

Memorial Hermann Heart & Vascular

2025 | Annual Report



MEMORIAL[®]
HERMANN
Heart & Vascular

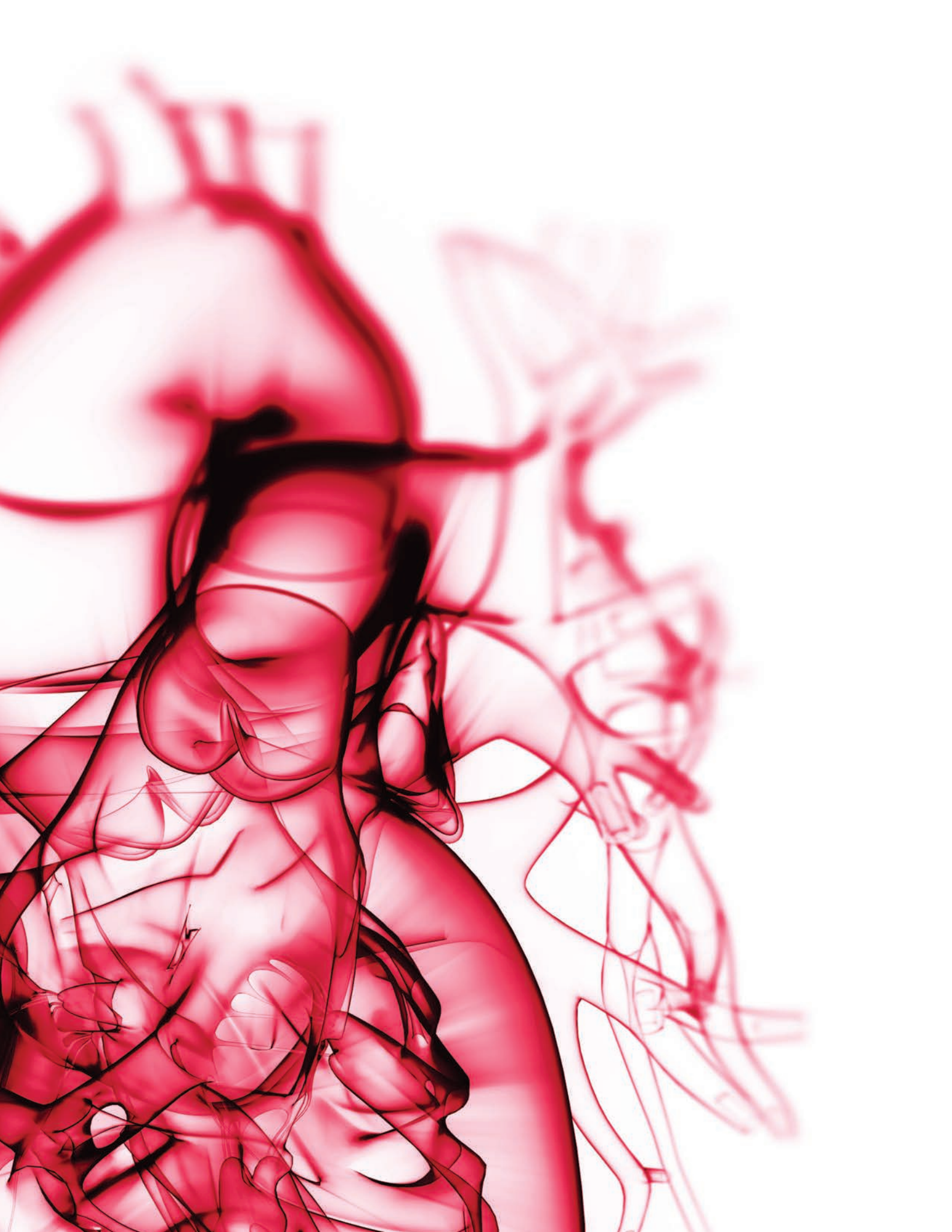


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Driving Innovation to Benefit Our Patients

Only a team built of individuals who strive for personal excellence and clinical collaboration can achieve great outcomes in medicine. At Memorial Hermann Heart & Vascular, we have the privilege of working with teams like that every day. Our goal is to improve the cardiac health of every patient through innovation across the full spectrum of heart and vascular care and dedication to quality outcomes from every team member.

The Memorial Hermann Heart & Vascular program serves the Greater Houston area, Southeast Texas and beyond, drawing patients from across the nation and internationally. With 11 acute care hospitals, we provide high-quality cardiac care at the intersection of convenience and innovation.

Along with our Memorial Hermann Medical Group physicians and many independent practices, we are committed to continually advancing the future of heart care in collaboration with our academic partner, UTHealth Houston. Participating in more than 60 active clinical trials, we offer our patients new care options and access to devices and procedures that are not commonly available. For more information on our research efforts, please go to the Clinical Trials section of this report.

Building on the momentum of these and previous clinical trials, our affiliated heart and vascular teams have built a reputation for pioneering new technologies in cardiology. We were early adopters of robot-assisted cardiac surgery and continue to advance its use in the operating room. Memorial Hermann is one of only a few hospitals to use the full spectrum of robotic capabilities for heart surgery, enabling smaller incisions and increased precision. Robotic surgery is just one example of our investment in the future of heart



Service Line Administration Leaders

Kyle Price

Senior Vice President
Service Lines
Memorial Hermann Health System

Amy Harberg

Vice President
Heart & Vascular Service Line
Memorial Hermann Health System

Physicians Governance Council Leaders

Anthony Estrera, MD, FACS

Professor and Chair, Cardiothoracic
and Vascular Surgery, McGovern
Medical School at UTHealth Houston

Co-Chair, UTHealth Houston
Heart & Vascular

Medical Director, Heart & Vascular
Service Line, Memorial Hermann
Health System

Igor Gregoric, MD, FACC

Professor, Cardiothoracic and
Vascular Surgery

Director of Research, Advanced
Cardiopulmonary Therapies and
Transplantation (ACTAT), McGovern
Medical School at UTHealth Houston

Medical Director, Heart & Vascular
Service Line, Memorial Hermann
Health System

Biswajit Kar, MD

Professor, Internal Medicine

Memorial Hermann Chair, McGovern
Medical School at UTHealth Houston

Vice President, Strategy and
Development, UTHealth Houston
Heart & Vascular

Center for Advanced Heart Failure
Medical Director, Heart & Vascular
Service Line, Memorial Hermann
Health System

Commitment to Quality



**Vizient Bernard A. Birnbaum, MD
Quality Leadership Top Performer
2023**



**National Cardiovascular
Data Registry (NCDR)
2023 CathPCI Registry®**

4-Star Rating

Memorial City Texas Medical Center
Southeast The Woodlands
Southwest



**2024 NCDR Chest Pain -
MI Registry™**

**Platinum Performance
Achievement Award**

Greater Heights Southeast
Cypress Sugar Land
Memorial City The Woodlands



**Gold Performance
Achievement Award**

Texas Medical Center



**Silver Performance
Achievement Award**

Northeast
Pearland
Southwest



**Society for Vascular Surgery®
Vascular Quality Initiative®**

3-Star Rating

Greater Heights Southeast
Katy Southwest
Memorial City Sugar Land

2-Star Rating

Texas Medical Center
The Woodlands
Northeast



**The Joint Commission
Chest Pain Certification**

Cypress Pearland
Greater Heights Southeast
Katy Southwest
Memorial City Sugar Land
Northeast The Woodlands



**American College of Cardiology
Accredited Chest Pain Center -
Primary PCI**

Texas Medical Center

and vascular care. From aortic stent grafts customized for a patient's unique anatomy to in-flight extracorporeal membrane oxygenation (ECMO) with our Memorial Hermann Life Flight® air ambulance service, we utilize the best innovations to drive outcomes.


Our focus on quality health care has garnered recognition from our peers. The Transcatheter Valve Therapy (TVT) Registry, a combined effort



of the Society of Thoracic Surgeons and the American College of Cardiology, has awarded Memorial Hermann-Texas Medical Center a three-star designation, the highest award possible, for our achievements in quality, safety and outcomes for transcatheter aortic valve replacement (TAVR). For the second year in a row, ours is the only three-star TAVR program in the state of Texas, and one of only a few in the country. Our ECMO program has received Platinum Level Center of Excellence recognition from the Extracorporeal Life Support Organization, the highest level

of recognition for education, performance, innovation, satisfaction and quality.

We hope you find the information in this Annual Report informative and invite you to visit us online at [memorialhermann.org/heart](https://www.memorialhermann.org/heart) for more information about our programs and referral process.



Memorial Hermann - Texas Medical Center Accolades and Recognitions

*Newsweek: America's Best
Cardiac Hospitals 2024*

*America's 250
Best Hospitals Award™*

*America's 100 Best Hospitals for
Cardiac Care Award™*

*America's 100 Best Hospitals for
Coronary Intervention Award™*

*U.S. News & World Report High
Performing in Cardiology, Heart &
Vascular Surgery*

*STS/ACC TVT Registry™
3-Star Rating*

*ELSO Platinum Level Center
of Excellence*

*American College of Cardiology
Cardiac Cath Lab*

*American College of Cardiology
Chest Pain Center*

Pioneering the Future of Aorta Care

Memorial Hermann's Aortic Center of Excellence is unique in the nation for its full spectrum approach to aortic care, dedicated physicians and technological offerings.

The Aortic Center of Excellence is one of the largest aortic programs in the world, making it an ideal place for both routine and complex aortic disease. The Aortic Center comprises a multidisciplinary team of UTHealth Houston Heart & Vascular faculty who are pioneers in the care of patients with aortic aneurysms and dissections using open surgical, robotic and endovascular techniques.

Among several firsts are total percutaneous endovascular arch repair and robotic reconstructive aortic surgery. Patients benefit from the latest generation hybrid operating rooms and access to investigational devices that are not yet commercially available in the United States. The distinguished team of physicians, surgeons and nurses strives to provide high-quality care for each individual.

Clinical Research: Customizing Stents to Each Patient

Our numerous research initiatives ensure our program remains at the forefront of care for complex aortic disease. In addition to a prolific publication track record, for the last few years Memorial Hermann-Texas Medical Center has been one of only 10 hospitals in the nation with a comprehensive physician-sponsored investigational device exemption study that allows access to conventional and custom manufactured devices (CMDs) for treatment of aortic arch, thoracic and thoracoabdominal aortic aneurysms. The CMDs are precision medicine devices tailored to match a patient's exact vascular anatomy and deployed endovascularly. Because of the design flexibility inherent in a custom device, they are ideal for patients who have unique anatomy or complex disease. Outcomes for our patients undergoing endovascular repair of thoracoabdominal aortic aneurysms using these devices are among the best in the nation.





70

Abdominal aortic
aneurysm repairs
in FY24

225

Thoracic aortic
aneurysm repairs
in FY24

139

Endovascular
abdominal aortic
aneurysm repairs
in FY24

337

Thoracic
endovascular aortic
aneurysm repairs
in FY24

The Future of Aortic Care: Modified Devices, GPS and Augmented Reality

Beyond groundbreaking CMD aortic aneurysm surgery, the Aortic Center of Excellence boasts nationally recognized UTHealth Houston Heart & Vascular physicians and surgeons who provide the full spectrum of aortic surgery. For patients who cannot wait for a CMD to be created for them, our physicians are also experienced in the use of off-the-shelf and physician-modified endografts, in which the surgeon adjusts the shape of a standard stent to accommodate a specific patient.

Memorial Hermann and UTHealth Houston Heart & Vascular drive improvement in outcomes for our aortic patients by leading ongoing investigations into new techniques and equipment. Our affiliated surgeons are currently using GPS guidance with CT imaging to more accurately place stent wires during endovascular procedures, decreasing radiation exposure for the patient and the physician while increasing accuracy. Additionally, augmented reality procedures combined with 3D imaging are under investigation by our team.

Reaching Across Specialties to Improve Aortic Care

Aortic aneurysm or other aortic disease can be one element of a broader, complex clinical picture. Our partnership and interdisciplinary meetings with physicians across cardiology subspecialties is essential to providing high-quality cardiovascular care.

