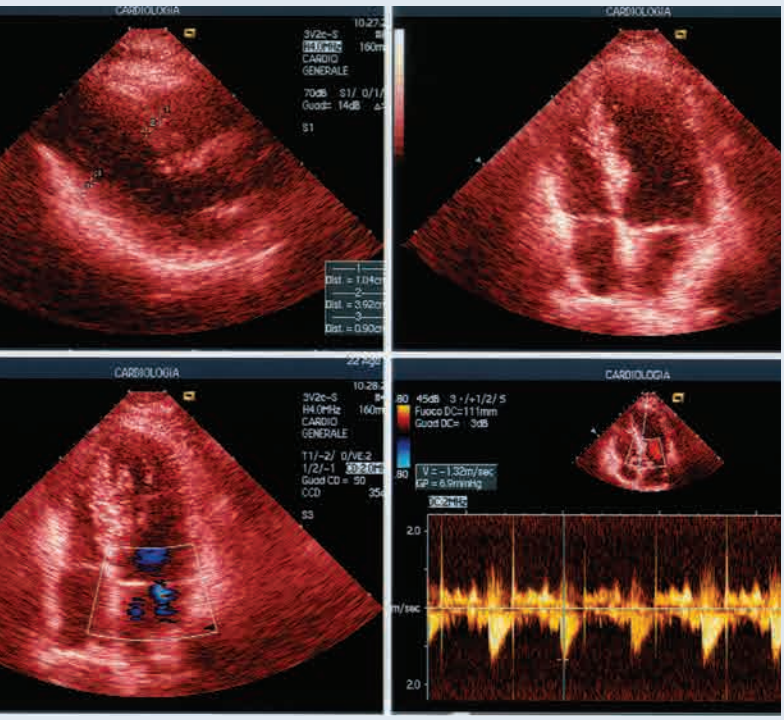
Transcatheter Mitral Valve Replacement With the Medtronic Intrepid™ TMVR System in Patients With Severe Symptomatic Mitral Regurgitation (APOLLO)
Multi-center, global, prospective, non-randomized, interventional, pre-market trial. All subjects enrolled will receive the study device.
NCT03242642, Principal Investigators: Smalling, Richard; Estrera, Anthony

PROGRESS: Management of Moderate Aortic Stenosis by Clinical Surveillance or TAVR (PROGRESS)
This study objective is to establish the safety and effectiveness of the Edwards SAPIEN 3 / SAPIEN 3 Ultra / SAPIEN 3 Ultra RESILIA Transcatheter Heart Valve systems in subjects with moderate, calcific aortic stenosis.
NCT04889872, Principal Investigator: Kar, Biswajit

Edwards PASCAL CLASP IID/IIF Pivotal Clinical Trial (CLASP IID/IIF)
To establish the safety and effectiveness of the Edwards PASCAL Transcatheter Valve Repair System in patients with degenerative mitral regurgitation (DMR) who have been determined to be at prohibitive risk for mitral valve surgery by the Heart Team, and in patients with functional mitral regurgitation (FMR) on guideline-directed medical therapy (GDMT)
NCT03706833, Principal Investigator: Dhoble, Abhijeet

MitraClip REPAIR MR Study
The objective of this randomized controlled trial (RCT) is to compare the clinical outcome of MitraClip™ device versus surgical repair in patients with severe primary MR who are at moderate surgical risk and whose mitral valve has been determined to be suitable for correction by MV repair surgery by the cardiac surgeon on the local site heart team.
NCT04198870, Principal Investigator: Smalling, Richard





ALLIANCE: Safety and Effectiveness of the SAPIEN X4 Transcatheter Heart Valve

The objective of this study is to establish the safety and effectiveness of the Edwards SAPIEN X4 Transcatheter Heart Valve (THV) in subjects with symptomatic, severe, calcific aortic stenosis (AS).

NCT05172960, Principal Investigators: Dhoble, Abhijeet; Jumean, Marwan

Comparing PFO Outcomes of the Occlutech Flex II PFO Occluder to Standard of Care PFO Occlusion (OCCLUFLEX)

The objective of this study is to investigate whether percutaneous PFO closure with the Occlutech Flex II PFO Occluder is non-inferior to the AMPLATZER™ PFO Occluder and Gore® Cardioform Septal Occluder in closure of the PFO, prevention of recurrent embolic stroke and device/procedure related Serious Adverse Events (SAE).

