Heart and Vascular Outcomes
A Message from Dr. Howard Weitz

Dear Colleague:

At Jefferson, we distinguish ourselves through our leadership in cardiovascular medicine and surgery, based on a long history of innovation — including our preeminence as an academic medical center where we have trained cardiology fellows since 1954.

Our clinicians, researchers and medical educators have played a key role in some of the most significant advances in cardiology, cardiac and vascular surgery and vascular medicine, which are reflected in hundreds of peer-reviewed articles and books.

With this legacy as a backdrop, we want to bring you up-to-date on our latest advances and our growing capabilities, which have strengthened Jefferson’s position as a center of excellence in cardiovascular medicine and surgery. Today, our reach in cardiac and vascular medicine is wide and expanding in clinical cardiology, cardiac arrhythmias and conduction disorders, cardiac catheterization and intervention, cardiac critical care, non-invasive cardiac and vascular imaging, cardiothoracic surgery, advanced heart failure and transplantation, prevention, vascular medicine and vascular surgery.

We base our actions on a team approach to care, which includes not only our collaborating medical and surgical specialists, but also referring physicians, patients and their family members.

With this team model, we routinely achieve excellent outcomes in the treatment and prevention of many serious and complex heart and vascular diseases.

Our team serves as a resource to our patients and their referring physicians on a 24/7 basis whether for a scheduled outpatient evaluation, telephone or video consultation with a referring physician, or emergency air or ground transport to our university hospital.

We are committed to shaping the future of treatment and research in heart and vascular diseases, while partnering with our patients’ referring physicians to deliver exceptional care every day. We also cherish our legacy as teachers of the heart and vascular physicians of tomorrow. We invite you to find out more in the pages that follow.

Howard Weitz, M.D.

Director, Division of Cardiology
Professor of Medicine
Medical Director, Jefferson Heart and Vascular Center
Thomas Jefferson University Hospitals

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Providing the Brodest Array of Heart and Vascular Services

Thomas Jefferson University Hospitals’ experienced cardiologists, cardiovascular specialists and surgeons combine the best of two extraordinary attributes — deep expertise in a broad range of complex conditions and treatments with a focus on the individual needs of each patient in their care.

At one end of the spectrum, our nationally recognized Advanced Heart Failure and Cardiac Transplant Center provides innovative therapies to successfully treat the sickest cardiac patients in the region. At the other end of the spectrum is the Cardiovascular Disease Prevention Program, which focuses on the latest science to prevent the onset of heart disease in those at risk and lower the risk of recurrent disease in patients with previous cardiovascular ailments.

From providing medical and preventive therapies to blazing new trails that advance the state of invasive procedures, the breadth of our expertise and resources means we provide patients with access to the full spectrum of life-saving heart and vascular care. These capabilities include:

**Leading-Edge Therapies**
- Electrophysiological options including atrial fibrillation ablation, which in many cases results in cure of this cardiac arrhythmia.
- Pioneering and highly skilled coronary angioplasty with drug-eluting stents to provide non-surgical coronary artery revascularization.
- Non-invasive heart and vascular tools including 3D echocardiography to better image the heart of the patient with structural heart disease, ultrasound speckle tracking to better define ventricular regional function, and advanced high-resolution CT angiography (256 slice) to visualize the heart, coronary arteries, and peripheral vessels with increased clarity, utilizing less radiation than conventional angiography.
- Advanced techniques to treat patients with cardiac pacemaker malfunction or infection.
- A comprehensive approach to the transfer of critically ill patients utilizing “JeffSTAT,” the only air and ground transport program in the Philadelphia area that is accredited by the Commission on Accreditation of Medical Transport Systems.
- Access to clinical trials such as the STABLE trial which evaluates a novel endovascular stent to treat type B aortic dissections.

**Advanced Surgical Options**
- Heart transplantation, as determined by expert evaluation, when conventional therapy for heart failure is unsuccessful.
- Implanted mechanical heart pumps (ventricular assist devices) to serve as a bridge to transplantation or for selected patients, destination therapy in the treatment of advanced heart failure.
- Coronary artery bypass graft surgery and valvular replacement for patients at high risk, i.e. those with significant heart failure and poor heart function, utilizing conventional and minimally invasive techniques.

