

TWO-YEAR
(2021-2023)

REVIEW



Bringing the Future of Cardiovascular Health to Life™



Oct. 1, 2023

The Texas Heart Institute Faculty and Staff

Re: Two-Year Review

Dear THI Faculty and Staff:

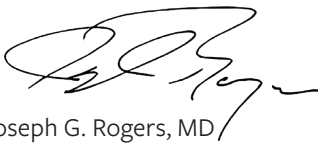
I often am asked, “Why THI?”

My answer has never wavered — the THI Board of Trustees has a compelling vision to restore The Texas Heart Institute’s prominence and we have the resources, talent, and organizational determination to achieve that goal.

In the pages that follow, you will find a synopsis of our accomplishments over the past two years. I am confident that THI is moving toward our collective vision with impactful and effective strategies.

I hope you enjoy reviewing this report. It was a pleasure to write as a reflection of excellent work across the entire organization.

With my deepest appreciation for your commitment,



Joseph G. Rogers, MD
President and CEO, The Texas Heart Institute

Executive Summary

The recent history of The Texas Heart Institute® (2021-2023) has been marked by rapid growth of the clinical practice and research activities, as well as the establishment of an effective infrastructure to facilitate real-time and longitudinal understanding of the Institute's performance. The following are some of THI's most important activities, achievements, and developments since May 2021:

1. PRACTICE GROWTH

Following the formation of the Texas Heart Medical Group with its 12 original members, three cardiologists have retired from practice and we have successfully recruited seven physicians and surgeons. In 2022, the Board approved a rapid growth plan to add 20 cardiovascular specialists over four to five years, making the employed practice of THI one of the largest and most specialized in Houston. The practice has started to realize the financial benefits of growth through increased patient volumes and revenue.

2. NEW OFFICE SPACE

In 2021, the Board approved resources to build a new space for the practice that now is housed on the 26th floor of the Fannin Tower. The new office doubled the size of the old clinic and added 11 examination rooms. In addition, we have state-of-the-art cardiac testing, new areas that accommodate innovative outpatient procedures, a patient-centered aesthetic and sufficient space to support practice growth.

3. QUALITY

We continue to build capabilities to measure and enhance clinical quality. Our work in 2022 demonstrated that we perform in the 99th percentile nationally in achieving LDL-cholesterol goals in patients with coronary artery disease. We also are tracking patient satisfaction throughout the practice. Our net promoter scores are excellent with more than 95% of patients giving us the highest possible ranking for their willingness to refer The Texas Heart Institute Center for Cardiovascular Care (THICCC) and specific THI physicians to family or friends.

4. BAYLOR ST. LUKE'S MEDICAL CENTER CARDIOVASCULAR SERVICE LIVE GOVERNANCE

An important shift in Baylor St. Luke's Medical Center (BSLMC) cardiovascular service line governance occurred in 2023. Hospital administrators endorsed a physician-led structure that empowers frontline team members to see and solve problems and provides an escalation pathway for issues that require assistance from physician and administrative leaders. THI has multiple leadership roles in the new BSLMC Cardiovascular Institute.

5. RESEARCH IMPACT

Our scientific programs have flourished over the past 24 months, achieving important advances in the fields of assisted circulation, electrophysiology, drug development, regenerative medicine, gene- and stem-cell therapies, and molecular and cell biology. Our researchers and clinicians continue to consistently publish their science in a variety of the world's most esteemed journals.



6. RESEARCH FUNDING

Two of our implemented programs are benefiting research funding: setting salary recovery expectations for our investigators and a cost neutral research incentive plan for highly successful scientists. The net result of these initiatives is a 20% year-over-year increase in grant submissions and growth of our federally funded research portfolio from \$2.4 million to \$3.7 million (a 54% increase). Currently, several of our outstanding proposals have scored in a traditionally funded range, so we are anticipating additional federal support of our research portfolio over the coming months.

7. WEBSITE INNOVATION

Using an innovative AI-enabled platform, our entire website — including patient education materials — has been translated to 104 unique languages. Since implementation, website traffic has increased 15%.