NCT05069558, Principal Investigator: Dhoble, Abhijeet

The JenaValve ALIGN-AR Pivotal Trial (ALIGN-AR)

To collect information about treatment for symptomatic severe Aortic Regurgitation (AR), which affects the aortic valve in the heart. The preferred treatment for severe aortic regurgitation is aortic valve replacement surgery.

NCT04415047, Principal Investigator: Basra, Sukhdeep

ELECTROPHYSIOLOGY

The LEADLESS II IDE Study for the Aveir VR Leadless Pacemaker System

Prospective, non-randomized, multi-center, international clinical study is designed to confirm the safety and effectiveness of the Aveir LP System in a subject population indicated for a VVI(R) pacemaker.

NCT04559945, Principal Investigator: Hariharan, Ramesh

FLExAbility Sensor Enabled Substrate Targeted Ablation for the Reduction of VT Study (LESS-VT)

This clinical investigation is intended to demonstrate the safety and effectiveness of ventricular ablation therapy using the FlexAbility Sensor Enabled Ablation Catheter in patients with drug-refractory monomorphic ventricular tachycardia in whom ventricular tachycardia recurs despite antiarrhythmic drug therapy or when antiarrhythmic drugs are not tolerated or desired.

NCT03490201, Principal Investigator: Hariharan, Ramesh

Amplatzer Amulet LAAO vs. NOAC (CATALYST)

The objective of this trial is to evaluate the safety and effectiveness of the Amulet LAA occluder compared to NOAC therapy in patients with non-valvular AF at increased risk for ischemic stroke and who are recommended for long-term NOAC therapy.

NCT04226547, Principal Investigator: Dhoble, Abhijeet

Cardiac Resynchronization Therapy in Previously Untreatable and High Risk Upgrade Patients (SOLVE-CRT)

This study is a prospective, multi-center, pivotal trial to study the safety and efficacy of the WiSE-CRT System for Cardiac Re-synchronization Therapy.

NCT02922036, Principal Investigator: Sharma, Saumya

Early Dronedarone Versus Usual Care to Improve Outcomes in Persons With Newly Diagnosed Atrial Fibrillation (CHANGE-AFIB)

The purpose of this study is to determine if treatment with dronedarone on top of usual care is superior to usual care alone for the prevention of cardiovascular hospitalization or death from any cause in patients hospitalized with first-detected AF. All patients will be treated with guideline-recommended stroke prevention therapy according to the CHA2DS2-VASc score.

NCT05130268, Principal Investigator: Chiadika, Olasimbo

CARDIOVASCULAR IMAGING

Century Trial, a Randomized Lifestyle Modification Study for Management of Stable Coronary Artery Disease (Century)

The Century Trial is a single-center Phase III randomized study sponsored by the Albert Weatherhead III Foundation and conducted by Dr. K. Lance Gould. The study hypothesis is that a combined image-treatment regimen of PET + comprehensive program of lifestyle modification and lipid-lowering drugs to target lipid level will result in an improved cardiovascular risk score when compared to current standard optimal medical therapy, potentially resulting in a lower rate of death, non-fatal myocardial infarction (MI) and revascularization procedures during long term follow-up when compared with current standard of care.

NCT00756379, Principal Investigator: Gould, K Lance

CARDIOVASCULAR GENETICS

Montalcino Aortic Consortium: Precision Medicine for Heritable Thoracic Aortic Disease (MAC:H-TAD)

The Montalcino Aortic Consortium (MAC) will provide the infrastructure to assemble large cohorts of patients with mutations in known heritable thoracic aortic disease (H-TAD) genes, define the phenotype associated with these genes and determine genetic and environmental modifiers of H-TAD.