**Investigational Programs**
- Leading research in the cardiac disease process, including ventricular remodeling, cardiopulmonary exercise, identifying familial genetic markers for cardiomyopathy and immunosuppression therapies.
- Clinical trials — supported by the NIH and other advocacy and industry groups — that establish new approaches to detect, understand, treat and prevent heart disease and heart failure.

As an academic medical center, Jefferson is often called upon to treat the most complex cases, and we have an outstanding record of successful outcomes. These achievements, among many others, reflect Jefferson’s high standards of care for the more than 45,000 patients who visit us each year for cardiac and vascular care.

Jefferson is designated a BLUE DISTINCTION CENTER FOR CARDIAC CARE, a nationwide program of the Blue Cross and Blue Shield Association recognizing specialty centers that offer the best practices and standards of cardiac care.
Collaborating for Successful Outcomes in Cardiovascular Surgery

Collaboration is a key trait of Jefferson’s cardiac surgeons. The Jefferson Aortic Center combines efforts of our vascular and endovascular surgeons and our cardiac surgical team. This team performs both traditional “open” surgery and minimally invasive endovascular techniques.

Our team of cardiac surgeons — each with years of surgical experience — performs hundreds of cardiac operations each year, from coronary artery bypass surgery, valve repair and replacement to surgical treatment of congenital heart disease, arrhythmias, congestive heart failure and aortic vascular disease.

As an academic medical center and a regional referral center, we are equipped to care for patients with advanced valvular and coronary artery disease. We are one of a select group of cardiac centers in the region whose surgeons routinely utilize percutaneous and implantable ventricular assist devices (LVADs) to help maintain the failing heart. Currently used as a bridge to transplantation, these devices are more routinely used as destination therapy for heart failure. Our ability to use assist devices as a back-up enables us to successfully treat a much sicker population of patients with vascular coronary artery disease.

Ongoing clinical trials place Jefferson among the first hospitals in the country to provide patients with the latest and best surgical procedures and technologies, including the newest approaches for the treatment of thoracic aortic aneurysms and aortic dissection.

Jefferson operates on more urgent and emergent cases … yet our mortality rate is lower than the national benchmark.

Operative Status

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Major Procedures Mortality

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(Includes CABG, VALVE, and CABG/Valve)

Source: The Society of Thoracic Surgeons (STS) database, 2008

The development of the HEART-LUNG BYPASS MACHINE and the performance of the first successful open heart surgery took place at Jefferson on May 6, 1953 by John H. Gibbon, Jr., M.D.
Effectively Managing Cardiac Arrhythmias

Atrial fibrillation is reaching epidemic proportions in the U.S. From relatively mild palpitations to more serious symptoms, atrial fibrillation can occur at any age, though it may intensify as people grow older. Thanks to the many therapeutic options at Jefferson, successful treatment for atrial fibrillation is readily available — from DC cardioversion to drug-based therapy to radio frequency catheter ablation, which in many cases can eliminate atrial fibrillation and the need for medication entirely.

The specialists in the atrial fibrillation program are trained to treat patients whose arrhythmias are difficult to control and who should seriously consider the option of catheter ablation, which is non-surgical and minimally invasive.

Jefferson uses the latest computer-aided diagnostic evaluation techniques, including computerized electroanatomic mapping systems, with merged CT and ultrasound imaging to more precisely locate and assess rhythm disorders. Our cardiac arrhythmia specialists also implant permanent pacemakers to treat symptoms associated with bradyarrhythmias. They implant biventricular pacemakers, for cardiac resynchronization therapy (CRT), to more effectively treat patients with congestive heart failure.

Our cardiologists utilize implantable cardioverter defibrillators (ICDs) to treat potentially lethal ventricular arrhythmias, and employ such non-surgical, minimally invasive methods as catheter ablation, to correct tachycardias and other related conditions.

Jefferson’s national leadership in electrophysiology is exemplified by our expertise in dealing with implanted cardiac device malfunctions or complications — a critically important specialty for patients who increasingly receive such devices to treat a number of conditions. Jefferson is one of only a handful of centers in the U.S. with experience in the laser extraction procedure, which treats complications of device leads, including device-related blood infections.

Transvenous lead extraction, when done by experienced physicians, can be the best way to manage device infections, veins with blockages or lead malfunctions. Jefferson not only participated in a major clinical study on this lead extraction procedure, but Program Director Arnold Greenspon, M.D. also published extensively on the subject, including a multicenter study presented at the Heart Rhythm Society conference in 2009, which demonstrated the high success and low complication rates of the procedure when experienced electrophysiologists are at the helm.