8. UPDATING THE TEXAS HEART INSTITUTE JOURNAL

We have implemented several processes at *The Texas Heart Institute Journal*, including a transition to a fee-for-publication, open-access model, a dedicated focus on process improvement to expedite publishing, and a refreshed color format, all of which are expected to improve the quality and impact of scientific papers we publish.

9. THI PROFESSIONAL STAFF REORGANIZATION

The THI Professional Staff now has a set of objective criteria that qualifies them for reappointment, including contributions in scholarship, service, and education. The non-employed THI Professional Staff now will be referred to as the THI Academic Professional Staff to clarify their work done on behalf of the Institute. We created three new departments to facilitate publication attribution, including Cardiology, Cardiovascular Surgery, and Cardiovascular Anesthesiology.

10. REESTABLISHING A DEVELOPMENT DEPARTMENT

Our philanthropic activities are growing with the hire of Julie Voss as the Vice President for Development. She has been instrumental in revising processes and policies to ensure an efficient and effective department. Julie has been invaluable to the organization in terms of reestablishing relationships with Houston foundations, our historical donors, and grateful patients.

11. FISCAL PERFORMANCE

We have implemented strategies to improve the financial position of THI by enhancing revenue streams and eliminating unnecessary expense. We are closing monthly books in a timely manner and our audits are unencumbered.

12. THI NAME CHANGE

We formally changed the name of THI to “The Texas Heart Institute” to distinguish us from other heart institutes and to add exclusivity to the brand.



The Texas Heart Institute Center for Cardiovascular Care

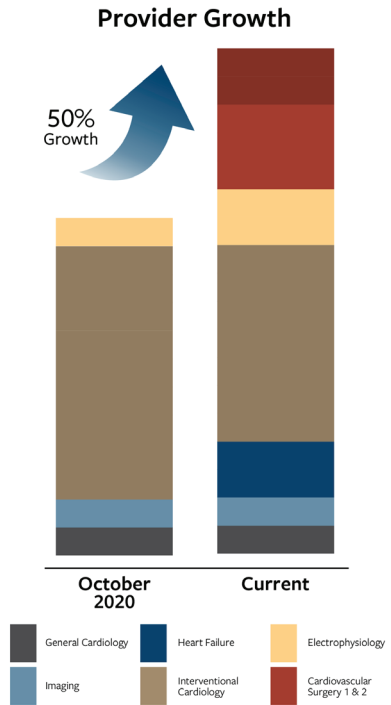
Upon formation of The Texas Heart Institute’s employed physician practice in 2020, our priorities were to expand the scope of clinical expertise through strategic recruiting and build a world-class office space fitted with the most contemporary tools to provide a single source for outpatient cardiovascular care. Our new office space occupies the 26th floor of Fannin Tower, expanding our footprint from 9,000 to 19,000 square feet. We more than doubled the number of patient examination rooms, which decongested our waiting room and led to enhanced patient, staff, and provider satisfaction.

Accompanying the move to the 26th floor, we upgraded our imaging equipment with the purchase of a 16-slice PET-CT. In only three months, the scanner schedule is nearly full and an important source of practice revenue.

In 2021, the employed practice of The Texas Heart Institute included 12 cardiologists — five of whom were over the age of 70 — and primarily was comprised of interventional cardiologists. Over the past two years, three senior cardiologists retired, including Drs. Jorge Guttin, Roberto Lufschanowski, and Paolo Angelini.

In February 2022, the THI Board approved an exciting and aggressive growth plan to add 20 cardiologists and surgeons to the employed practice over four years. These recruitments are intended to bring unique physician talent and expertise to THI that will distinguish us from other local practices and promote Centers of Excellence able to care for nearly all cardiovascular disease patients.