NCT04005976, Principal Investigator: Milewicz, Dianna

CARDIOVASCULAR OTHER

Efficacy of the COronary SInus Reducer in Patients With Refractory Angina II (COSIRA-II)

To demonstrate the safety and effectiveness of the Reducer system for treatment of patients with refractory angina pectoris treated with maximally tolerated guideline-directed medical therapy who demonstrate objective evidence of reversible myocardial ischemia in the distribution of the left coronary artery and who are deemed unsuitable for revascularization. A non-randomized single-arm will further assess the safety and effectiveness of the Neovasc Reducer System in selected subjects with reversible myocardial ischemia in the distribution of the right coronary artery and who are deemed unsuitable for revascularization, subjects with reversible myocardial ischemia without documented obstructive coronary disease and subjects who cannot complete an exercise tolerance test due to an above-the-ankle amputation.

NCT05102019, Principal Investigator: Arain, Salman

RADIANCE Continued Access Protocol (RADIANCE CAP)

RADIANCE CAP is a non-randomized study designed to allow for continued access to ultrasound renal denervation therapy via the Paradise System, and to allow for the on-going collection of safety and effectiveness data in subjects with uncontrolled hypertension despite the prescription of antihypertensive medications.

NCT05017935, Principal Investigator: Charitakis, Konstantinos

Efficacy and Safety of Intravenous Efzofitimod in Patients With Pulmonary Sarcoidosis

This is a multicenter, randomized, double-blind, placebo-controlled, study comparing the efficacy and safety of intravenous (IV) efzofitimod 3 mg/kg and 5 mg/kg versus placebo after 48 weeks of treatment. This study will enroll adults with histologically confirmed pulmonary sarcoidosis receiving stable treatment with oral corticosteroid (OCS), with or without immunosuppressant therapy.

NCT05415137, Principal Investigator: Hussain, Rahat

Study of Efficacy and Safety of Inhaled Treprostinil in Subjects With Idiopathic Pulmonary Fibrosis (TETON)

Study RIN-PF-301 is designed to evaluate the superiority of inhaled treprostinil against placebo for the change in absolute forced vital capacity (FVC) from baseline to Week 52.

NCT04708782, Principal Investigator: Hussain, Rahat

Primary Unloading and Delayed Reperfusion in ST-Elevation Myocardial Infarction: The STEMI-DTU Trial (DTU-STEMI)

The purpose of this research study is to evaluate whether using the the IMPELLA® CP System temporary circulatory assist device for 30 minutes prior to a catheterization procedure has the potential to reduce the damage to the heart caused by a heart attack, compared to the current standard of care.

NCT03947619, Principal Investigators: Kumar, Sachin; Marwan, Jumean; Basra, Sukhdeep

The PEERLESS Study (PEERLESS)

A prospective, multicenter, randomized controlled trial of the FlowTriever System compared to Catheter-Directed Thrombolysis (CDT) for use in the treatment of acute pulmonary embolism. The trial includes a non-randomized cohort of subjects with an absolute contraindication to thrombolysis.

NCT05111613, Principal Investigator: Basra, Sukhdeep

All five Memorial Hermann sites participating in the National Cardiovascular Data Registry (NCDR) CathPCI Registry® received the top, four-star ranking (2022): Memorial Hermann Memorial City Medical Center, Memorial Hermann Southeast Hospital, Memorial Hermann Southwest Hospital, Memorial Hermann-Texas Medical Center and Memorial Hermann The Woodlands Medical Center.

Memorial Hermann Memorial City Medical Center and Memorial Hermann Sugar Land Hospital achieved Platinum status for the NCDR Chest Pain - MI Registry™. Memorial Hermann Southeast Hospital achieved Gold status. And Memorial Hermann Cypress Hospital, Memorial Hermann Greater Heights Hospital, Memorial Hermann-Texas Medical Center and Memorial Hermann The Woodlands Medical Center achieved Silver status.

Memorial Hermann-Texas Medical Center received a three-star rating—the highest rating possible—for TAVR from the Society of Thoracic Surgeons (STS) and the American College of Cardiology's (ACC's) TVT Registry™, which publicly reports outcomes for cardiovascular procedures.