Several genetic conditions, such as Loeys-Dietz and Ehlers-Danlos syndromes, have unique implications for the aorta in addition to causing disease in other organ systems. Our affiliated partner, UTHealth Houston, has been a pioneer in genetic testing for aortic disease, allowing us to screen for common associated aortic conditions.





Raising the Bar Through Education: Houston Aortic Symposium

Contributions to Aortic Medicine

We have curated a team from across the nation, bringing them together to create a unique destination center for aortic care. Our prolific research initiatives and experienced affiliated faculty continue to make significant contributions to the field of vascular and aortic medicine.

Current research initiatives include, among others, comparing standard of care with thoracic endovascular aneurysm repair for type B aortic dissections as well as studying the use of novel aortic graft devices in complex aneurysms, such as conformable thoracic stent grafts in zones 0-2 of the thoracic aorta, very near the heart where surgeries are high risk. Our ongoing dedication to increasing the treatment options for aortic conditions can make a significant difference for patients in need.



The Houston Aortic Symposium is the leading conference for aortic conditions, drawing surgeons from across the nation and internationally. Memorial Hermann and UTHealth Houston originated this annual symposium with the goal of bringing together leaders in the field from around the globe to share ideas, learn and innovate.

In March 2024, we welcomed more than 500 vascular and cardiothoracic surgeons, interventional radiologists, cardiologists, anesthesiologists, advanced practice providers, perfusionists and other health care professionals. In addition to presentations on current research and new technologies, practical skills and protocol updates are offered to nursing professionals. These educational opportunities are essential to elevating aortic care across the nation and enhancing the future for people with aortic disease.

Driving Forward into a New Heart Surgery Landscape

A breadth-and-depth approach to delivering cutting-edge heart surgery, offered in one nationally recognized hospital system.

Cardiac surgery at Memorial Hermann thrives on the principle of bringing high-quality heart care to the patients who need it. With cardiac surgery services offered at six sites around the Greater Houston area, we are here for our patients when they need us, where they need us.

Our program offers both open heart surgery and minimally invasive procedures, including robotic-assisted procedures.

Full Spectrum Robotic-Assisted Surgery

Since unveiling robotic heart surgery at Memorial Hermann Memorial City two years ago, the program has grown significantly, with robotic capabilities now at Memorial Hermann-Texas Medical Center as well, completing over 250 robotic-assisted surgeries. Our program has been a consistent leader in robotic-assisted aortic valve replacement and has been instrumental in advancing the use of robotic technology for other cardiac procedures. Robotic-assisted surgery continues to gain recognition in the medical and lay community as an essential offering in cardiothoracic surgery. With notable potential benefits to the patient, such as cardiac access without sternotomy, quicker recovery time and lower risk of infection compared to traditional open surgery, robotic-assisted procedures have the potential to improve patient outcomes for valvular and coronary disease.

Our program offers all the robotic-assisted heart surgeries currently approved by the FDA, including mitral valve repair, coronary artery bypass graft, atrial maze procedures and myxoma resection. This unique breadth of experience with robotic surgery is possible because of Memorial Hermann's and UTHealth Houston's combined focus on quality improvement and innovation. Our technical experience with the use of these machines complements our medical experience to optimize patient recoveries.

Open heart surgery programs at
6 locations across the
Houston metro area

1,076

ISO-CABG surgeries performed in FY24

1,639

Total cardiac surgeries performed in FY24

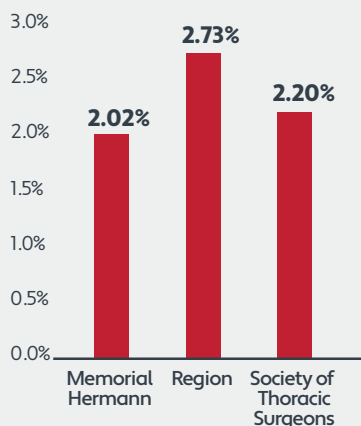


A National Destination for Complex Valve Conditions

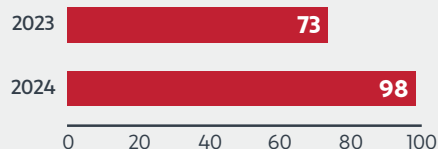
Besides embracing modern surgical technology, cardiac surgeons support the heart health of patients by offering treatment approaches that are only available in a few hospitals across the country.

For example, the unique offerings of the Larry D. Johnson Heart & Vascular Institute led to utilizing the Ross procedure to replace the aortic valve in an adult with their own pulmonic valve and using a healthy donor valve for their pulmonic artery. Long established in pediatrics, the Ross procedure offers the benefits of a long-lasting grafted aortic valve and avoiding anticoagulation therapy for adults with aortic valve failure as well.

Risk-Adjusted Operative CABG Mortality - 2024



Cardiac Robotic Volume



Clinical Trials

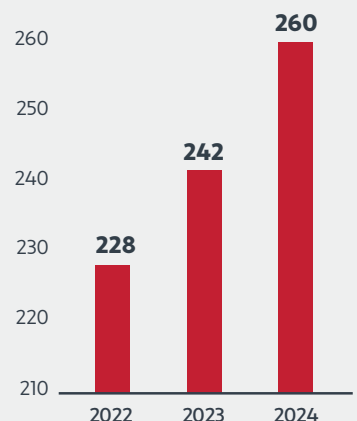
The large clinical network of Memorial Hermann, reaching across Greater Houston, allows us to offer our patients participation in nationwide clinical trials in collaboration with our academic partner, UTHealth Houston. These patients have access to medications, tools and procedures that would otherwise be unavailable. Cardiac surgery is currently involved in several trials, including the following:

- ENVISION Trial, which is studying the efficacy of a newly developed transcatheter aortic valve replacement, available at Memorial Hermann-Texas Medical Center and Memorial Hermann Memorial City.
- REPAIR MR trial, which is comparing the outcomes in percutaneous repair and open mitral valve repair for moderate-risk patients, available at Memorial Hermann-Texas Medical Center, Memorial Hermann Memorial City and Memorial Hermann The Woodlands.

I love the collegiality and the teamwork between surgeons and cardiologists in this hospital. It's unlike any relationship that I have seen in other hospitals.

—**Juan Abreu, MD**, Assistant Professor, Cardiothoracic and Vascular Surgery, McGovern Medical School at UTHealth Houston and Cardiothoracic Surgeon affiliated with Memorial Hermann

Surgical Valve Volume



Elevating the Standard for Complex Coronary Care

Our Complex Coronary Intervention program has emerged as a leading force, particularly for patients requiring high-risk coronary interventions.

Through a combination of specialized skill, focus on continuous quality improvement and comprehensive training, the Complex Coronary Intervention program offers lifesaving care for patients with complex and chronic coronary artery disease (CAD). Memorial Hermann's interventional cardiologists and affiliated physicians are experienced in managing high-risk coronary cases, particularly for patients with chronic total occlusions (CTOs) and those classified as complex high-risk indicated patients (CHIPs).

Niche Skills in Complex Cases

Our CTO program is one of the busiest in Houston, providing advanced percutaneous coronary interventions (PCIs) for patients who previously only had surgical options. With more than 120 CTO procedures performed last year alone, our program's high-volume and innovative approach has made it a regional referral center for complex coronary care. Each patient is evaluated by a team of specialists to determine the appropriate course of treatment, and most CTO patients return home within 24 hours of intervention.

For patients ineligible for bypass surgery, our CHIP interventions leverage advanced imaging, specialized stenting techniques and circulatory support devices to perform minimally invasive procedures with high success rates. Our multifaceted approach enables many of our patients to achieve the degree of revascularization needed to recover their cardiovascular function and improve their symptoms without the need for traditional open-heart surgery.



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

120+

CTO procedures
performed annually

<75 min

Average door-to-balloon
across the system

2,750+

PCIs performed annually
systemwide

Participation in national
registries and trials such
as the PROGRESS CTO
Registry and COSIRA-II,
advancing patient care
through research.

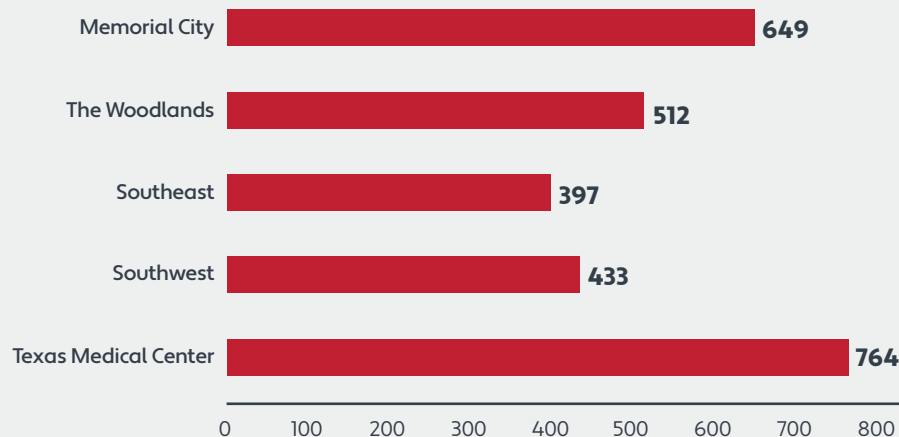
*The Joint Commission or ACC



Memorial Hermann has distinguished itself as a place for cutting-edge care. There are new developments every day, and we take pride in making sure that these become accessible to our patients as soon as they become available to the community at large.

—Salman Arain, MD,
Associate Professor,
Cardiovascular Medicine,
McGovern Medical School
at UTHealth Houston and
Interventional Cardiologist,
Memorial Hermann Health
System

PCI Procedures Performed in 2023



Source: CardioSmart Public Reporting for Memorial Hermann sites that participate in the PCI Registry Calendar Year 2023

STEMI and High-Acuity Cardiac Cases

Memorial Hermann's ST-segment elevation myocardial infarction (STEMI) protocol is designed to deliver lifesaving interventions with efficiency and precision. Memorial Hermann-Texas Medical Center is recognized as an Accredited STEMI Receiving Center by the American Heart Association (AHA), placing it among an elite group of facilities nationwide. The program is supported by Life Flight—

the only nonprofit hospital-based air ambulance serving Houston and the surrounding communities. Access to Life Flight enables our team to transfer high-acuity STEMI patients from outlying areas directly to our intervention-ready facilities, reducing time to care, which has been shown to result in better outcomes.

This proactive STEMI care model and an innovative app-based STEMI activation system helps us triage and treat patients rapidly, even from

remote locations. Our approach minimizes door-to-balloon times by enabling EMS teams to perform prehospital EKGs, which alert our STEMI response teams before the patient arrives. This process has resulted in a <75 minute average door-to-balloon time across the system, outperforming the national standard of <90 minutes set by the American College of Cardiology (ACC)/AHA and securing Memorial Hermann's place as a recognized leader in STEMI care.

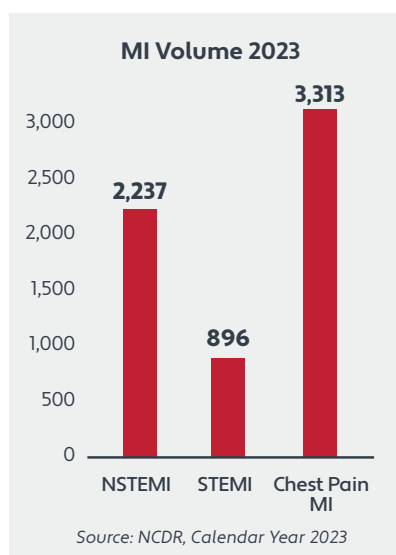
Commitment to Quality

This year, our cath lab at Memorial Hermann-Texas Medical Center earned the prestigious ACC Cardiac Cath Lab accreditation. This rigorous process involves compliance with 347 quality essential measures. This accreditation builds on our ACC accreditation as a Chest Pain and Primary PCI Center earned in 2023.



