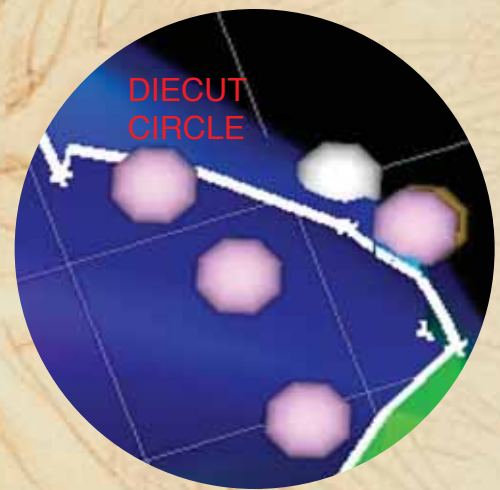


Jefferson Heart Institute and Cardiovascular Program



Thomas Jefferson University Hospital
Jefferson Medical College of Thomas Jefferson University

The Jefferson Heart Institute and Cardiovascular Program provide the highest quality comprehensive medical and surgical cardiovascular care clinical services. Our award-winning cardiologists and heart surgeons offer tailored therapy and multidisciplinary expertise. State-of-the-art clinical and basic research seeks to transform the diagnosis and treatment of cardiovascular disease.



DIECUT
CIRCLE

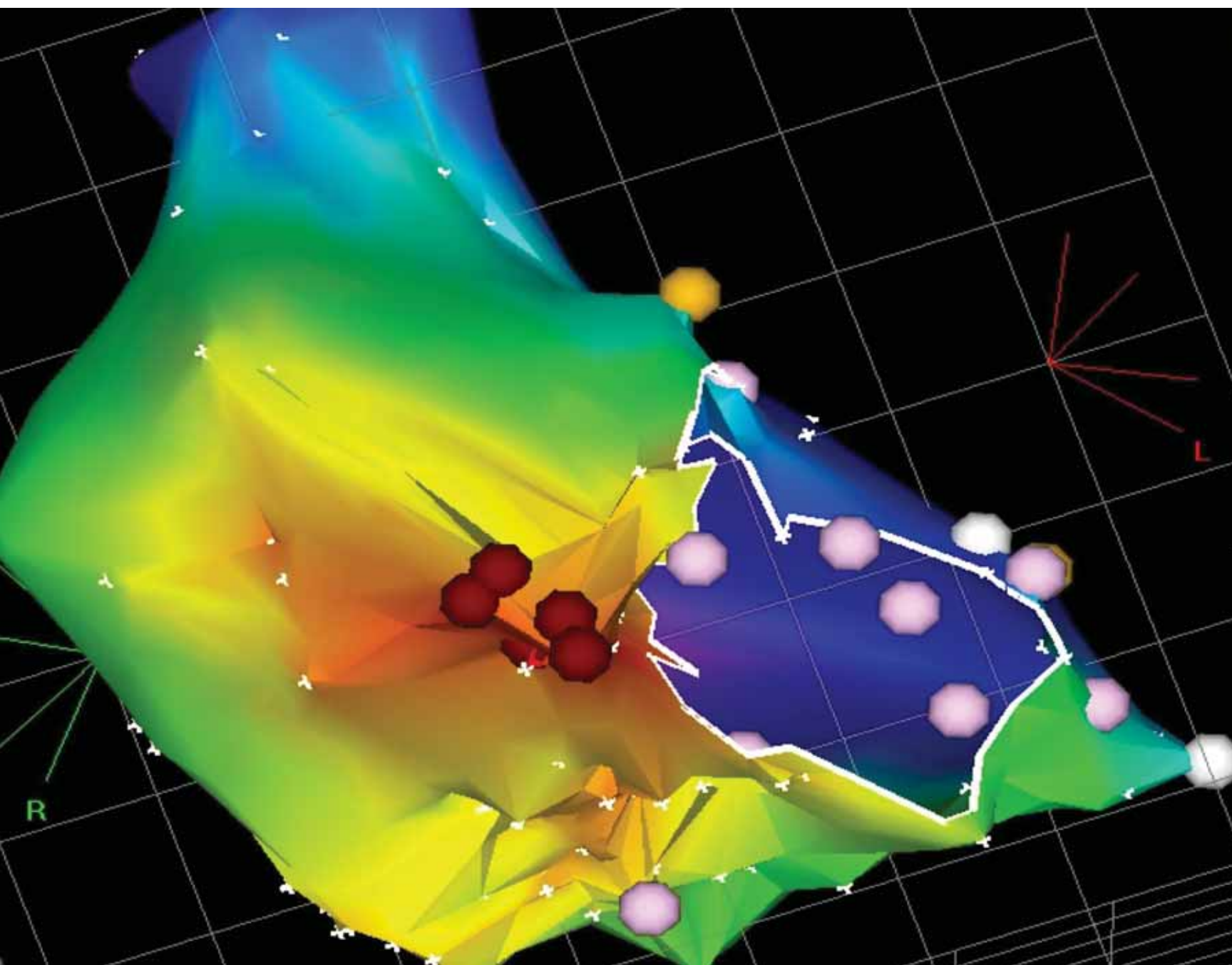
The Jefferson program offers a comprehensive range of treatment options that are unequalled in the Delaware Valley. In addition to aggressive heart failure therapy, the Advanced Heart Failure and Cardiac Transplant Center provides access to the full spectrum of life-saving heart care, from the least invasive to state-of-the-art transplants.