For more than 25 years, our arrhythmia specialists have combined outstanding patient care with groundbreaking scientific research, training and the implementation of innovative technologies and techniques.

Jefferson is one of the few centers in the U.S. with experience in the LASER LEAD EXTRACTION PROCEDURE, a non-surgical method for removing infected or malfunctioning pacemaker or ICD leads.
When Advanced Heart Failure and Transplantation Services are Needed

Jefferson’s Advanced Heart Failure and Cardiac Transplant Center is a comprehensive program that offers innovative, evidence-based medical care for patients with heart failure. Patients are referred to us in all stages of congestive heart failure from newly diagnosed asymptomatic left ventricular dysfunction to the patient with heart failure requiring cardiac transplantation.

Starting with optimal heart failure medical management, we provide advanced interventions ranging from the implantation of defibrillators to cardiac resynchronization therapy, high-risk surgeries such as coronary artery bypass in the setting of severe left ventricular dysfunction, valve repair and replacement, mechanical assist devices (LVADs and RVADs) and heart transplantation.

Jefferson cardiologists are leading researchers in heart failure, ventricular remodeling, cardiopulmonary exercise, familial genetic markers for cardiomyopathy, and immunosuppression therapies. Innovative investigational approaches for detecting, understanding, treating and preventing heart failure are studied here. These trials, including drugs and monitoring devices that are not commonly available, and pharmacokinetic and genetic screening studies, offer innovative options to treat heart failure.

Research to better understand and modify the immune-mediated process of cardiac rejection is also a hallmark of the research at Jefferson. These studies are supported by National Institutes of Health, the National Heart, Lung and Blood Institute, the American Heart Association and the pharmaceutical industry.

Patients who require or who have had a transplant may benefit from photopheresis and plasmapheresis as clinically indicated to prevent or treat rejection.

Jefferson’s experience with transplantation allows us to treat patients with advanced disease who may benefit from standard therapies such as bypass and valve procedures, averting the need for transplantation.

Heart transplantation may be an option for patients for whom more conventional therapy has failed. From 2004 to 2009, patients who received heart transplants at Jefferson’s UNOS-certified center had excellent survival rates.

We’ve refined donor and recipient selection methods, strengthened the donor heart management process, and seen advances in immunosuppression, all of which have significantly improved outcomes.

Our Advanced Heart Failure and Transplant team has collectively performed more than 1,200 heart transplants.
Preventing and Treating Heart Problems in Women

Research has shown that women with heart disease may display vastly different symptoms than men, which may lead to missed or delayed diagnosis. Additionally, once diagnosed with heart disease, treatment for women is often less aggressive than for men.

Nonetheless, cardiovascular disease is the leading cause of death among women, outpacing all cancers combined, including breast cancer. The problem is especially challenging because many women who are most at risk for cardiovascular disease are unaware of these demographic trends. That’s why Jefferson established the Women’s Heart and Vascular Program.

Referring physicians or patients can ask specifically to be referred to the program’s physicians for testing and treatment. For women with concerning cardiovascular symptoms, the latest imaging technology and advanced blood testing and analysis, are used for diagnosis. If diagnosed with heart disease, patients will receive the highest quality, evidence-based care. Emerging protocols may help to identify women who may need more aggressive treatment.

Providers in our program follow specific guidelines for women recommended by the American College of Cardiology. We are also spearheading research into new, women-specific screening methods and heart disease prevention recommendations.

Jefferson has the distinction of being the FIRST HOSPITAL in Pennsylvania to implant a Jarvik 2000 Heart Assist System, which SAVED THE LIFE of a man suffering from chronic heart failure.

RESEARCHERS AT JEFFERSON recently discovered that GRK2, a protein that plays an IMPORTANT REGULATORY ROLE in heart function, is ELEVATED in patients with failing hearts.

Ventricular remodeling surgery, along with valvular repair is also a surgical option in select patients with severe heart failure. Patients with severe heart failure may benefit from a ventricular assist device (mechanical heart pump) which is surgically implanted to improve cardiac function. These assist devices are available as a bridge to transplant. In certain patients, the assist device may be a permanent pump when transplant is not an option. The Joint Commission, on behalf of the Centers for Medicare and Medicaid Services, has certified Jefferson as a VAD (ventricular assist device) Destination Therapy Facility.