Innovation and Research Drive Program Expansion

Memorial Hermann is not only at the forefront of patient care, but also plays a key role in cardiovascular research and education. In collaboration with UTHealth Houston Heart & Vascular, we regularly host international experts in the field, such as Mauro Carlino, MD, pioneer of the Carlino CTO technique from Milan, to work alongside our affiliated physicians and educate our teams on innovative approaches to higher complexity lesions. Together, Memorial Hermann Heart & Vascular and UTHealth Houston participate in several leading clinical trials, including the PROGRESS CTO Registry, an international multi-center registry of CTO PCIs aimed at studying techniques and outcomes across a diverse group of institutions. This registry has already produced nearly 140 publications and 200+ presentations to advance the field.



Another key study, the COSIRA-II trial, evaluates the safety and efficacy of a device to relieve chronic refractory angina in patients who are not candidates for further revascularization. Participation in studies like these enables us to offer our patients access to novel devices and treatments that are shaping the future of complex coronary interventions.

In addition, through our Cath Lab Staff Fellowship Program (see Educating Future Leaders - right), Memorial Hermann trains cath lab nurses and technologists. The program includes a rigorous mix of classroom instruction, hands-on experience and simulation-based training, equipping staff with the skills needed for high-acuity cardiac care. This pipeline of talent is critical to maintaining the program's high standards of care, as staff learn directly from specialists experienced in CTO and CHIP interventions.

Educating Future Leaders: Cath Lab Staff Fellowship Program



To sustain a high standard of care across our 42 cath labs, Memorial Hermann developed a unique fellowship program. This four-month program provides intensive training in cath lab procedures, patient management and advanced technologies. The program is designed to ensure that the next generation of cath lab nurses and radiology technologists has the skillset necessary for complex coronary interventions, including CTO and CHIP cases.

Key Benefits of the Fellowship Program

- **Comprehensive training:** Staff learn about anatomy, interventional devices and complex procedures.
- **Cross-training:** Staff are trained to understand and assist in multiple roles, including circulating, scrubbing and monitoring.
- **Hands-on experience:** Staff work on live cases under the guidance of experienced interventionalists.
- **High retention rates:** Graduates often continue to work in Memorial Hermann cath labs, reinforcing our commitment to maintaining a well-prepared, highly skilled cath lab team.

For more information or to apply, visit [memorialhermann.org/clinical-fellowship](https://www.memorialhermann.org/clinical-fellowship)

Leading the Rhythm of Innovation Across the Nation

With more than 15,500 procedures annually, our robust program is committed to offering patients the latest technologies.

As the electrophysiology inpatient market share leader in Houston—a competitive market for advanced cardiac care—our program stands at the forefront of heart and vascular care, blending cutting-edge technology, a high volume of procedures and a commitment to delivering high-quality outcomes for patients with heart rhythm disorders.

Our experienced EP diagnostic and treatment services include device-based therapies, complex lead management, cardiac contractility modulation, implantable loop recorders and cardioversions, just to name a few. With 10 dedicated EP/catheterization labs across our footprint, care is not only robust, but accessible.

To further increase accessibility, EP treatment is available seven days a week, a rare capability that decreases wait times for critical procedures. While most centers operate on a five-day schedule, our extended service model improves workflow, reduces length of stay and allows for timely interventions.

Innovative Treatments for Complex Atrial Fibrillation (AFib)

Memorial Hermann is at the forefront of AFib care, including innovative ablation technologies such as pulsed field ablation (PFA). This leading-edge technique uses electrical pulses to selectively ablate heart tissue while sparing surrounding structures like the esophagus and blood vessels, making it particularly useful for ablation near sensitive areas and allowing for rapid and precise ablation that leads to potentially shorter and safer treatments.



1,550

Ablations
performed in the
last year

15,500+

EP
procedures
annually

10

EP/catheterization
labs across
our footprint

120+

Lead extractions
annually, with >97%
success rate

EP availability
7 days a week

Our center was the first in Houston to adopt the Medtronic and Boston Scientific PFA systems, and we were selected as a research center for Abbott's system, reflecting our commitment to leveraging the latest advancements for improved patient safety and outcomes.

For patients with long-standing or treatment-resistant AFib, Memorial Hermann-affiliated specialists offer the Convergent procedure—a minimally invasive approach that combines the expertise of an electrophysiologist and a cardiac surgeon. Memorial Hermann was one of the first centers—and still one of only 20 active centers worldwide—to perform the Convergent procedure using a robotic-surgery platform. This ablation procedure, which targets both the inside and outside of the heart simultaneously, often leads to a significantly higher success rate for patients with limited treatment options. Unlike other centers, Memorial Hermann goes a step further by using a state-of-the-art mapping system in the operating room both before and after the ablation to evaluate success in real time and optimize outcomes.

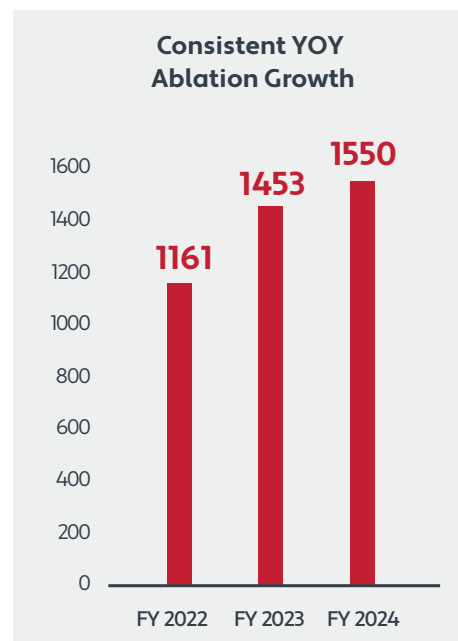
To mitigate stroke risk in AFib patients who cannot tolerate blood thinners, Memorial Hermann offers leading options for left atrial appendage

occlusion (LAAO) closure, including the Watchman FLX™ and Amulet™ devices as well as surgical closure. Our program was selected as a top clinical trial site for testing these devices, reflecting our leadership in stroke prevention and cardiac device technology. These minimally invasive procedures reduce stroke risk and eliminate the need for long-term blood thinners, offering patients a safe, convenient treatment option.

Ensuring Proper Pacing

For several years, Memorial Hermann was one of a few centers to provide both commercially available leadless pacemaker options, offering the potential for reduced inflammation, scarring and complications, such as wire insulation breaks, vein blockage and infection. As a clinical trial site, we were one of the first to implant the AVEIR™ DR Dual Chamber Leadless Pacemaker System—which allows for greater communication and coordination between the upper and lower chambers of the heart—paving the way for FDA approval of this innovative device last year. The EP team continues to offer the full breadth of devices available, whether in clinical trials or after commercial approval.

For patients who require implantable cardioverter-defibrillator (ICD), we



offer subcutaneous ICD insertion as an option. We collaborate with cardiac surgeons to insert the device, positioning it under the skin rather than transvenously to protect patients from both sudden cardiac death and the potential complications associated with transvenous leads.

For patients with complications from traditional pacemaker or ICD devices, we are also a robust center for lead extraction. In the past year alone, our program has completed over 120 lead extractions, placing us among the top centers in the country. This extensive experience not only drives efficiency but leads to patients receiving highly specialized care from some of the most experienced electrophysiologists in the nation. Since 2012, our affiliated physicians have performed over 1,100 lead extractions with a success rate exceeding 97%.

Collaborating closely with our cardiac surgeons, Memorial Hermann's affiliated EP specialists have access to select hybrid operating rooms across the system, enabling us to handle complex cases that require both extraction and immediate surgical intervention. This collaboration leads to patients receiving the highest level of care, even in the most challenging circumstances.



Clinical Trials and the Future of EP

Memorial Hermann, in collaboration with our academic partner, UTHealth Houston, is consistently chosen as a clinical trial site for groundbreaking EP technologies, paving the way from clinical trial to commercial availability. One such trial, CATALYST, is evaluating the safety and effectiveness of the Amplatzer™ Amulet™ device for LAAO compared to blood-thinning medication in patients with nonvalvular AFib who are at an increased risk for stroke and who are recommended for long-term blood thinning medication.

Within the PFA field, we're participating in the DISRUPT-AF Registry, an observational, prospective, multi-center, non-randomized, real-world registry designed to obtain clinical experience with the Farapulse™ Pulsed Field Ablation System for the treatment of AFib. The primary purpose of the registry is to assess clinical outcomes, including procedural efficiency, safety and long-term effectiveness of PFA, as well as the effect of PFA technology implementation on practice patterns, operational workflow and operator experience.

These trials enable our affiliated specialists to contribute to the evolution of EP treatment options while giving our patients access to the most advanced care. Our involvement in these high-profile studies underscores our role as a leader in electrophysiology, both locally and globally.

For more about our EP clinical trials, see page 43.

Collaborating on Behalf of Patients



Collaboration is one of the keys to our success in delivering world-renowned EP care. Our program integrates specialists from across cardiac subspecialties, including interventional cardiologists, heart failure specialists and cardiac surgeons. This multidisciplinary approach ensures that each patient benefits from a comprehensive evaluation and a personalized treatment plan tailored to their needs.

Our ability to perform high-risk procedures, such as ventricular tachycardia ablation, in collaboration with our affiliated heart failure team exemplifies the depth of expertise available within our EP program. For patients with advanced heart failure, Memorial Hermann offers procedures that are supported by mechanical cardiac assistance, enhancing patient stability throughout complex interventions.


We also work closely with colleagues in other specialties to provide experienced care for

patients with unique needs. In collaboration with our radiation oncology team, we've recently begun treating complex ventricular tachycardia cases—for example, those who have already been ablated or have an LVAD that makes surgical exposure challenging—using stereotactic radiation therapy to deliver high doses of radiation directly to the area of the heart causing the arrhythmia. We are one of the few centers in the country offering stereotactic radiation therapy.

The EP program at Memorial Hermann also includes a robust collaboration with pediatric specialists, enabling seamless care of patients with congenital heart disease who transition from pediatric to adult services. With advances in congenital heart disease care, many patients now live well into adulthood, and our program is well positioned to manage the complex EP needs of these patients via our adult congenital heart disease team.

Transforming Outcomes: Precision Care for Complex Hearts

We provide unmatched expertise in managing even the most complex cases.



In collaboration with UTHealth Houston, the Center for Advanced Heart Failure (CAHF) at the Larry D. Johnson Heart & Vascular Institute at Memorial Hermann-Texas Medical Center offers the full spectrum of advanced heart failure services, including ventricular assist devices (VADs), extracorporeal membrane oxygenation (ECMO), total artificial heart implantation and heart transplant.

Comprehensive Care for the Most Complex Cases

The multidisciplinary team at the CAHF—comprising more than 50 board-certified physicians who specialize in cardiothoracic surgery, advanced heart failure management, mechanical assist devices, video-assisted surgery, coronary intervention and heart transplantation—has been working together for over a decade, creating a solid foundation for best practices and continual process improvement across the spectrum of heart failure and transplant care. This collaboration is key to our program's success in managing complex cases. By combining the team's expertise and advanced technologies with a robust infrastructure and patient-centered approach, we strive to improve the quality of life and outcomes for individuals with advanced heart conditions.

For patients with high-risk clinical presentations, our skill means that we can often provide treatment strategies that can delay or even prevent the need for a transplant. For example, our affiliated physicians regularly perform high-risk revascularizations and complex circulatory support interventions for these patients, improving their quality of life and reducing adverse clinical events.