In the past two years, 54 cardiologists and surgeons have inquired about joining THICCC, and we successfully recruited seven in the past year, including Drs. Jorge Escobar, Nikos Diakos, Robert Paisley, Hector Medina, Jim Livesay, Charles Hallman, and Jennifer Cozart. We also successfully recruited Dr. Marc Moon, an internationally recognized expert in aortic and valvular cardiac surgery, through a unique collaboration with Baylor College of Medicine. Dr. Moon was jointly appointed as the Chief of Cardiac Surgery at Baylor College of Medicine, the Chief of Cardiac Surgery and Denton A. Cooley Chair at Baylor St. Luke’s Medical Center, and the Chief of Cardiac Surgery at The Texas Heart Institute. Dr. Moon was accompanied by Dr. Lauren Barron, a cardiac surgeon who also has a THI clinical appointment.



As health care transitions to a model of “value” in which measures of quality increasingly will be acknowledged and rewarded with less emphasis placed on traditional fee-for-service models, The Texas Heart Institute has embraced quality as a primary distinguishing feature. Last year we hired a physician whose sole responsibility is the collection and interpretation of practice quality measures. Our quality work already has resulted in financial gains for THICCC through high performance in the Merit-based Incentive Payments System (MIPS), a CMS-sponsored program that integrates quality metric performance into a prospective payment program and places Medicare reimbursement at risk. In our first MIPS year, the practice had \$185,000 of reimbursement at risk, but will earn \$20,000 from MIPS participation based upon successful quality performance. Another of our 2022 quality initiatives focused on achievement of cholesterol goals in patients with coronary artery disease. We demonstrated that 93% of our patients have optimally treated cholesterol levels placing us in the 99th percentile nationally. Finally, we implemented a program to longitudinally measure patient satisfaction and have demonstrated that 98% of patients would recommend THICCC and our physicians to family and friends.

This is just the beginning of our quality journey — with implementation of EPIC in 2023, we plan to participate in the American College of Cardiology PINNACLE Registry that will mine our electronic health record (EHR) data, expand the number of quality measures and provide greater benchmarking capabilities. We remain resolute to be the highest value cardiology practice in Houston and amongst the best performing centers in the U.S.



As of June 2023, due diligence for the CommonSpirit instance of EPIC was completed, the THI Board approved the resources to transition our EHR platform, and the contract was executed. Implementation of EPIC will be transformative for THICCC by improving patient care, managing referring physician relationships, enhancing back-office functions, and improving patient, provider, and staff satisfaction.

Since the beginning of 2023, THICCC has seen a measurable increase in productivity. Compared to the first five months of 2022, new and return patient visits have increased 44% and 27%, respectively; echocardiography and PET(CT) volumes have increased by 24% and 41%, respectively; and monthly practice revenue reached an all-time high of \$1.8 million. These positive changes temporally are related to the addition of new providers, employment of a business development professional, addition of payor contracts that have expanded access to patients, and the new office space that allows for enhanced efficiencies.

Another important change in productivity was the development of a clinical compensation model that incentivizes growth and productivity. In the next iteration of the compensation model, rewarding group behaviors and practice growth will be incentivized.



Some of the most impactful work undertaken in the past two years included developing a relationship with Edelman, our corporate marketing and branding partner. Over several months of exploratory discussion, Edelman recommended that we unify the THI brand and change the practice name from the “Texas Heart Medical Group” to “The Texas Heart Institute Center for Cardiovascular Care.”

Finally, through our affiliation negotiations with BSLMC, we developed a new governance structure for the Cardiovascular Service Line. This service line has evolved to a Cardiovascular Institute modeled after the BSLMC Transplant Institute with two-fifths of the Executive Committee comprised of THI leadership (the same representation as Baylor College of Medicine). The CV Institute was given significant oversight and responsibility for quality of care, metric development, patient satisfaction, clinical engagement, growth and strategy, space coordination, budget and capital expenditure planning, and clinical research. THI also is well-represented on the Operations Committee and many of the sub-committees that will manage day-to-day function of the hospital’s cardiovascular services. On a national level at CommonSpirit Health, THI holds leadership positions in the CV Service Line in interventional cardiology, electrophysiology, and cardiovascular anesthesiology.