1 Year Transplant Survival

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Prevention is an increasingly important aspect of our care, especially for patients with a family history of cardiac problems. In fact, a family history of premature coronary artery disease may be an even stronger risk factor for women than for men, especially in young women. In addition to advanced blood testing and analysis to determine overall risk, patients receive gender-specific risk-factor counseling too. Our clinical physicians will map out tailored programs to reduce the risk of cardiovascular disease, which may include lifestyle changes, weight management, diet and exercise, smoking cessation and medication to maintain appropriate cholesterol and blood pressure levels.

The providers in the Women’s Heart and Vascular Program have expertise with gender-specific issues that can help clarify diagnostic and treatment choices for women. For example, women who have a family or personal history of breast cancer will receive expert consultation in choosing diagnostic modalities that will determine their cardiovascular risk while minimizing exposure to radiation. The program’s cardiologists, nurses and counselors have the knowledge and expertise to guide women on the often-conflicting data on hormone replacement therapy and heart disease, which must be an individualized decision. Indeed, the peri-menopausal period is when many women first present or are diagnosed with heart disease.

At the request of the patient or the primary care physician, Jefferson’s prevention and clinical care cardiologists and support professionals are available for consultation in facilities throughout the region — from Philadelphia to suburban communities west of the city to areas in southeastern New Jersey. This system of satellite offices in and around the metropolitan area provides robust services for a large number of people close to their homes. Often the first line of defense in cardiac care, these physicians meet with 30,000 outpatients a year and diagnose everything from high cholesterol to advanced heart failure.

When needed, our clinical care physicians send patients to the Center City campus with direct access to Jefferson’s comprehensive cardiovascular infrastructure, including all the essential non-invasive diagnostic resources that help them determine specific treatment protocols for patients.

Among JEFFERSON’S TEAM OF EXPERT heart and vascular physicians are talented women with an UNDERSTANDING of the unique challenges of CARING FOR THE FEMALE HEART.
Our interventional cardiologists, who are available 24/7, offer the region’s widest variety of alternatives to surgery for opening blocked coronary arteries. These techniques include balloon angioplasty, coronary artery stenting, excimer laser angioplasty and rotational atherectomy often guided by intracardiac ultrasound and intracoronary pressure measurements.

Innovation is the reason our cardiac catheterization laboratory provides so many options for patients and their referring physicians. Our interventional cardiologists were the leaders in the development of coronary artery stenting to treat coronary artery disease. Since the landmark STRESS trial, which demonstrated the benefit of stents compared with balloon angioplasty, we have been at the forefront of other groundbreaking procedures such as angiojet thrombectomy to remove thrombus from the artery and intracoronary brachytherapy to treat recurrent blockage within stents. We were also the first in the region to implant drug-coated stents.

We continue to develop new interventional techniques to improve patient outcomes in complex and difficult procedures. Recently, we demonstrated that the use of a readily available topical lubricant can aid in stent deployment when all other means have failed, avoiding potential complications and the need for surgery. We have also shown that a commonly used calcium channel antagonist (nicardipine) can effectively improve the diminished “no-flow” state that frequently occurs in the blood vessel following balloon angioplasty and stent placement.

Following coronary artery stenting, dual antiplatelet therapy is mandatory to prevent clot formation within the stent. An allergic reaction to one of these agents, clopidogrel, is not uncommon. Jefferson’s interventional research team recently reported results of a study showing that treating these patients on a short-term basis with a combination of corticosteroids and antihistamines can alleviate symptoms of an allergic reaction, allowing patients to remain on the medication.

We perform percutaneous repair of congenital defects such as atrial septal defects and patent foramen ovale (PFO). In collaboration with the world-renowned Jefferson Headache Center, we are participating in a multicenter randomized study to assess the efficacy of percutaneous patent foramen ovale closure in the treatment of migraine headaches.