92.07%

Three-year heart
transplant survival rate,
well above the national
average of 84.4%

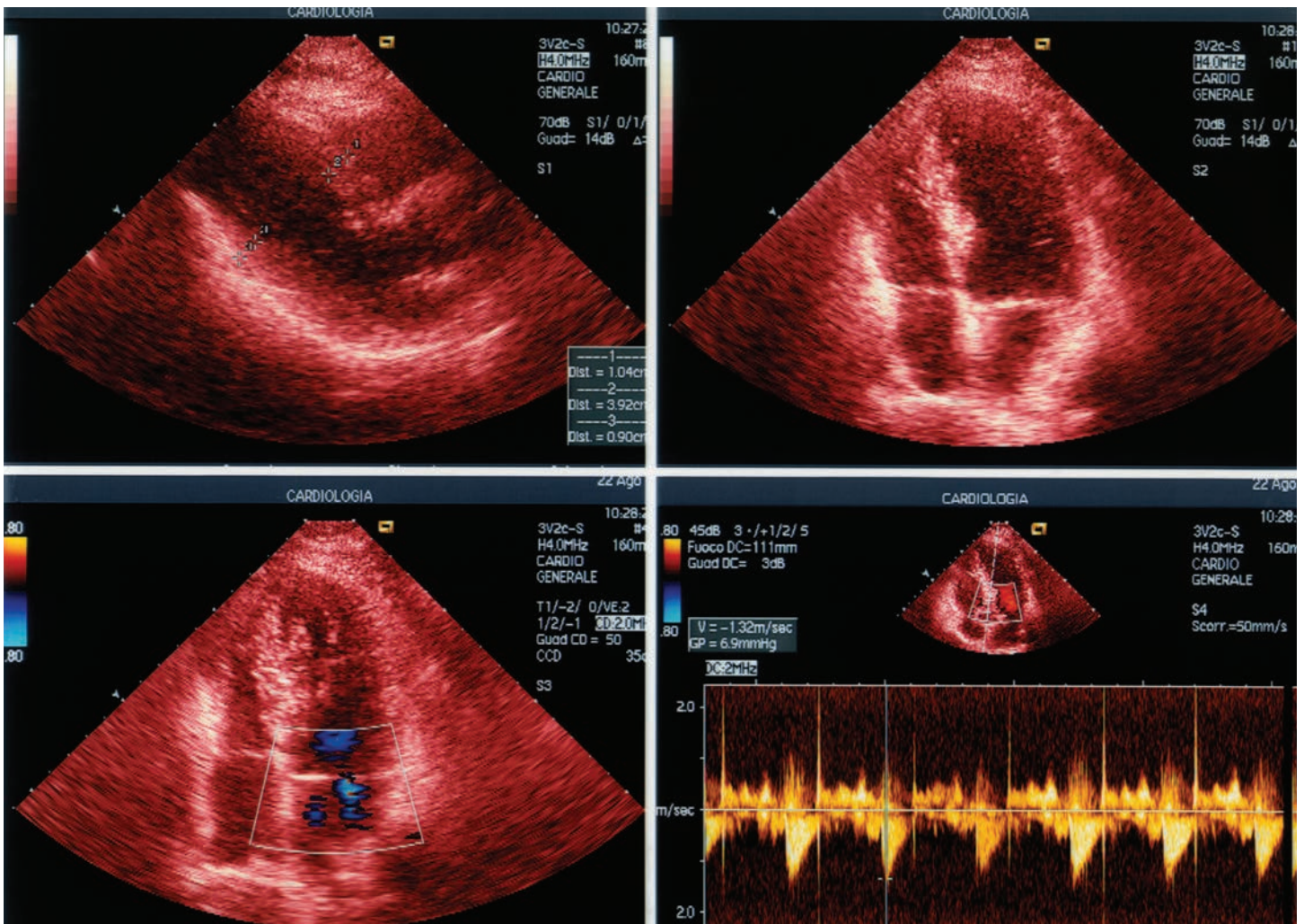
403

Heart transplants
performed since 2012

649

LVADs implanted
since 2012





The CAHF also receives critically ill patients in cardiogenic shock from community hospitals in a spoke-hub distribution paradigm, organizing transfers that connect outlying hospitals to the CAHF, our central hub, for urgent evaluations for heart transplant and VADs. We facilitate rapid transfers through Life Flight, our air ambulance service. Life Flight also enables the heart failure team to reach patients in need of ECMO or other circulatory support interventions within a 150-mile radius.

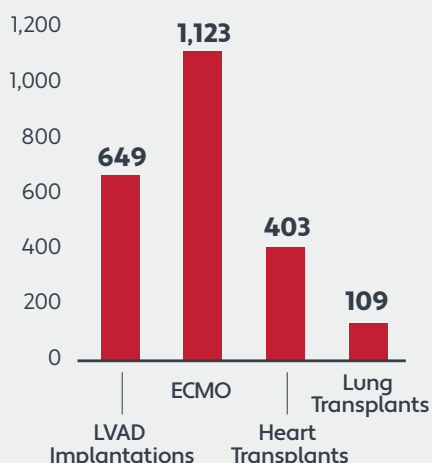
Our program is proud to be certified by The Joint Commission for VAD, demonstrating our commitment to a high standard of service and quality. Additionally, with more than 1,100 patients supported with ECMO, we have been consistently recognized by the Excellence in Life Support Organization (ELSO) as a Platinum

Level Center of Excellence since 2020, an award that highlights programs that set the highest standards in ECMO worldwide. This designation is granted to programs that stand out for their exceptional processes, procedures, benchmarking and systems designed to ensure the utmost quality. Our center exceeded the rigorous criteria set forth by ELSO. Our scores from the Interagency Registry for Mechanically Assisted Circulatory Support (INTERMACS) reveal that even the sickest patients at Memorial Hermann have equal or better outcomes than less sick patients at other facilities in Texas and throughout the U.S.

Multidisciplinary Success for Unique Patient Populations

Multidisciplinary collaboration is also vital in addressing the needs of specialized patient populations. Our team is uniquely suited to care for

Volumes Since Program Inception in 2012



Source: Memorial Hermann internal data

patients who require the care of multiple specialists.

For example, we partner with bariatric surgery colleagues to help patients with obesity overcome clearance barriers for transplantation. Often, patients with obesity are 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. We also pair bariatric surgeons with obese heart failure patients who must reach a 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.

Similarly, the CAHF is one of the few programs in the U.S. treating peripartum cardiomyopathy, a form of heart failure affecting pregnant women, through an integrated partnership with our affiliated obstetrics and gynecology teams. Because women's heart issues tend to be underdiagnosed and undertreated, our academic partner, UTHealth Houston, opened the Women's Vascular and Cardiac Health Interdisciplinary Center to deliver comprehensive, individualized care for women of all ages diagnosed with cardiovascular diseases.

Our program also boasts decades of experience in delivering specialized medical and surgical care for patients

Driving Knowledge and Innovation: The Houston Shock Symposium



Memorial Hermann's dedication to advancing the field extends beyond patient care to education and knowledge sharing amongst the global community. Memorial Hermann is the title sponsor of the largest cardiogenic shock conference in North America, the Houston Shock Symposium. The prestigious three-day event brings together national and international experts to explore new ways to reduce mortality in cardiogenic shock and apply the latest technological advances. Launched in 2018, the event has grown to one of the largest shock conferences in the nation with more than 2,500 attendees from the U.S., Canada and Europe.

The symposium features case studies, poster presentations and the TEACH II course, which provides in-depth training on cardiac pathophysiology and mechanical circulatory support, among other training opportunities. This educational initiative not only fosters collaboration, but also drives global innovation across the field.



with chronic thromboembolic pulmonary hypertension (CTEPH), a rare and progressive form of pulmonary hypertension. We're one of a few programs in the nation to offer both leading treatment options for CTEPH: pulmonary thromboendarterectomy (PTE) and balloon pulmonary angioplasty (BPA).

Heart Transplant Outcomes

The demand for donor hearts continues to outpace the number of hearts that become available each year. When a donor heart is unavailable and both cardiac ventricles fail, our program uses a temporary SynCardia Total Artificial Heart—the world's only commercially approved total artificial heart—as a bridge to transplantation, which can eliminate the symptoms and source of end-stage biventricular failure. As soon as patients are stabilized following surgery, they are returned to the active transplant list.

For transplant recipients, our program consistently outperforms national benchmarks in heart transplantation outcomes. We've performed more

than 400 heart transplants since the program's inception just 12 years ago, making us a fast-growing transplant program. Moreover, our performance metrics reflect our commitment to delivering superior patient care. Improved transport systems in the past year have led to better organ preservation, increasing reach.

Clinical Trials and Research Leadership

A hallmark of the program is robust participation in groundbreaking clinical trials. One such study is the multicenter ENGULF trial, which evaluates the Hēlo™ PE Thrombectomy System for treating acute submassive pulmonary embolism (PE). Currently, therapeutic options are limited for patients with intermediate-risk PE, with only two catheter-based devices approved by the U.S. Food and Drug Administration (FDA).

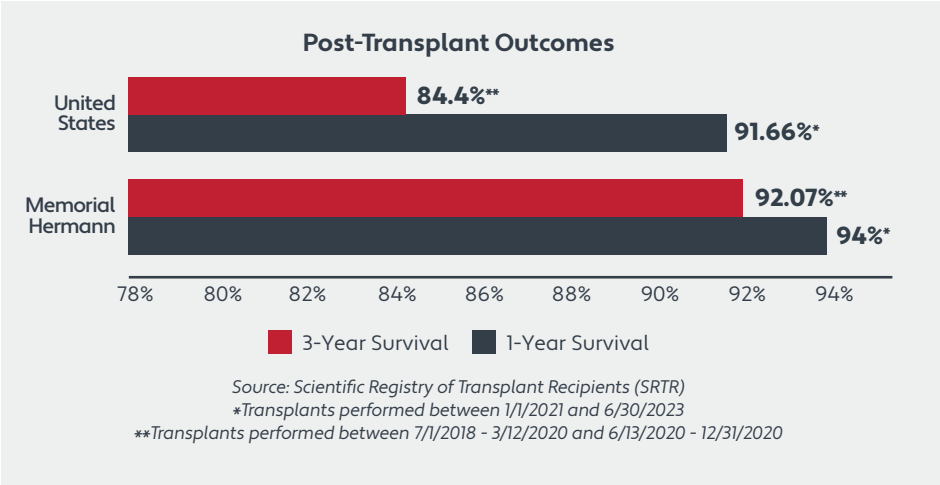
The team is also involved in evaluating a new device for high-risk PCI in patients with reduced left-sided heart function in the PROTECT IV trial. The study aims to assess if using the

Impella® VAD device will result in an improvement in symptoms, heart function and health compared to the current standard of care.

Additionally, the CORCINCH-HF Study is evaluating the safety and efficacy of a device-based approach to heart failure using the AccuCinch® Ventricular Restoration System. During a minimally invasive procedure, this flexible implant is used to reduce the size of the left ventricle and reduce ventricular wall stress while supporting and strengthening the heart wall.

By participating in trials like these, Memorial Hermann's patients gain access to therapies and devices not widely available, and our program remains at the forefront of innovative heart care. In collaboration with UTHealth Houston, our robust clinical research infrastructure enables rapid translation of research into clinical practice.

To learn more about heart failure and heart transplant clinical trials, see page 44.

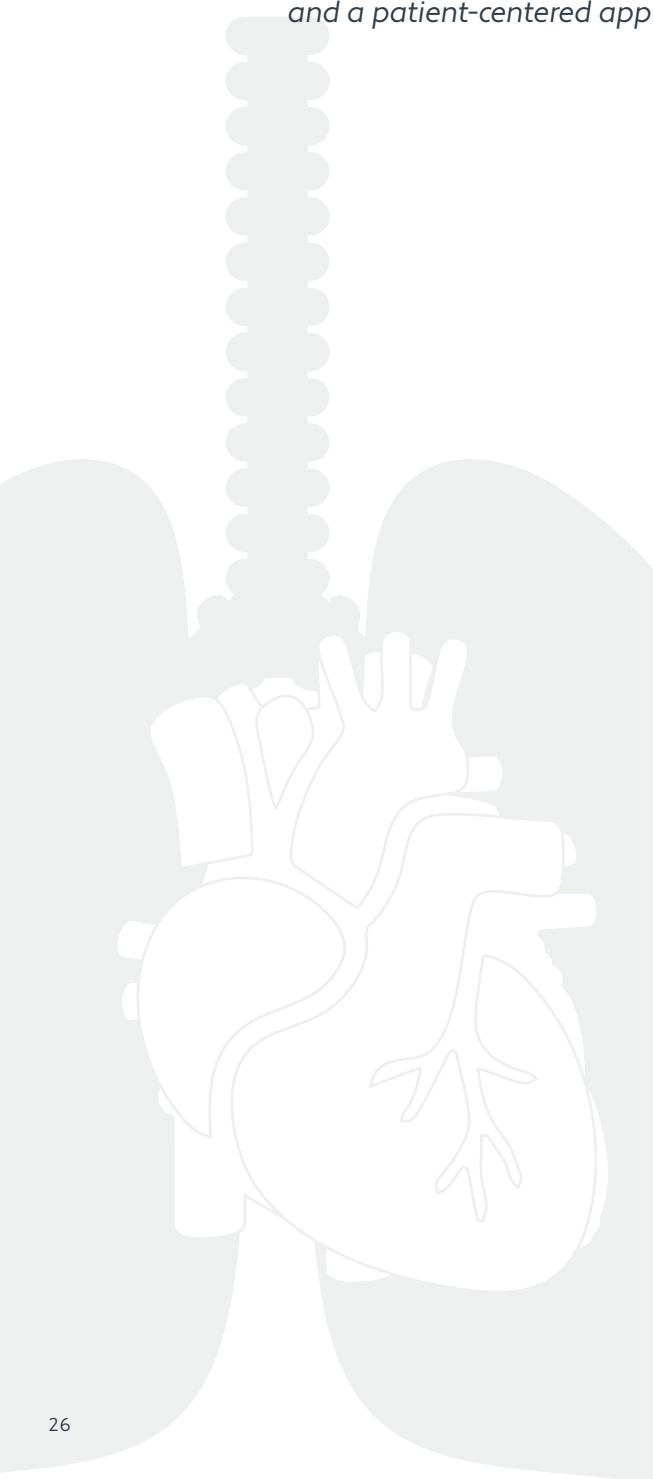


Our outcomes demonstrate our robust program and commitment to quality and cutting-edge treatments.