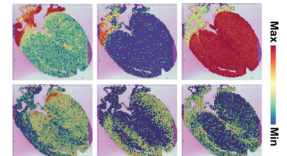
Delivering the Future of Cardiovascular Health – Today!

The research mission of The Texas Heart Institute remains robust with a focus on translating our discoveries to patient care. The impact of our scientific program has grown through strategic collaborative recruitment and the appointment of key national and international thought leaders to the THI Professional Staff. The vision to restore THI's prominence always will be highly dependent upon scholarship, discovery, innovation, and publication.

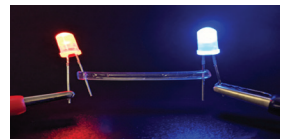
THI achieved several scientific research milestones in the past two years. The BiVACOR total artificial heart development program completed preclinical testing and the company is preparing its FDA submission for first-in-human trials. During the last series of animal experiments, clinicians who will be caring for these patients participated in the animal implants and care. In this way, we are uniquely prepared to perform the first human implant. The THI Office of Research Administration has worked with BSLMC, CommonSpirit, and Baylor College of Medicine to ensure that the regulatory and trial start-up requirements are completed to remove these potential barriers for first implant.



Dr. Jim Martin has made important strides in characterizing the fundamental biology of congenital heart disease and heart failure. His laboratory has perfected a technique in which they can sample the genetic signals from single cells (spatial transcriptomics) in the heart and develop an understanding of the complex cell-cell interactions that allow the heart to function normally and fail following injury.



Dr. Mehdi Razavi's lab has developed a new electroconductive hydrogel that can be injected into the cardiac veins and used as a pacing medium. This holds the promise of recapitulating the normal electrical system of the heart in a manner far superior to standard pacemaker technologies and also may have important anti-arrhythmic properties by normalizing conduction through areas of scar tissue in the heart.



Researchers in the Molecular Cardiology Research Laboratory previously discovered a drug that can enhance the immune response and, potentially, boost vaccine effectiveness. The novel compound also holds potential to improve the effectiveness of certain cancer therapies that leverage the body's own immune system to fight tumors. This technology was licensed to 7 Hills Pharma that recently was awarded a \$13.4 million CPRIT grant from the state of Texas to test this compound in drug-resistant melanoma.



CPRIT

Finally, Dr. Emerson Perin completed the largest stem cell trial in heart failure performed to date. The DREAM-HF study was an international collaboration that used mesenchymal precursor cells to reduce the morbidity and mortality in heart failure. DREAM-HF demonstrated that patients who received the cells were less likely to have heart attacks and strokes during the follow-up period. Perhaps most important was the demonstration that, for the first time, treatment of heart failure patients with higher levels of inflammation benefited most from stem cell therapy. These vital observations will inform the next set of clinical stem cell trials.

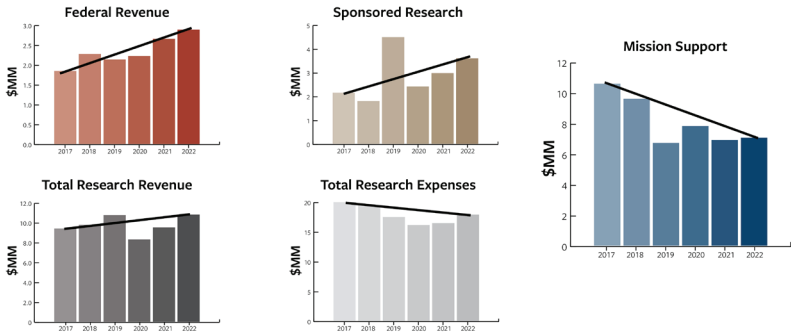


2022 Research Grants Awarded

THI investigators have met with success both in grant writing and identifying external funding sources. In 2022, grant submissions increased by 20% relative to the prior year and THI received more than \$4 million in NIH funding, \$2.9 million from the Department of Defense, and \$408,000 from a sponsored research agreement with YAP Therapeutics. Further, by early 2023, we received notification that eight federal proposals had scored in a range likely to be funded. The total monetary value of that portfolio would be an additional \$11.5 million.