U.S. NEWS & WORLD REPORT HIGH PERFORMING HOSPITALS

Memorial Hermann received several High Performing Hospitals awards by *U.S. News & World Report*:

High Performing Cardiology and Heart & Vascular Surgery: Memorial Hermann Cypress Hospital, Memorial Hermann Greater Heights Hospital, Memorial Hermann Hospital (Memorial Hermann-Texas Medical Center), Memorial Hermann Pearland Hospital, Memorial Hermann Southeast Hospital, Memorial Hermann Southwest Hospital, Memorial Hermann The Woodlands Medical Center

High Performing Heart Failure: Memorial Hermann Cypress Hospital, Memorial Hermann Greater Heights Hospital, Memorial Hermann Hospital (Memorial Hermann-Texas Medical Center), Memorial Hermann Katy Hospital, Memorial Hermann Memorial City Medical Center, Memorial Hermann Northeast Hospital, Memorial Hermann Pearland Hospital, Memorial Hermann Southeast Hospital, Memorial Hermann Southwest Hospital, Memorial Hermann The Woodlands Medical Center

High Performing Heart Attack: Memorial Hermann Cypress Hospital, Memorial Hermann Greater Heights Hospital, Memorial Hermann Hospital (Memorial Hermann-Texas Medical Center), Memorial Hermann Katy Hospital, Memorial Hermann Memorial City Medical Center, Memorial Hermann Northeast Hospital, Memorial Hermann Pearland Hospital, Memorial Hermann Southeast Hospital, Memorial Hermann Southwest Hospital, Memorial Hermann The Woodlands Medical Center
High Performing Heart Bypass: Memorial Hermann Greater Heights Hospital, Memorial Hermann Hospital (Memorial Hermann-Texas Medical Center), Memorial Hermann Memorial City Medical Center, Memorial Hermann Southeast Hospital, Memorial Hermann Southwest Hospital, Memorial Hermann The Woodlands Medical Center

High Performing Aortic Valve Surgery: Memorial Hermann Hospital (Memorial Hermann-Texas Medical Center)

High Performing Abdominal Aortic Aneurysm Repair: Memorial Hermann Greater Heights Hospital, Memorial Hermann Hospital (Memorial Hermann-Texas Medical Center), Memorial Hermann Pearland Hospital, Memorial Hermann Southeast Hospital, Memorial Hermann Southwest Hospital, Memorial Hermann The Woodlands Medical Center

High Performing TAVR: Memorial Hermann Hospital (Memorial Hermann-Texas Medical Center)

High Performing Lung Cancer Surgery: Memorial Hermann Greater Heights Hospital, Memorial Hermann Hospital (Memorial Hermann-Texas Medical Center), Memorial Hermann Southeast Hospital, Memorial Hermann Southwest Hospital, Memorial Hermann The Woodlands Medical Center

Memorial Hermann-Texas Medical Center received a three-star rating—the highest rating possible—for TAVR from the Society of Thoracic Surgeons (STS) and the American College of Cardiology's (ACC's) TVT Registry™, which publicly reports outcomes for cardiovascular procedures.

Four Memorial Hermann sites earned the Society for Vascular Surgery® Vascular Quality Initiative® (SVS/VQI) three-star ranking: Memorial Hermann Greater Heights Hospital, Memorial Hermann Katy Hospital, Memorial Hermann Memorial City Medical Center and Memorial Hermann Northeast Hospital.

Five Memorial Hermann sites earned the SVS/VQI two-star ranking: Memorial Hermann Southeast Hospital, Memorial Hermann Southwest Hospital, Memorial Hermann Sugar Land Hospital, Memorial Hermann-Texas Medical Center and Memorial Hermann The Woodlands Medical Center.

Memorial Hermann acute care hospitals are STEMI-receiving facilities and Chest Pain certified.*

**The Joint Commission or The American College of Cardiology.*

The Center for Advanced Heart Failure at Memorial Hermann-Texas Medical Center was designated as a Platinum Level Center of Excellence for Life Support (ECMO) September 2020 – 2023.

To refer a patient to the Memorial Hermann Heart & Vascular Program, scan this QR code or click here. Your information will be directed to the appropriate physician or clinician who will respond to you quickly.

MEMORIAL HERMANN®
Heart & Vascular

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