—Biswajit Kar, MD, Professor, Internal Medicine and Memorial Hermann Chair, McGovern Medical School at UTHealth Houston Vice President, Strategy and Development, UTHealth Houston Heart & Vascular Center for Advanced Heart Failure Medical Director, Heart & Vascular Service Line, Memorial Hermann Health System

Leading Thoracic Surgery with Precision and Collaboration

Combining advanced surgical techniques, multidisciplinary collaboration and a patient-centered approach to deliver exceptional care.



Our Thoracic Surgery program is recognized for its commitment to providing advanced, minimally invasive procedures, particularly using robotic surgery, throughout the Greater Houston area. With a robust network of facilities and the full range of thoracic services, the program ensures that patients have access to specialized thoracic care close to home.

Innovative Techniques

Our team of affiliated surgeons leads the field with their expertise in advanced techniques such as video-assisted thoracoscopic surgery and robotic-assisted thoracic surgery. These advances typically benefit patients by reducing recovery time, incision sizes and complications compared to traditional open surgery. Innovation is central to Memorial Hermann's approach, enabling us to treat complex thoracic conditions effectively and efficiently.

We provide a full spectrum of surgical procedures, from the resection of lung and mediastinal tumors to tracheal sleeve resections, and manage conditions such as esophageal cancer, benign tracheal disorders and other chest wall abnormalities. With more than 3,000 pulmonary resections performed, our experienced team is equipped to treat both routine and complex cases.



470

Thoracic surgeries
in FY24

121

Robotic thoracic
surgeries in FY24

100th

Robotic bronchoscopy
in FY24



The Role of Robotic Technology

One of the many features that sets surgical care at Memorial Hermann apart is the use of robotic-assisted surgery, particularly for lung cancer and other thoracic procedures. We have performed more than 120 robotic thoracic procedures in the past year. Robotic systems provide surgeons with enhanced precision, flexibility and control, allowing for delicate and complex operations. Our program is proud to offer robotic surgery not just at our Texas Medical Center location but also at community hospitals including Memorial Hermann Memorial City and Memorial Hermann Southeast, making this advanced technology accessible to more patients across Houston.

We specialize in robotic-assisted lung resections, mediastinal tumor resections and esophageal procedures, including esophagectomies. This approach has also proven effective for non-cancerous conditions, such as thymectomies for patients with myasthenia gravis—a unique offering that reflects our collaboration with neurology and demonstrates our ability to care for diverse thoracic conditions. (To learn more, see Robotic-Assisted Thymectomy - right.)

Memorial Hermann is also at the forefront of incorporating cutting-edge technology to enhance our diagnostic capabilities and reduce

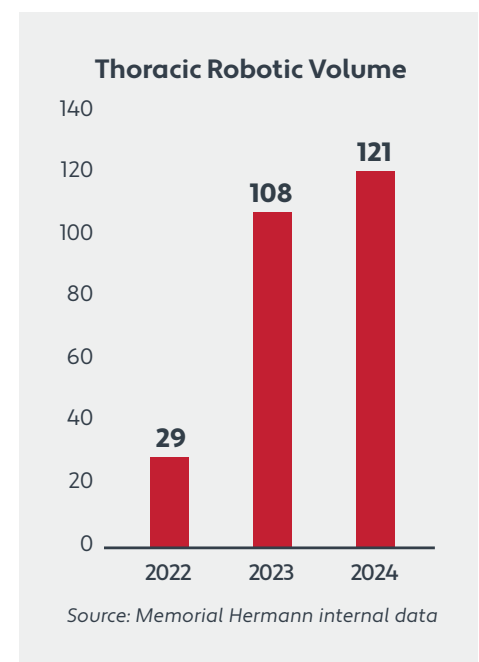
time to treatment. Our use of robotic bronchoscopy has allowed for early, accurate diagnosis of lung cancer by facilitating precise biopsies of even the smallest nodules via an ultrathin, ultramaneuverable catheter that enables clinicians to reach all 18 segments of the lung. This innovation has been a game-changer, enabling patients to proceed to treatment—often a robotic resection—without unnecessary delays. Such integration of diagnostics and surgical capabilities underscores our commitment to a streamlined, patient-focused care pathway. Recently, we performed our 100th robotic bronchoscopy procedure, reflecting the high level of expertise and experience our team brings to lung cancer care.

Collaboration with Multidisciplinary Teams

Our collaborative multidisciplinary approach is tailored to the unique needs of each patient and the complexities inherent in thoracic anatomy. For lung cancer patients, this approach means working closely with oncologists, pulmonologists and radiation specialists to create a seamless continuum of care from diagnosis through treatment. We partner with local oncologists to ensure that patients receive comprehensive treatment plans for their specific case. Our affiliated physicians offer a weekly multidisciplinary clinic and conduct

a weekly Lung Nodule Tumor Board to discuss high-risk CT findings and a monthly Thoracic Oncology Tumor Board to discuss specific cases and the approach to treatment. With the help of our Lung Nodule Tumor Board, the interventional pulmonology and thoracic surgery teams can expedite patients with lung nodules to a definitive diagnosis sooner, living up to our motto of “early diagnosis, early treatment.”

For patients undergoing esophageal surgery, we integrate expertise from nutritionists, gastroenterologists, speech pathologists and thoracic surgeons, ensuring that even the most



Robotic-Assisted Thymectomy: Expanding Care for Neurological Conditions

complex cases receive well-coordinated, holistic care. This model not only streamlines treatment but also improves outcomes, particularly for patients requiring neoadjuvant therapy before surgery, which requires close collaboration across the care team.

Dedicated oncology nurse navigators also assist patients through their entire care journey. This service provides invaluable support, helping to coordinate appointments, treatments and follow-ups, thus ensuring that patients feel empowered and informed throughout their experience. For complex cases, such as esophageal cancer, this level of coordination is essential, given the multifaceted nature of treatment that often spans multiple specialties.

Our lung cancer screening nurse navigators bring high-risk findings to the Lung Nodule Tumor Board to help expedite a patient's time to diagnosis and treatment. Memorial Hermann nurse navigators are instrumental in maintaining smooth communication among different departments, ensuring that patients receive timely and coordinated care.



Memorial Hermann offers a unique approach to treating myasthenia gravis, a neuromuscular condition, through robotic-assisted thymectomy. By collaborating closely with neurology, the thoracic surgery team has developed a specialized protocol that provides a minimally invasive surgical option for patients who are typically managed medically. This innovative procedure, performed using robotic technology, typically minimizes recovery time and enhances surgical precision, setting Memorial Hermann apart from other regional centers.

Because of the thymus' proximity to the heart and other vital organs, surgical removal requires a high degree of skill and dexterity. Using robotic surgery eliminates the need to split the sternum, instead performing the procedure through a few small incisions, which can reduce trauma to surrounding bone and tissue. The robotic system provides our surgeons with enhanced vision as well as tools capable of bending and rotating much further than a human hand. This additional precision and control can lead to less postoperative pain, a faster recovery and a better cosmetic result for patients.

Leading the Charge in Structural Heart Innovation


Our program has a proven track record of pioneering new, minimally invasive procedures—providing more options to more patients.

With a network of 11 acute-care hospitals and a comprehensive presence throughout the Greater Houston area, Memorial Hermann's Valve and Structural Heart program has established itself as a leader in the treatment of complex cardiac conditions.

We offer a wide array of treatment options that span surgical, catheter-based and other minimally invasive techniques, including robotic surgery. This breadth and depth enable us to take on the most challenging cases and deliver exceptional outcomes.

Minimally Invasive Innovations: Redefining Structural Heart Care

At Memorial Hermann, innovation is at the heart of everything we do. Our program has a proven track record of pioneering new, minimally invasive procedures that can offer significant potential advantages over traditional surgery, such as shorter hospital stays and faster recoveries. For example, our affiliated physicians were instrumental in developing the TAVR procedure, participating in the groundbreaking PARTNER trials and performing the first commercial TAVR in Texas. Today, we remain one of the highest-volume TAVR programs in the United States, performing nearly 600 TAVR procedures annually across five centers, with outcomes that exceed national benchmarks. Memorial Hermann-Texas Medical Center has been honored with a 3-star distinction in TAVR, the highest rating possible by the NCDR, for two consecutive years. Only 3% of facilities in the nation that participate in the STS/ACC TVT Registry have achieved a 3-star rating in the TAVR program, and our Texas Medical Center location is the only heart facility in Texas to receive this recognition. Our TAVR program stands among the most elite institutions in the country.



The only facility in Texas
to achieve a 3-star rating
in TAVR by the NCDR.*

The only system
in the region routinely
using EVOQUE for
catheter-based tricuspid
valve repair.

First system in Texas to
offer robotic aortic valve
replacement.

*Memorial Hermann-Texas
Medical Center

Driving the Field Forward: Memorial Hermann's Role in Clinical Research

Memorial Hermann's Valve and Structural Heart program is at the forefront of clinical research, giving patients access to novel therapies and devices not yet available elsewhere. We are actively involved in over a dozen pivotal clinical trials.

Mitral Studies

CLASP IID/F
REPAIR MR
APOLLO
SUMMIT

Aortic Studies

PROGRESS – UTHEALTH HOUSTON
ACURATE IDE – UTHEALTH HOUSTON
ALLIANCE AVIV
ALIGN-AR

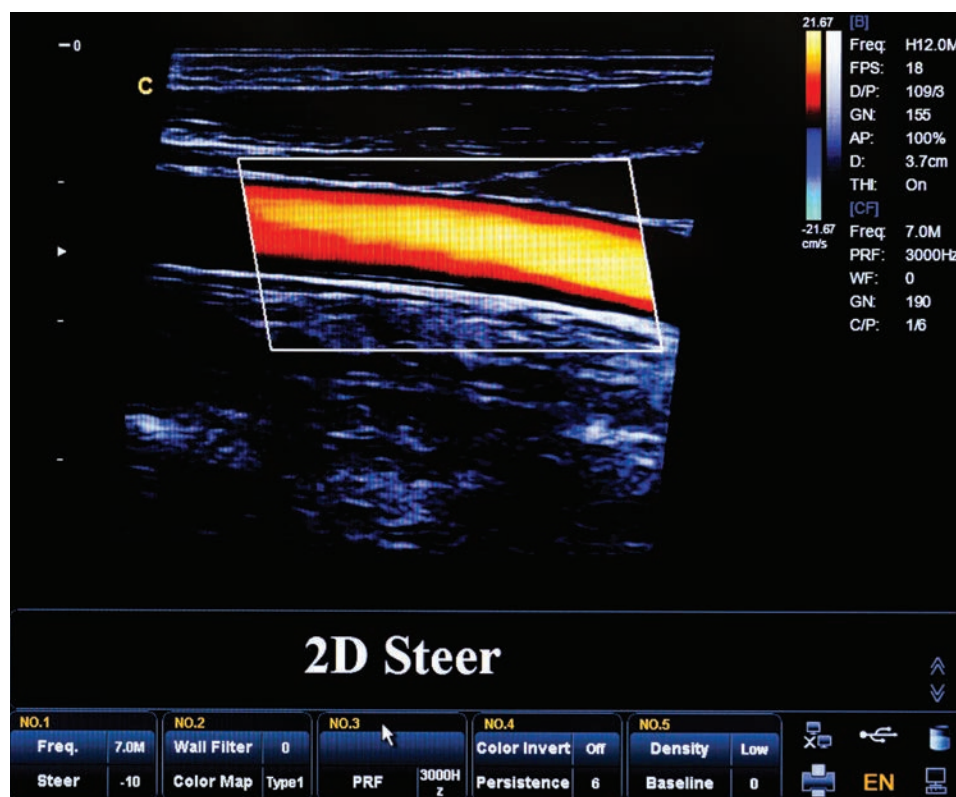
Tricuspid Studies

TRISCEND

Patent Foramen Ovale Studies

PFO-PAS – UTHEALTH HOUSTON
OCCLUFLEX – UTHEALTH HOUSTON

For more details on these trials, see page 44.