The overarching goal of the THI translational research program is to bridge the gap between scientific discovery and clinical practice. Getting new innovative treatments approved for use in patients requires commercial partnerships that can support the resource-intensive FDA approval process. Currently, The Texas Heart Institute has relationships with several companies developing “first-in-class” treatments. Some of these companies include BiVACOR Inc. — developing a total artificial heart; YAP Therapeutics — developing gene therapies for patients with heart failure; and 7 Hills Pharma — developing universal vaccine and cancer therapy adjuvants. In the last two fiscal years, revenues from licensing and royalty agreements have totaled \$400,000, representing a more than 50% increase in total revenues as compared to the two previous years.

Research Financials: Revenue and Expense Trends



Our research team implemented two important initiatives that have driven productivity. For the first time in THI history, salary recovery expectations were established; over the coming three years, our investigators will be expected to cover at least 25% of their salaries through external funding. We also implemented a research incentive plan that returns a portion of indirect costs for investigators funding more than 50% of their salary. This incentive may be taken personally or returned to the laboratory and is cost neutral to the Institute. The net financial result of THI's research productivity and cost coverage is a year-over-year reduction in mission support by \$3.5 million.

A critical component of scholarship is the dissemination of research findings. Last year, the THI Professional Staff published 478 papers compared to 326 in 2021. Many of THI's researchers continue to publish studies in high-profile journals, including *The New England Journal of Medicine*, *Lancet*, *Nature*, *European Heart Journal*, and *Science Translational Medicine*.

From a research administration perspective, THI has passed all mandatory federal inspections without citation and there have been no episodes of scientific misconduct. Additionally, we have strengthened scientific integrity and conflict-of-interest policies.

To improve efficiency in clinical research, a collaborative working group with membership from THI, BCM, and BSLMC have met monthly to review opportunities expected to improve clinical research infrastructure, enhance processes, and expedite clinical trial initiation. The entire process of clinical trial initiation has been mapped and benchmarks developed so delays can be diagnosed and corrected promptly.



We have begun work on the THI Health Data Sciences program. An underutilized resource, the THI Research Database (THIRDBase), is one of the largest institutional cardiovascular repositories of clinical information in the United States, with longitudinal follow-up on more than 180,000 patients, 14,000 cardiac operations, 127,000 heart catheterizations, and 12,000 electrophysiology studies. The information contained in this dataset will allow THI clinicians and investigators to make important contributions to scientific knowledge following proper investments to transition to a contemporary analytic platform and clean the data. We were fortunate to receive a \$250,000 gift this year from the Cullen Trust for Healthcare that is the initial seed money needed to build a more robust platform in health data sciences.

Lastly, we were fortunate to recruit Dr. Salim Virani, a prolific researcher, writer, and mentor. Dr. Virani was a THI fellow who recently accepted a position as the Vice Provost for Research at Aga Khan University in Pakistan. He was hired to assist with our health data sciences initiative, provide mentorship for our fellows, and support the THI brand across Europe and Africa. Since his appointment in early 2023, he has published nearly 40 manuscripts, including two with THI fellows. He has provided numerous media interviews as a THI member, and later this month will publish the highly impactful 2023 AHA/ACC Guidelines for the Management of Chronic Coronary Artery Disease.



The Next Generation

In the past two years, THI has made important transitions in our educational platform to enhance our brand, improve end-user experience with THI educational products, and increase the educational value of our enduring materials.

A key strategic priority of THI was to leverage the patient education portal on our website to drive brand awareness and expand reach by translating the materials into other languages. This spring we implemented an AI-driven program that translated the entire website into 104 languages. While we are working to ensure the accuracy of the content, this innovative approach translates sentences rather than individual words, resulting in superior accuracy. Since making this change, website traffic has increased by 15%.