**CASE STUDY:**

**PATIENT:** Frank L.

**SURGEON:** David L. Fischman, M.D., James Diehl, M.D.

**DX:** Coronary artery disease, mitral valve disease

**SOLUTION:** Percutaneous coronary interventions including brachytherapy and mitral valve replacement surgery

The patient, an 81-year-old retired male, sustained his first myocardial infarction at the age of 68 for which he was treated with coronary stenting. Eight years following this procedure, he underwent brachytherapy for his restenosis. Three years ago, at the age of 78, he underwent mitral valve replacement surgery for mitral insufficiency. He has since remained asymptomatic and very active. This past year, he bowled two perfect games (300) within six days in a men’s league in Philadelphia.
Focusing the Diagnosis and Treatment of Vascular Disease

In Jefferson’s Vascular Center, clinicians in many related disciplines — vascular surgeons, medical vascular specialists, cardiologists, radiologists, podiatrists, hyperbaric oxygen wound care experts and pharmacists — work together as a team in a state-of-the-art facility designed to enhance clinical outcomes.

The Jefferson Vascular Center provides an integrated, multi-disciplinary approach to the treatment of patients with vascular diseases and thrombotic disorders. Patients receive comprehensive care involving physician evaluation, non-invasive testing and treatment planning including medical therapy, traditional open and endovascular surgery, anticoagulation services and wound care, all in one convenient location.

Patients who come to Jefferson may benefit from participation in clinical trials (ADOPT and MAGELLAN) evaluating two new oral anticoagulants in the prevention of DVT/PE in acutely ill hospitalized medical patients. These new drugs will enhance patient’s lifestyles by reducing or eliminating the need for blood test monitoring and restrictions related to food and drug interactions.

Diagnostic examinations have assumed a critical role in evaluating and managing vascular problems, and Jefferson provides the latest and best imaging technology available as well as subspecialty trained cardiovascular radiologists. A fully staffed non-invasive vascular laboratory is located within the center which offers point of care service. In addition, our patients have direct access to many other innovative imaging modalities including CT and MR angiography. Jefferson utilizes a new 256-slice CT scanner, one of the most advanced CT systems available anywhere, for non-invasively visualizing the aorta and peripheral arteries, as well as the coronary arteries, with superb clarity — and with lower radiation doses than those used in conventional imaging procedures. This allows patients to receive high-quality arterial and venous imaging that was formerly only available through more invasive methods.

Jefferson has multiple leading-edge, minimally invasive vascular laboratories capable of 3D vascular imaging which provides invaluable assistance for complicated interventional procedures. In addition, Jefferson is one of only a few hospitals to have a dedicated endovascular OR suite, equipped to perform a wide range of minimally invasive endovascular and open vascular procedures. Some patients with complex aortic and branch vessel disease may require hybrid treatments involving a combination of open surgical and endovascular techniques not possible in other settings. We are one of only five centers nationwide participating in the STABLE trial which evaluates a novel endovascular stent system designed to seal complicated Type B aortic dissections. Endovascular aortic repair is the treatment of choice for many vascular diseases; at Jefferson, over 75 percent of our operative patients are now treated with these minimally invasive technologies.

Three-dimensional 256-slice CT scan of abdominal aortic aneurysm.
It starts with one call by a referring physician to the Jefferson Transfer Center (1-800-JEFF-121) to initiate a time-sensitive emergency transfer. The Jefferson Transfer Center then makes all the necessary air and ground transportation arrangements. Our JeffSTAT helicopter or ambulance, staffed by experienced paramedics, EMTs and nurses, is dispatched to pick up the patient.

Upon arrival at Jefferson all key resources — from the catheterization laboratory to portable echocardiography and advanced bedside hemodynamic monitoring — are available, providing fully integrated services to those who require rapid access to care. The precise coordination among Jefferson’s emergency medicine physicians, cardiologists, and surgeons is also a crucial part of our integrated approach to patient management. Sophisticated dispatch and communication systems ensure that the flow of information among the team members is immediate and exact. Cardiologists, cardiac surgeons, anesthesiologists, nurses and other specialists work side-by-side to manage critical care patients comprehensively as the need arises.

Unlike critical care units at other hospitals, our highly experienced critical care specialists support both the medical and surgical cardiac care units on a full-time basis. This means that critically ill patients can be assured that knowledgeable and experienced intensivists attend to their particular needs at all times.

Further, our critical care physicians and nurses believe that the families of patients play a crucial role in the recovery process and the management of care. We understand the need to communicate and coordinate care with family members.

Jefferson has again been designated as a CHEST PAIN CENTER by The Society of Chest Pain Centers, based on demonstrated expertise in eight key areas, including categories in emergency services, process improvement, community outreach and training.