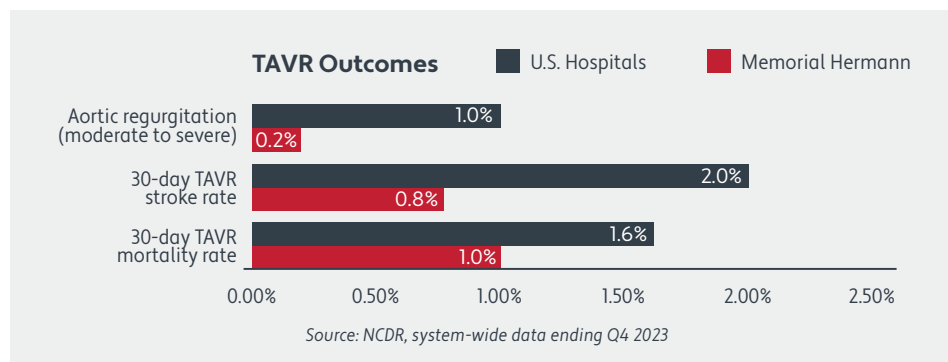
Memorial Hermann has also implemented artificial intelligence software to identify aortic stenosis patients for possible TAVR or medical treatment. The software utilizes an algorithm in our echocardiography findings to help notify attending physicians of a patient's diagnosis.

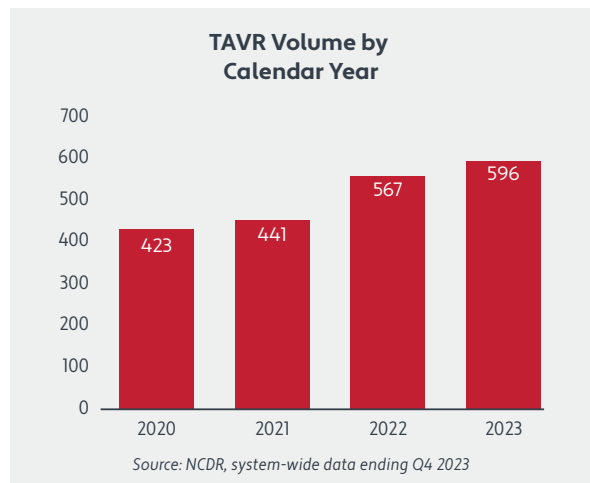
Setting new standards in the treatment of mitral and tricuspid valve conditions, Memorial Hermann was one of the first systems in the nation to offer transcatheter edge-to-edge repair (TEER) for mitral valve disease and remains a leader in this area. In fact, our team has played an active role in advancing research, including enrolling the second-highest volume of patients in the REPAIR MR trial, which aims to evaluate TEER against surgical

repair in patients with primary mitral regurgitation.

Doctors practicing at five Memorial Hermann facilities also perform nearly 800 left atrial appendage occlusion (LAAO) procedures a year, making us not only the busiest LAAO program in the region, but also one of the busiest in the country. For the rare patients whose anatomies are unfavorable for current FDA-approved devices, we can offer surgical options for LAA closure, including robotic techniques.

Additionally, Memorial Hermann is the only center in the region routinely using EVOQUE, one of the newest catheter-based tricuspid valve replacement tools approved just last year. In the U.S., more than 1.5 million people are





estimated to have clinically relevant tricuspid regurgitation, with more than 20% estimated mortality in severe cases within 1 year of diagnosis. With this advancement, we can provide more patients with lifesaving care.

Collaborative Approach to Complex Cases—From Near and Far

Memorial Hermann's Valve and Structural Heart program is known for its willingness to tackle complex and high-risk cases. Our program accepts patients who have been turned down by other institutions, demonstrating our commitment to delivering hope and exceptional care in even the most challenging conditions. Here, complex is routine.

Our role as a referral center extends far beyond the Greater Houston area. We collaborate closely with physicians across the nation, offering streamlined processes that minimize the need for patients to travel. Virtual consultations, advanced imaging and pre-procedure planning are all part of our comprehensive approach to make it easy for referring physicians to partner with us and ensure that every patient receives the best possible care with minimal disruption to their lives.

Expanding Access to State-of-the-Art Imaging

One of the keys to the program's success is our investment in advanced imaging capabilities. Memorial Hermann offers advanced cardiac CT and MRI imaging at multiple campuses as well as advanced cardiac PET imaging at Memorial Hermann-Texas Medical Center through UTHHealth Houston, offering convenient access for patients. These technologies provide our teams with a detailed understanding of a patient's anatomy before a procedure, enabling us to plan meticulously and execute with precision. This planning ensures that our team is fully prepared for potential anatomical complexities.

Systemwide Capabilities



Memorial Hermann offers convenient locations for patients throughout the Houston area for both preprocedure imaging and minimally invasive procedures:

Memorial City

CT and Cardiac MRI
LAAO
Mitral Clip
TAVR
TMVR

Texas Medical Center

CT and Cardiac MRI
LAAO
Mitral Clip
TAVR
TMVR
TTVR

Southeast

LAAO
TAVR

The Woodlands

CT and Cardiac MRI
LAAO
Mitral Clip
TAVR

Southwest

CT
LAAO
TAVR

Refer a patient online at
[memorialhermann.org/heart-refer](https://www.memorialhermann.org/heart-refer)

We respond to all requests as quickly as possible.

Accelerating Innovation for Complex Vascular Care

We offer the full suite of surgical approaches in one team to give our patients the best outcomes possible.

The Vascular Surgery program at Memorial Hermann is known for its dedication to constantly improving the standard of care. From hosting international conferences to fostering quality improvement initiatives, our affiliated physicians lead national discussions about modern treatment of both common and complex vascular conditions, including peripheral artery disease, carotid artery disease, aortic aneurysm, venous disease and lymphedema.

We are continually looking to the future of vascular care, through both enhancing clinical practice and driving research, with 52 unique publications last year.

Our partnership with the Society for Vascular Surgery® Vascular Quality Initiative® (SVS VQI) is designed to ensure our patients receive high-quality care. As registry members, we share information about our procedures and outcomes for comparison with other institutions in addition to sharing best practices and important innovations. In 2023, Memorial Hermann Memorial City, Memorial Hermann Greater Heights, Memorial Hermann Katy and Memorial Hermann Northeast achieved three-star recognition—the highest quality rating—from SVS VQI.

Advanced Operating Room Technology

Before the patient arrives in the operating room, our affiliated vascular surgeons prepare for complex surgeries at the simulation lab at Memorial Hermann-Texas Medical Center. Here, the entire surgical plan can be rehearsed and reviewed, including fluoroscopy time, radiation exposure and operating time.



At the time of operation, state-of-the-art hybrid operating rooms exemplify Memorial Hermann's dedication to combining modern innovation with clinical expertise. These unique operating theaters combine the imaging tools necessary for endovascular procedures in a space that can also accommodate open surgery.

Carotid Procedures to Suit Each Patient

The transcarotid artery revascularization (TCAR) procedure is offered at all our Memorial Hermann hospital locations. Memorial Hermann participated in the initial studies for TCAR and, to this day, our affiliated physicians perform more TCAR surgeries than most other facilities in the nation, in addition to offering traditional endarterectomies and transfemoral carotid artery stenting. By offering a variety of procedures for treating carotid artery plaques, we match each patient with the procedure best suited to their vascular anatomy and medical comorbidities.

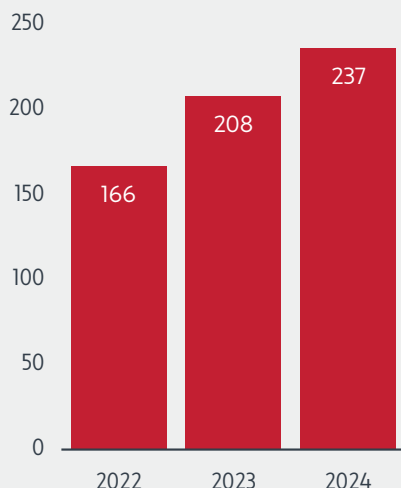
Being a Team Player

Beyond offering cutting-edge surgical options, the Vascular Surgery team at Memorial Hermann improves patient care by collaborating with other service lines. Our affiliated physicians have significant experience working side-by-side in the operating room with orthopedic and trauma surgeons when essential vessels are involved in acute

For vascular care, whether it's in the Texas Medical Center or out on the periphery, we offer high-quality, highly predictable care, as well as coordinated care for complex patients.

—**Kourosh Keyhani, DO**,
Associate Professor,
Cardiothoracic and Vascular
Surgery, McGovern Medical
School at UTHealth Houston,
and Vascular Surgeon,
Memorial Hermann
Memorial City Medical
Center and Memorial
Hermann Greater Heights
Hospital

TCAR Volumes



injuries. Vascular surgeons also lend their expertise during neurosurgery procedures, most notably in anterior lumbar interbody fusions, when large vessels must be protected and repaired immediately if any injury has occurred. Additionally, Memorial Hermann teams are experienced at treating congenital conditions that involve the vasculature, such as Ehlers-Danlos syndrome, and work closely across the entire system to coordinate care for these patients. From complex conditions requiring multidisciplinary involvement to routine vascular procedures, Memorial Hermann welcomes patients with any vascular condition.




Center of Excellence Award

The Surgical Review Corporation awarded Memorial Hermann Greater Heights its **Center of Excellence Award** in 2020.



Empowering Recovery: A Comprehensive Approach

With one of Houston's most expansive cardiac and pulmonary rehabilitation programs, Memorial Hermann offers a critical touchpoint for helping patients recover while reducing the risk of readmissions.



Memorial Hermann's medically supervised cardiac and pulmonary rehabilitation programs blend quality care with breadth of access unlike any other program in the Greater Houston area. We offer cardiac rehabilitation at seven locations and pulmonary rehabilitation at Memorial Hermann-Texas Medical Center, with a strong reputation for successful recovery and satisfied patients.

Significant Patient Benefits

Research consistently shows that participation in rehabilitation following a health event leads to improved survival rates and a better quality of life. Reflecting our program's holistic approach, patients who complete it experience benefits that extend beyond physical recovery:

- Lowered risk of recurrence and/or fewer hospital visits
- Easier management of routine activities and work
- Enhanced physical strength and flexibility
- Reduced fear, anxiety and depression associated with their condition



26,941

Cardiac rehabilitation
visits in FY24

786

Pulmonary
rehabilitation visits
in FY24

All Memorial Hermann
cardiac rehabilitation
centers are staffed with
cardiac-trained nurses.



A Collaborative and Standardized Approach

One of the hallmarks of Memorial Hermann's cardiac rehabilitation is its systemwide standardization. All sessions follow consistent protocols across all seven locations. This uniformity enables patients the flexibility to move between locations, when needed, without interrupting their care, while maintaining the program's quality and safety.