We initiated an annual Global Cardiovascular Symposium in early 2022 to align with *U.S. News and World Report* voting. This symposium highlights the best of THI and our affiliates, engages the CommonSpirit network, and truly has a global reach. In addition, we expanded our conference offerings and now support 10 CME events, and have more than 250 online enduring and certified offerings for clinicians wishing to receive the most contemporary updates in cardiovascular disease. Our CME team also supports the THI Grand Round series that was viewed by more than 127,000 participants in the past academic year.

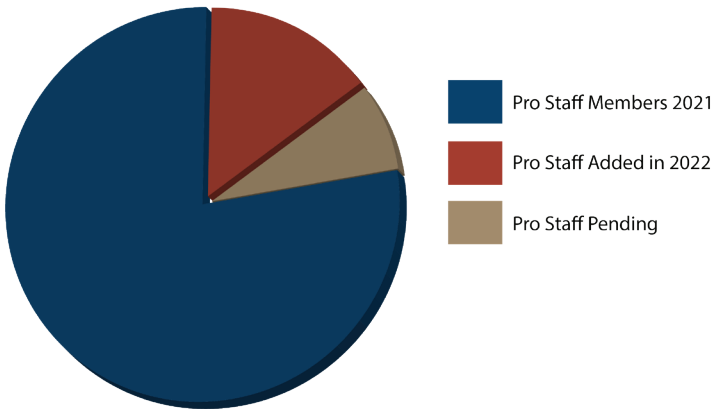
In May 2023, The Texas Heart Institute, in collaboration with the European Society of Cardiology Working Group for Cardiovascular Regenerative and Reparative Medicine, hosted the 3rd THI International Symposium on Cardiovascular Regenerative Medicine to advance the field through scholarly debates, discussion, and the establishment of a new platform of understanding from which to move the field forward.

We also upgraded *The Texas Heart Institute Journal* and engaged an editorial consultant who cleared the backlog of accepted papers and enhanced journal processes through a data-driven approach to the life cycle of a scientific manuscript. We recently transitioned the journal to open access with a publication fee that should help defray some management costs. Finally, we refreshed the color palette and layout, giving the journal a more contemporary and professional appearance.

Professional Staff

Since May 2021, we have organized and grown the THI Professional Staff to 119 physicians and scientists who contribute to the mission of the Institute. Last year, we implemented a program to enhance Professional Staff engagement by requiring documentation of the contributions to THI as part of the bi-annual Professional Staff membership renewal. This multi-dimensional system accounts for our major mission areas and ways in which the Professional Staff contributes to and represents the THI brand.

Academic Professional Staff By the Numbers



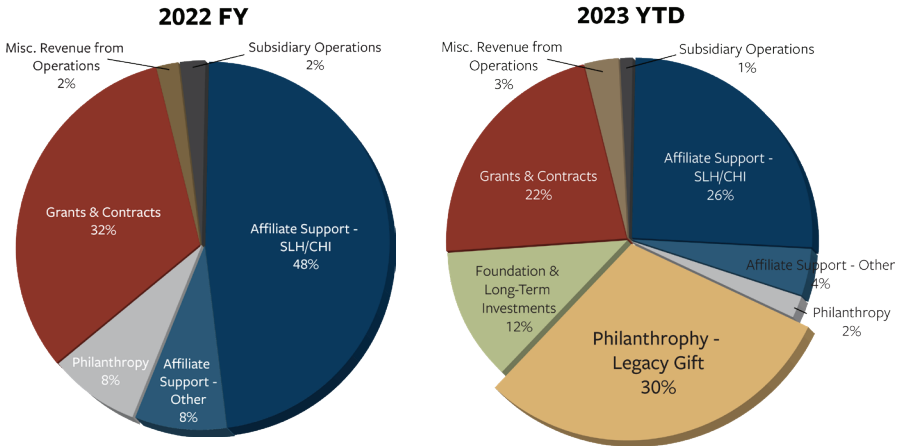
We also established a new nomenclature for the non-employed physicians and scientists on the THI Professional Staff. Going forward, these individuals will be classified as The Texas Heart Institute Academic Professional Staff, signifying their THI role in research and education.