**CASE STUDY:**

**PATIENT:** Steven W.

**SURGEON:** Paul DiMuzio, M.D.

**DX:** Motor vehicle accident, thoracic aortic transection, paraplegia

**SOLUTION:** Endovascular repair of aortic transection, spinal decompression

Steven, 18 years old, was transferred to Jefferson following a major motor vehicle accident. His problems included thoracic aortic transection, severe pulmonary contusion and paraplegia secondary to spinal cord injury. After stabilization by the Critical Care Trauma Team, he was taken to Jefferson’s state-of-the-art endovascular surgical suite where a stent-graft was placed within his thoracic aorta via a simple cut-down on the femoral artery, successfully excluding the transection. Steven subsequently underwent successful spine surgery, and after a two-week stay, was discharged to Jefferson’s Rehabilitation Unit for spinal cord therapy. Four months after his surgery, Steven is walking normally and fully recovered from each of his injuries.
Getting the Right Diagnosis Through Non-Invasive Cardiology

An emerging technology that is available at Jefferson is 3D transesophageal echocardiography (TEE). Leading-edge imaging enables cardiologists and surgeons to see vivid, three-dimensional images of the heart valves, walls and chambers. Because the esophagus is close to the atrium, it is possible to use a higher frequency probe (7 megahertz), which provides a clarity and resolution of images not possible with regular echocardiography. Imaging planes previously unavailable using any other modality are now accessible for study.

With TEE, the full dimension of the heart or valve is visualized in real time, so clinicians are better informed about the condition before an actual repair procedure begins. Real time 3D TEE helps guide the accurate catheter-based placement of new “clamshell” devices that close holes in the heart without surgery. It can assist cardiothoracic surgeons in determining approaches to mitral valve repair. The 3D imaging of regurgitant jets and quantitation of the severity of the leak of damaged heart valves can help guide both medical and surgical management. It will soon be used to guide placement of prosthetic aortic valves both by catheter and by combined catheter and limited surgery in patients unlikely to tolerate total surgical repair.

Another new echocardiography technique available at Jefferson is speckle tracking for wall stress and strain analysis and guidance of pacemaker resynchronization of the heart in cardiomyopathy.

In addition to performing more than 8,000 echocardiography studies each year, Jefferson’s certified non-invasive cardiovascular diagnostic testing laboratories provide a full array of stress testing modalities to detect heart disease. Each study is performed by board certified cardiologists and radiologists and highly trained technicians and nurses who are dedicated to non-invasive cardiovascular diagnostics.

“Surgeon’s view” of the mitral valve through 3D transesophageal echocardiography. Posterior leaflet segments P2 and P3 are prolapsed. The arrow indicates a partial flail of the P2 segment with torn chordae causing severe mitral insufficiency.
Discovering and Developing Innovations in Cardiac Care

The discovery and development of innovative treatments is driven by an innovative spirit. Jefferson is one of the top National Institutes of Health-funded cardiovascular research institutions in the country, with over $30 million in funding.

We are involved in over 10 NIH-funded translational studies in two main categories: heart failure (i.e. the molecular mechanisms that trigger or exacerbate failure) and vascular disease. This work includes biomarker studies in which key changes in biological factors, like proteins, can be tested to more accurately and quickly diagnose disease and identify the best treatments. Our investigations include a study on the role of adenosine receptors in the heart and the part they play in heart failure or in healing the heart after injury. Jefferson was awarded a $12 million NIH Program Project Grant to specifically study mechanisms of cardiac injury and repair including understanding the cardiototoxicities of anti-cancer agents that can prevent cancer patients from receiving potentially life-saving therapies, as well as improving the function of the failing heart through gene and stem cell therapy.

We have over 30 ongoing studies in heart failure, electrophysiology, atrial fibrillation, venous thrombosis and cardiac surgery. Notable studies include the clinical evaluation of the JARVIK device, in which Jefferson is the only regional center enrolling subjects, the mechanism of cardiac injury and repair including understanding the cardiotoxicities of anti-cancer agents that can prevent cancer patients from receiving potentially life-saving therapies, as well as improving the function of the failing heart through gene and stem cell therapy.