Real-Time Monitoring and Physician Integration

Collaboration with referring physicians is a cornerstone of rehabilitation at Memorial Hermann. Staff work closely with a variety of specialists—cardiologists, pulmonologists and more, depending on the patient's specific program and needs—to provide seamless care from hospitalization through outpatient rehabilitation. Because cardiac rehabilitation is staffed by experienced nurses with cardiac and ICU backgrounds, symptoms that may require follow-up care can be identified quickly and flagged to the appropriate

clinical staff. Similarly, the experienced nurses and respiratory therapists in pulmonary rehabilitation can help facilitate and advocate for patient's needs, such as supplemental oxygen.

Physicians can access real-time reports on their patients' progress via Epic. This connectivity enhances communication, helping physicians address concerns promptly and optimize patient outcomes. The program's real-time monitoring systems provide vital data, enabling the care team to respond immediately to any unusual symptoms or trends, which helps lower the risk of hospital readmissions.

Experienced Staff

Memorial Hermann's rehabilitation teams consist of seasoned professionals, including nurses, exercise physiologists, respiratory therapists and dietitians. These multidisciplinary teams not only support patients through the physical aspects of recovery, but also offer emotional and educational support, helping patients cope with the anxiety that



often accompanies a significant health event and empowering them through knowledge and practical application.

Inpatient Cardiac Rehabilitation at TIRR Memorial Hermann

For patients not yet ready to transition to outpatient care, TIRR Memorial Hermann offers a solution. Ranked No. 2 in the nation for medical rehabilitation by U.S. News & World Report, TIRR Memorial Hermann, operating eight TIRR Memorial Hermann facilities across the Greater Houston area in addition to facilities which are part of the Memorial

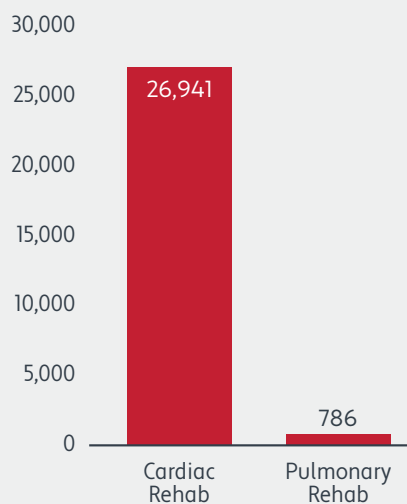


Research Highlight



Hermann Rehabilitation Network, provides comprehensive inpatient rehabilitation services to patients recovering from serious cardiac conditions. This collaboration ensures that patients can smoothly transition from acute care to rehabilitation without delay, helping them regain strength and independence more efficiently.

Rehabilitation Sessions - FY24



In addition to providing clinical care, Memorial Hermann's pulmonary rehabilitation team is collaborating with colleagues in Infectious Disease to participate in the UTHealth Houston-led RECOVER-ENERGIZE trial, a multi-center, randomized, controlled platform trial evaluating interventions to address and improve exercise intolerance and post-exertional malaise following COVID-19 infection. The trial's focus is to assess interventions that can improve exercise capacity, tolerance for daily activities and quality of life.


Our Locations

Cardiac and Pulmonary Rehabilitation
Texas Medical Center

Cardiac Rehabilitation
Greater Heights
Memorial City
Northeast
Southeast
Southwest
The Woodlands

Advancing Groundbreaking Research

For decades, Memorial Hermann, in partnership with McGovern Medical School at UTHealth Houston, has participated in innovative research shaping the future of care.



We are currently participating in 60+ trials aimed at testing new devices, exploring new techniques and identifying breakthrough therapies to prevent and treat heart disease.

The following pages include a subset of the clinical trials that are being performed at Memorial Hermann.

To see all of the trials currently available at Memorial Hermann, visit bit.ly/hvi-clinicaltrials



Aortic Surgery

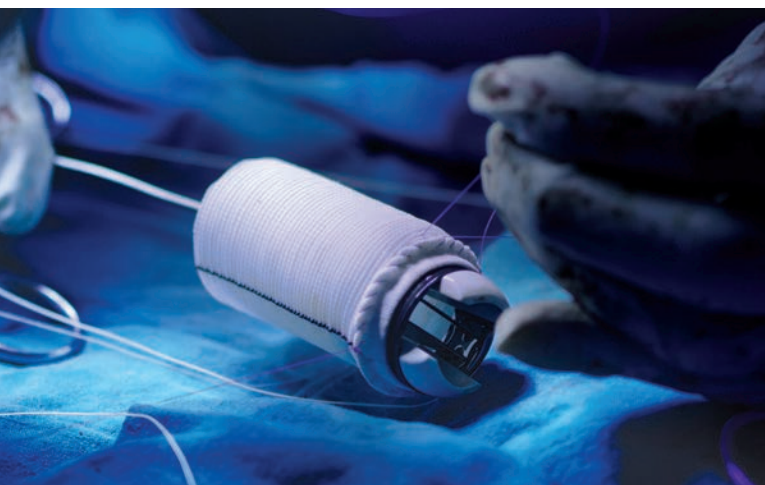
The Aortic Surgery team is currently participating in 10 active trials. Highlights include:

Acute Uncomplicated Type B Aortic Dissection: Endovascular Repair vs. Best Medical Therapy (ACUTE-B)

This prospective, single-center study sponsored by UTHHealth Houston compares the outcomes of endovascular repair versus best medical therapy in patients with acute uncomplicated type B aortic dissection.

ID number: NCT02622542

Principal investigator: Harleen Sandhu, MD, MPH
(713.486.5131,
harleen.k.sandhu@uth.tmc.edu)



ALLIANCE AVIV: Safety and Effectiveness of the SAPIEN X4 Transcatheter Heart Valve in Failing Aortic Bioprosthetic Valves

This prospective study evaluates the safety and efficacy of the Edwards SAPIEN X4 Transcatheter Heart Valve in subjects who are at high or greater risk with a failing aortic bioprosthetic valve. We are currently the only study center in the Greater Houston area for this trial.

ID number: NCT05172973

Contact: Memorial Hermann Clinical Innovation & Research Institute (713.222.2273)

Zenith® Fenestrated+ Endovascular Graft Clinical Study

This study assesses the safety and effectiveness of the Zenith® Fenestrated+ Endovascular Graft in combination with the BeGraft Balloon-Expandable FEVAR Bridging Stent Graft System and Unibody2 in patients with complex abdominal aortic aneurysms. We are currently the only study center in the Greater Houston area for this trial.

ID number: NCT04875429

Principal investigator: Naveed Saqib, MD, FACS
(713.486.1160, naveed.U.Saqib@uth.tmc.edu)

Cardiac Surgery

The Cardiac Surgery team is currently participating in three active trials:

SURPASS Impella 5.5 Study

This multi-center, prospective and retrospective study assesses clinical outcomes up to one year of patients which have undergone standard of care implantation of Impella 5.5, regardless of clinical situation or indication. We are currently the only study center in the Greater Houston area for this trial.

ID number: NCT05100836

Contact: Memorial Hermann Clinical Innovation & Research Institute (713.222.2273)

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

This study will examine the use of TAVR performed using the JenaValve Pericardial TAVR System, which is intended to help treat symptomatic severe aortic regurgitation for patients at high risk for open surgical valve replacement.

ID number: NCT04415047

Contact: Memorial Hermann Clinical Innovation & Research Institute (713.222.2273)

MitraClip REPAIR MR Study

This study compares the clinical outcomes of MitraClip™ device versus surgical repair in patients with severe primary mitral regurgitation who are at moderate surgical risk and whose mitral valve has been determined to be suitable for correction by repair surgery.

ID number: NCT04198870

Principal investigators: Richard Smalling, MD; Daniel Hermann, MD
Contact: Matthew Franciskovich, research coordinator
(832.803.3389, matthew.r.franciskovich@uth.tmc.edu)

Cardiovascular Genetics

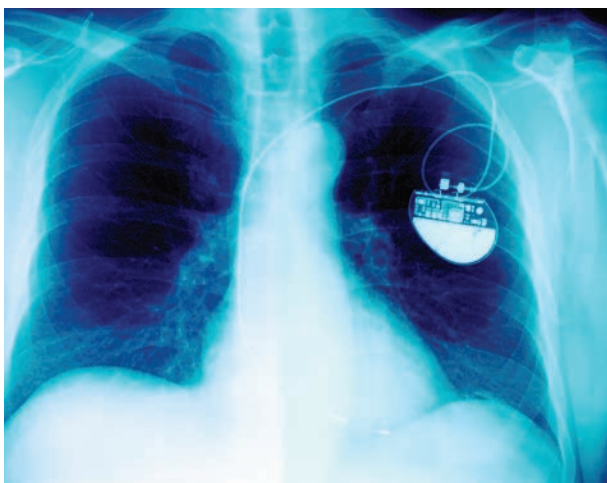
The Cardiovascular Genetics team is currently participating in one active trial:

Pharmacokinetics, Pharmacodynamics, and Safety Profile of Understudied Drugs Administered to Children Per Standard of Care (POPS) (POPS or POP02)

This clinical trial examines how drugs given to children act in the bodies of children and young adults, aiming to find the most safe and effective dose. The primary objective of this study is to evaluate the pharmacokinetics of understudied drugs currently being administered to children per standard of care.

ID number: NCT04278404

Principal investigator: Elizabeth Aguilera, MD
(713.500.5806, elizabeth.aguilera@uth.tmc.edu)



Electrophysiology

The Electrophysiology team is currently participating in eight active trials. Highlights include:

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

This multi-center, international study evaluates the safety and effectiveness of the Aveir VR Leadless Pacemaker System in patients requiring ventricular pacing. We are currently the only study center in the Greater Houston area for this trial.

ID number: NCT04559945

Contact: Memorial Hermann Clinical Innovation & Research Institute
(713.222.2273)

Amplatzer Amulet LAAO vs. NOAC (CATALYST)

This prospective, multi-center study evaluates the safety and efficacy of the Abbott Amplatzer™ Amulet™ Left Atrial Appendage Occluder compared to non-vitamin K antagonist oral anticoagulants patients with non-valvular atrial fibrillation at increased risk for ischemic stroke.

ID number: NCT04226547

Principal investigator:
Abhijeet Dhoble, MD
Contact: Mary Pierce
(mary.h.pierce@uth.tmc.edu)

Anticoagulation in ICH Survivors for Stroke Prevention and Recovery (ASPIRE)

This phase III clinical trial aims to determine if apixaban is superior to aspirin for prevention of the composite outcome of any stroke or death from any cause in patients with recent intracerebral hemorrhage and atrial fibrillation.