Reestablishing our Philanthropic Community

In the years preceding 2021, development activities at THI significantly decreased. Julie Voss, Vice President of Development, was a key strategic hire in 2022 and she has reversed this trend. She continues to build an infrastructure that will reestablish THI's donor base and engage the next generation of community members who hopefully will respond to THI's inspiring work through generous donations.

Over the past two years, we raised \$7.5 million from individuals and foundations. THI is committed to establishing a sustainable process that will support development activities into the future. A mature gifts program in health care typically raises approximately 36% of gifts from the top three donors each year. On average, THI has raised 80% from its top three donors, highlighting the need for a more balanced program that will sustain year-over-year growth.

In December 2021, THI received the largest gift ever given to the Institute (\$34 million) from the estate of Dr. Frederick Weissman, a former patient of Dr. Cooley. We intend to leverage this remarkable gift as seed money to further grow our endowments and provide start-up packages for recruits into our research program.



The magnitude of this gift sparked our recognition that THI had antiquated spending policies and no policies pertaining to criteria or classification of endowed positions. We have since created these policies, which now are Board-approved.

Supporting THI

We spent a significant portion of the past two years developing enduring processes, policies, and procedures that have improved our core business functions and allow us to track Institute performance in real time.

In 2022, we worked with Edelman, our national branding and marketing firm, to develop a new brand architecture and rename both the Institute and the employed practice. We formally changed THI to “The Texas Heart Institute,” and the practice to “*The* Texas Heart Institute Center for Cardiovascular Care.” That work also produced an exciting revelation describing our archetype that distinguishes us from our competitors — THI is a **pioneering** brand. We also developed new vision, mission, and values statements that we rolled out to our teams and in our communications strategy.

Vision:

To bring the future of cardiovascular health to life

Mission:

Improving cardiovascular health today through trailblazing research, thought leadership, education, and patient care

Values



Excellence: We will strive for excellence in all we do.



Safety: We are committed to providing a safe environment for our patients and staff.



Respect: We will treat patients and employees with dignity and respect by emphasizing integrity, consistency, responsibility, honesty, compassion, collaboration, and professionalism.



Value and Recognition: We affirm the fundamental value of every person and will cultivate an environment that is supportive, promotes a sense of belonging, embraces diversity, and appreciates that different perspectives enrich the patient care experience and our work culture.



Service: We will use our talents and resources for the benefit of our patients, partners, community, and one another.



Continuous Improvement: We are committed to learning and continual improvement. Our teams will have the tools needed for success and professional fulfillment.



Curiosity: We foster the spirit of inquiry and discovery, encouraging innovation in everything we do.



Pioneering: We challenge the status quo and experiment to find new ways to grow our organization and each other.



As part of our commitment to caring for our team, we recognized our lack of a formal program to address Diversity, Equity, Inclusion, and Belonging (DEIB). We distributed an Institute-wide survey in 2022 and 36% of our employees provided feedback. While THI performed well overall, we recognized opportunities for improvement, particularly in the areas of data acquisition and monitoring, implicit bias training, and an employee voice in DEIB matters. In response, we have undertaken DEI training for leadership, managers, staff, and fellows. In addition, we are forming the first DEI committee to provide recommendations for future initiatives.

From a financial perspective, we have taken important steps to improve performance and reporting. For example, we have implemented a new financial package for our researchers so they can track grant expenditures for the first time. We also have improved our annual budgeting processes and have new software that expedites and tracks budget and performance. THI's Chief Financial Officer Howard Schramm has worked diligently to enhance our annual audit processes, and last year we had a clean audit with no findings and a commendation from Blazek and Vetterling on THI's improved performance.