As one of five academic coordinating centers, Jefferson is managing enrolling centers in our region for two multicenter clinical trials. The ASCEND-HF Trial is the largest study ever of patients hospitalized with acute heart failure, designed to assess the long-term clinical outcomes of a drug used to relieve the symptoms of patients with acutely de-compensated heart failure. Jefferson also participated in the landmark HF-Action Study as part of the coordinating center that managed 82 participating centers across the U.S., Canada and France. The study identified exercise training as a safe and efficacious treatment for heart failure patients.

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<td>ECHO CRT</td>
<td>Dr. R. Rubin</td>
<td>A study to compare monthly versus quarterly review of Cardiac Compass® Trends with Optobx for initiation of clinical action</td>
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<td>OPTIMOL</td>
<td>Dr. P. Mathre</td>
<td>A study that measures the potential genetic changes in heart structure and function in patients newly diagnosed with a weakened heart muscle</td>
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<td>IMAC</td>
<td>Dr. P. Mathre</td>
<td>A study to evaluate the effectiveness and safety of patients receiving the Cornl Costar drug filled stent compared to patients receiving the Taxus drug coated stents</td>
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<td>INTERVENTIONAL</td>
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<td>COSTR</td>
<td>Dr. M. Savon</td>
<td>A study to evaluate the incidence of headache reduction in subjects with migraine and PFO using theAMPLATZER/PFO Occluder compared to medical management</td>
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<td>prMOB</td>
<td>Dr. D. Fisch</td>
<td>A study to demonstrate that the solid state of emission detectors of the Digirad upright Cardiac Spect cameras can be used with a low dose fluorescence x-ray generator to produce an attenuation map of the patient</td>
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<td>MUCRINE MEDICINE</td>
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<td>X-AXT SYSTEM</td>
<td>Dr. C. Hansen</td>
<td>A study to compare the effectiveness of Daughters vs placebo in the development of blood clots in patients whose Warfarin is held prior to a procedure/surgery</td>
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<td>VASCULAR</td>
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<td>BRIDGE</td>
<td>Dr. G. Merli</td>
<td>A study to evaluate the potential effectiveness of rivaroxaban in the prevention of blood clots in patients who have been hospitalized for a medical illness</td>
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<td>MAELLEN</td>
<td>Dr. A. Macchihetti</td>
<td>A study to evaluate Apixaban vs Enoxaparin for prevention of blood clots</td>
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<td>ADOP</td>
<td>Dr. G. Merli</td>
<td>A study to evaluate Apixaban for prevention of blood clots</td>
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<td>DISCHARGE ALERT</td>
<td>Dr. G. Merli</td>
<td>A quality improvement registry that focuses on reducing the risk of a venous Thrombembolism occurring after being discharged from the hospital</td>
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<td>CT SURGERY</td>
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<td>JARK</td>
<td>Dr. S. Silvestry</td>
<td>A study to evaluate the Janrik 2000 left heart assist system in HF patients awaiting heart transplant</td>
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<td>TRANSLATIONAL HF</td>
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<td>JARK</td>
<td>Dr. W. Koch/Dr. D. Whelan</td>
<td>A study measuring GFR in the blood to diagnose and treat patients with heart failure</td>
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<td>BARK</td>
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<td>JEFFERSON COORDINATING CENTER</td>
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<td>ASCEND-HF AND SERVICES</td>
<td>Dr. D. Whelan</td>
<td>Site management of approximately 30 enrolling centers in ASCEND</td>
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<tr>
<td>TRACER AND SERVICES</td>
<td>Dr. D. Whelan</td>
<td>Site management of approximately 30 enrolling centers in TRACER</td>
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</table>
What makes this program unique? With a primary goal of, and an unwavering commitment to, producing master clinicians, the Jefferson Cardiology Fellowship is one of the few programs to combine comprehensive training in clinical cardiology and academic research and education. Jefferson fellows gain a solid foundation as practitioners, researchers and educators — all at the highest levels of achievement.

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The Cardiology Fellowship at JEFFERSON has trained more than 150 cardiologists, practicing throughout the U.S.
On the Cover: Reginald T. Ho, M.D., is board-certified in cardiovascular disease and clinical cardiac electrophysiology. A fellow in the American College of Cardiology and a member of the Heart Rhythm Society, he also authored the textbook *Electrophysiology of Arrhythmias*. While an undergraduate at the University of Notre Dame, Dr. Ho was the place-kicker for the National Championship-winning football team and was recognized by *Sports Illustrated* as the Player of the Week for his performance against Michigan State University.