ID number: NCT03907046

Principal investigator: Andrew Barreto, MD, MS
(713.500.7002; andrew.D.Barreto@uth.tmc.edu)

Cardiovascular Imaging

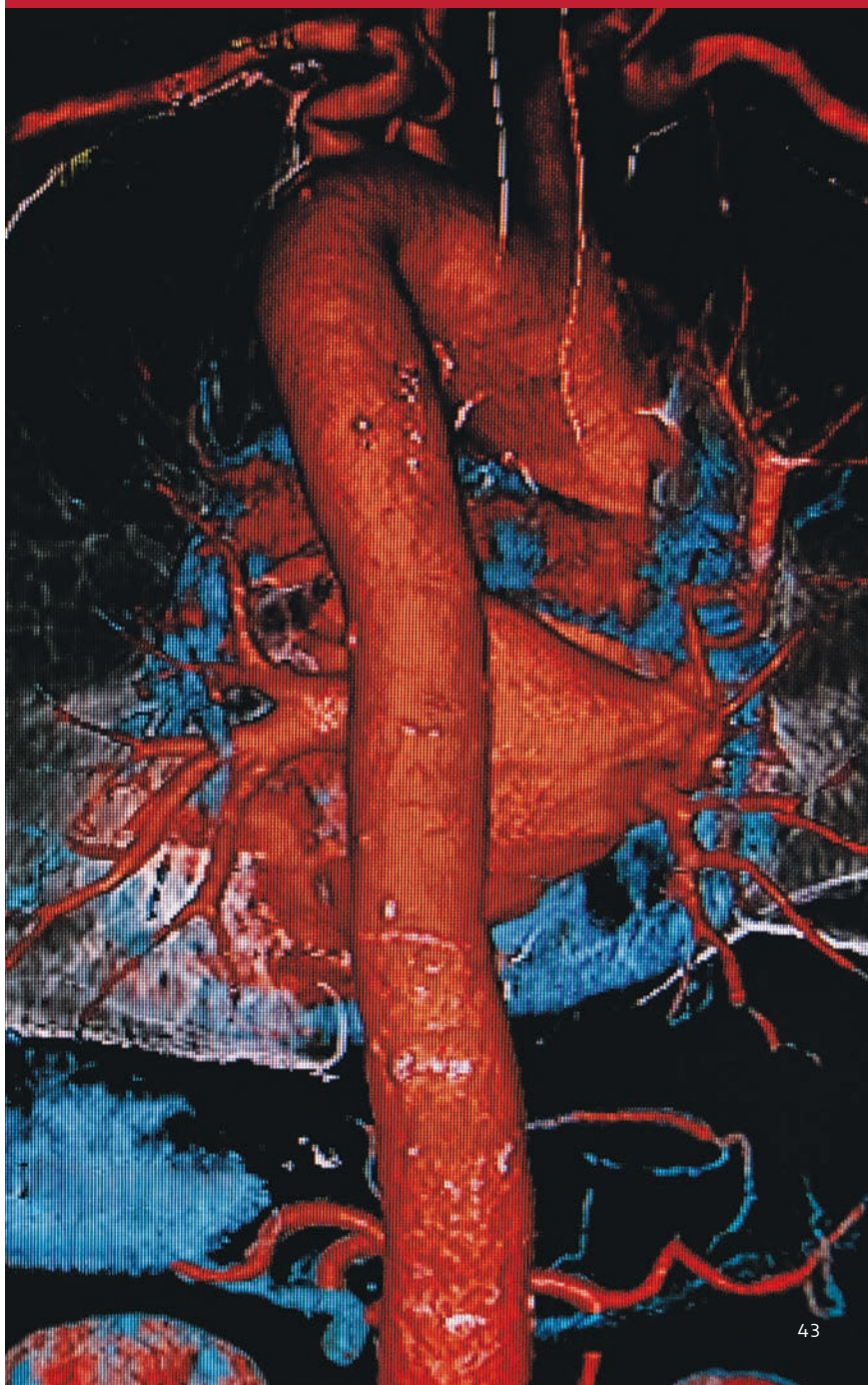
Our Cardiovascular Imaging team is currently participating in one active trial:

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

This single-center Phase III trial aims to test the impact of stress perfusion imaging by PET coupled with two different intensities of clinical management strategies. This study examines post-test resource utilization and reduction of cardiovascular risk in patients with known disease or at high risk for coronary artery disease. This study is only available at Memorial Hermann.

ID number: NCT00756379

Contact: Memorial Hermann Clinical



Heart Failure

The Heart Failure team is currently participating in 10 active trials. Highlights include:

Post Approval Study (PAS) of the OPTIMIZER Smart and CCM Therapy (PAS)

This post-approval study evaluates the long-term safety and efficacy of the OPTIMIZER Smart in a real-world setting for patients receiving an OPTIMIZER implant as standard of care.

ID number: NCT03970343

Principal investigator: Anju Bhardwaj, MD, FACC, FHSA
Contact: Chandni Patel, program manager-research
(713.500.7572, chandni.patel@uth.tmc.edu)

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

This prospective, multi-center trial will evaluate the safety and efficacy of cardiac contractility modulation therapy in patients with heart failure with left ventricular ejection fraction $\geq 40\%$ and $\leq 60\%$.

ID number: NCT05064709

Contact: Lawana Self (lawana.self@uth.tmc.edu)

TRISCEND II Pivotal Trial

This prospective, multi-center trial evaluates the safety and effectiveness of the Edwards EVOQUE tricuspid valve replacement system with optimal medical therapy compared to optimal medical therapy alone in patients with at least severe tricuspid regurgitation.

ID number: NCT04482062

Contact: Memorial Hermann Clinical Innovation & Research Institute
(713.222.2273)

Valve and Structural Heart

The Valve and Structural Heart team is currently participating in 16 active trials. Highlights include:

The PROTEMBO Trial

This prospective, multi-center study compares the safety and efficacy of the ProtEmbo Cerebral Embolic Protection device to a hybrid control (no embolic protection device and the Sentinel device) in patients with severe symptomatic native aortic valve stenosis undergoing a TAVR procedure. We are currently the only study center in Texas for this trial.

ID number: NCT05873816

Principal investigator: Abhijeet Dhoble, MD

Contact: Anna Menezes, senior program manager, research (713.500.5683, anna.m.menezes@uth.tmc.edu)

Portico Re-sheathable Transcatheter Aortic Valve System US IDE Trial (PORTICO-IDE)

This clinical trial evaluates the safety and efficacy of the Portico Transcatheter Heart Valve and Delivery Systems in patients with severe symptomatic aortic stenosis.

ID number: NCT02000115

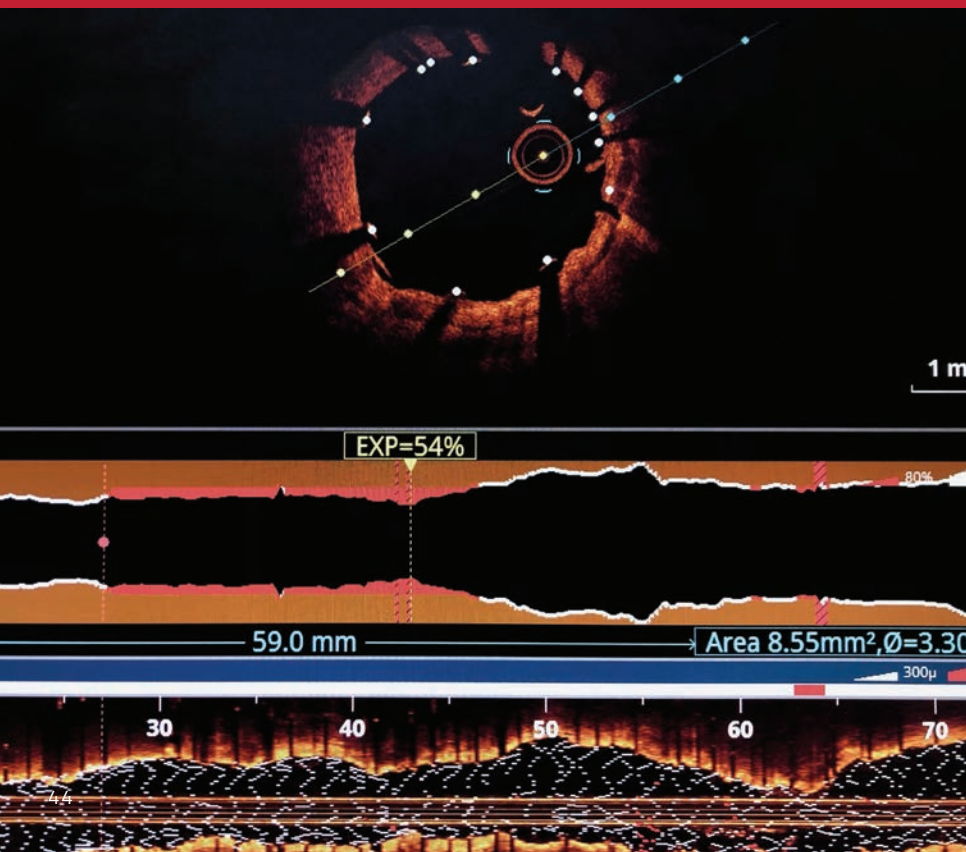
Contact: Memorial Hermann Clinical Innovation & Research Institute
(713.222.2273)

Edwards PASCAL Transcatheter Valve Repair System Pivotal Clinical Trial (CLASP II TR)

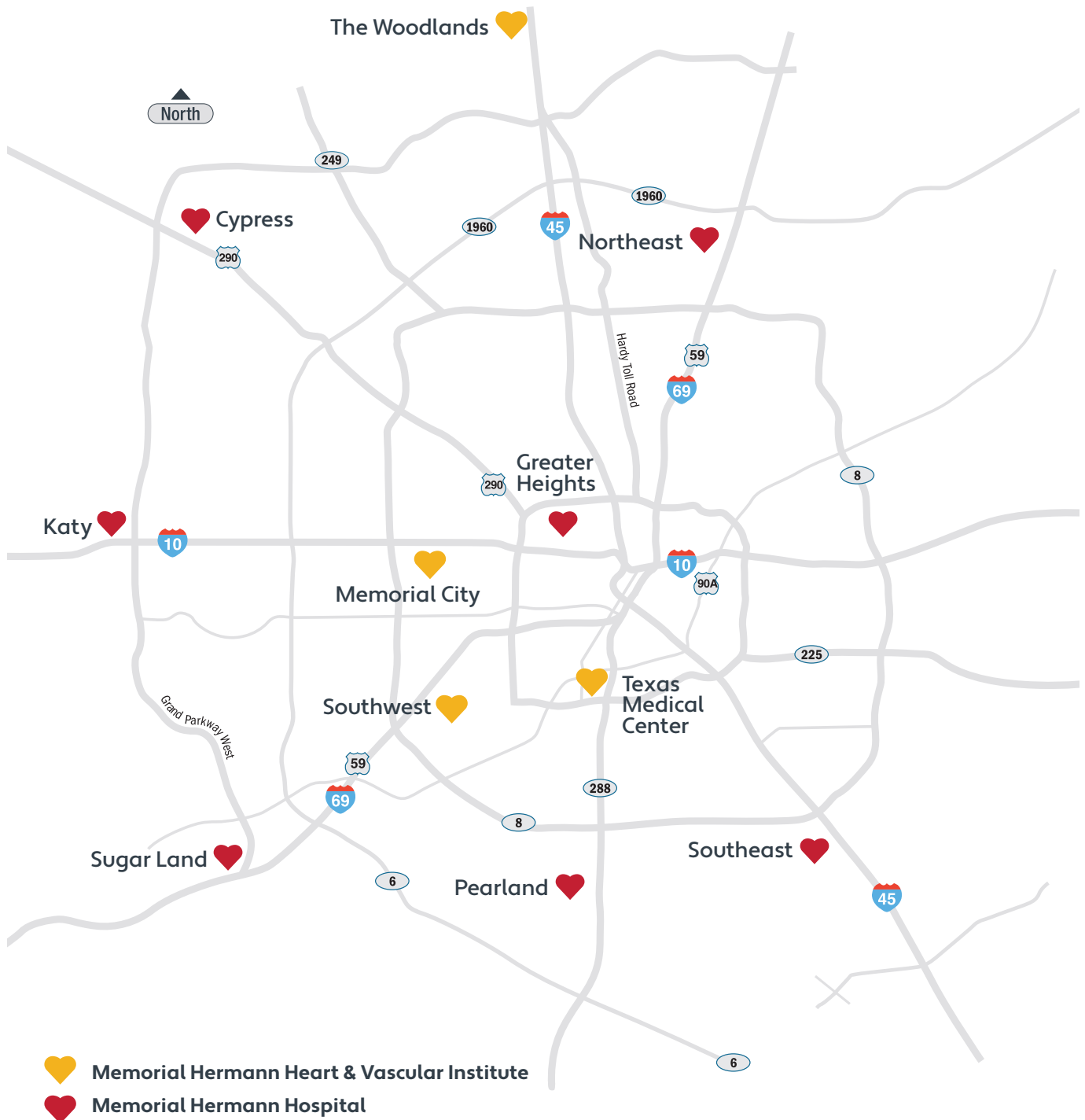
This prospective, multi-center study evaluates the safety and efficacy of the Edwards PASCAL Transcatheter Repair System in patients with symptomatic severe tricuspid regurgitation who have been determined to be at an intermediate or greater estimated risk of mortality with tricuspid valve surgery.

ID number: NCT04097145

Principal investigators: Abhijeet Dhoble, MD (713.500.6511, abhijeet.Dhoble@uth.tmc.edu); Richard Smalling, MD



Memorial Hermann Heart & Vascular Locations



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