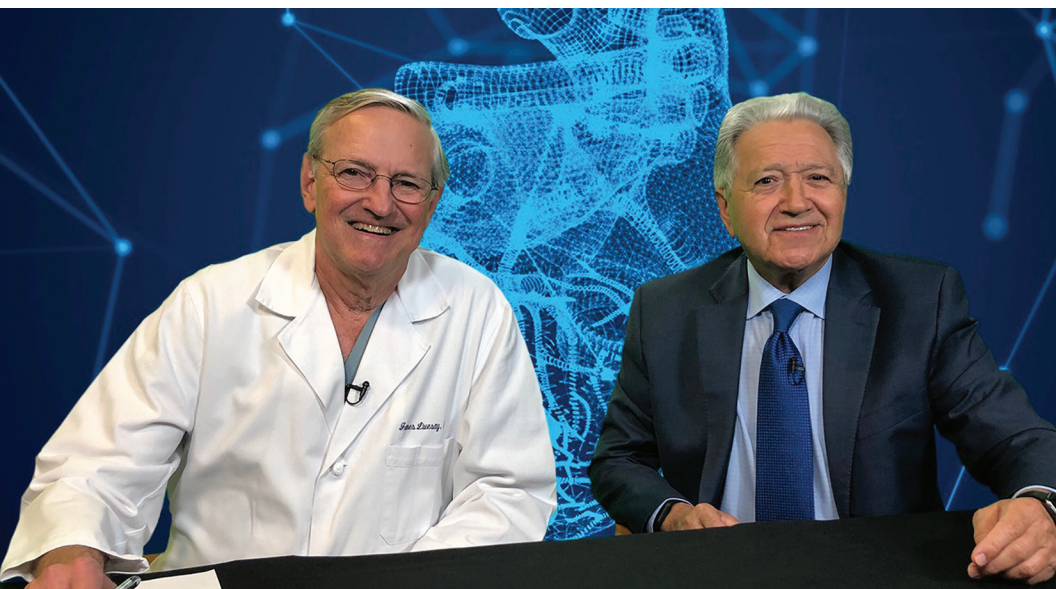
In 2023, we initiated a strategic initiative to improve the financial performance of THI and reduce our dependence on mission support funding. At present, our revenue generating opportunities primarily are in the clinical practice, development, and technology transfer and licensing (previously discussed). In addition, we committed to lowering Institute expenses by 5% or more. We implemented a one-time early retirement program for individuals over the age of 62: 42 THI employees were eligible for the program and eight accepted this option. In addition, our managers were able to further reduce expenses by \$2,004,000, resulting in a projected overall annual expense reduction of 6.9%. We also critically evaluated THI services and elected to close the THI library and repurpose that space.

In 2023, we renewed the lease with BSLMC for space on the 5th floor of the hospital (clinical research, pathology, the School of Perfusion Technology, IT, Scientific Publications and *The Texas Heart Institute Journal*) and the large animal lab. The lease terms guarantee access to these critical areas for the upcoming seven years.

Finally, a key strategic initiative in 2021 was to develop a highly functional relationship with Baylor College of Medicine. This relationship now is as strong as it has been in the past 60 years. Leaders from both organizations have participated in the Joint Affiliation Committee, setting strategy and priorities for a higher level of collaboration. We jointly recruited several faculty members and are sponsoring weekly research symposia. As noted above, perhaps the most impactful work has been focused on improving the clinical research infrastructure to develop a nimble pathway to trial management.

Conclusions

The past two years have witnessed remarkable and positive change at The Texas Heart Institute. We are growing and thriving as an organization with an unwavering commitment to excellence, quality, and impact. While we continue to celebrate the rich history of THI, we are even more excited and confident about our path to the future. The Texas Heart Institute will continue to forge new inroads in discovery, translating our innovation to new diagnostics and therapeutics to improve patient care. The impact of our educational materials and programs is expansive, providing a trusted source of knowledge to learners across the globe. By all measures, The Texas Heart Institute is ***Bringing the Future of Cardiovascular Health to Life.***



“SCIENCE ISN’T FINISHED
UNTIL IT IS COMMUNICATED.”

— SIR MARK WALPERT