Our physicians delivered comprehensive medical and surgical care to more than 50,000 patients with heart disease in 2004. This overview of the Jefferson cardiology program highlights our research and clinical offerings; we are proud to work together as we continue to diversify and strengthen our team.

Howard H. Weitz, MD
Associate Director, Division of Cardiology
Co-Director, Jefferson Heart Institute

James T. Diehl, MD
Director of Cardiothoracic Surgery, Thomas Jefferson University Hospital
Clinical Professor, Jefferson Medical College

Bernard L. Segal, MD
Director, Division of Cardiology, Jefferson Medical College
Director, Jefferson Heart Institute



Contents	Clinical Cardiology	2
	Advanced Heart Failure and Cardiac Transplant Center	6
	Clinical Electrophysiology.....	8
	Non-Invasive Cardiology	10
	Invasive (diagnostic and interventional) Cardiology.....	12
	Center for Translational Medicine.....	14
	Multidisciplinary Programs	16
	Cardiac Surgery	18
	Cardiac Care Close to Home	20
	Cardiovascular Training Program	22
	Educating the Next Generation	24
	Contacting Jefferson Cardiologists.....	25



Clinical Cardiology

Jefferson's Division of Cardiology faculty and research staff conducts more than 50 clinical research projects annually. The program allows investigators to conduct leading-edge research, and provides an educational program for new investigators, fellows, residents, and medical students.

Defining Cardiac Risk

The Sidney Kimmel Cardiovascular Disease Prevention Center is committed to patient education and care, research in the area of cardiovascular disease and diabetes, and educational programs for residents, fellows, and practicing physicians. The Center's mission is to prevent the occurrence and progression of atherosclerotic disease and thereby prevent heart attacks, strokes, and advanced peripheral vascular disease. An extensive clinical research program has been instrumental in the development of the major therapies for dyslipidemia, as well as novel treatments that are currently under development. In addition, the Center's research includes nutritional elements that can supplement the effects of low-fat diets and drug therapy.

Cardiovascular Disease Prevention Center
215-955-5050
www.JeffersonHospital.org/heart

Emergency and Intensive Cardiac Care

Coronary Care Unit

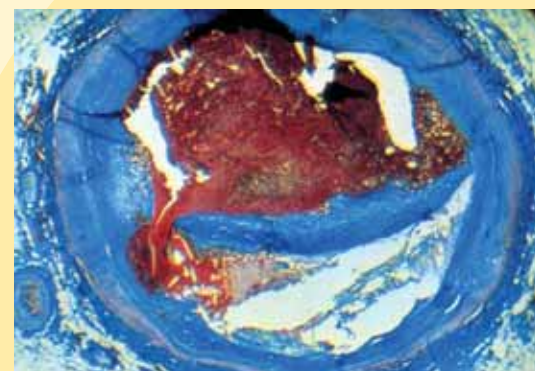
The leadership of Jefferson's Coronary Care Units (CCU) oversees patient care, research, and education on a daily basis and triages patients to the CCU and other units, including telemetry. The Program Director may be called upon to evaluate patients in the telemetry unit who are considered clinically stable, to be either discharged from the hospital or transferred off service, allowing greater bed capacity for patients with serious or critical cardiovascular problems.

Working with the Emergency Department, patients with chest pain and significant ECG changes can be offered angiography and percutaneous interventions to establish reperfusion in less than 90 minutes, and thrombolytic treatment in less than 30 minutes.

Communication with patients, family members, and other caregivers, as well as the triage of seriously ill patients are considered an integral part of the provision of high-quality medical care. The ongoing training and assessment of physical diagnosis skills among the students and house staff, as well as mentoring in the development of effective communication in the Cardiology critical care setting, are top priorities.

Coronary Care Unit
215-955-9465 or 215-955-3323
www.JeffersonHospital.org/heart

- The Kimmel Cardiovascular Disease Prevention Center seeks to identify and prevent progression of disease through better understanding of Lipoprotein(a), C-reactive protein, homocysteine levels, lipoprotein subfractions, and small dense LDL cholesterol.
- Studies have been approved to test the potential for statin drugs to slow or reverse atherosclerosis and for testing the effects of LDL-apheresis (removal of LDL particles from the bloodstream). This outpatient technique utilizes a new and safe extracorporeal filtration of blood plasma to reduce plaque formation in patients in whom drug therapy cannot accomplish this objective.
- New technology is being developed to help detect early atherosclerosis through ultrasound and ultra-fast CT scanners, which help to link basic research and clinical practice by looking at early effects of lipoproteins on the myocardium and vascular system.



Depiction of a postmortem, stained, cross-section specimen of a fissured atherosclerotic plaque of a diseased human coronary artery. The blood clot occurs after edge breakage of the blue-stained rooflike cap of a vulnerable plaque, as its liquefied lipid pool of cholesterol esters seeps out to meet the arterial blood, thereby forming a blood flow barrier.

Clinical Cardiology continued

- Recent research at Jefferson in endocrinology sheds light on the mechanisms leading to increased risk of macrovascular disease in obesity and diabetes.

Researchers in the Division of Nephrology are working in collaboration with the Genomics Laboratory in the Center for Translational Medicine (see page 14) to investigate possible genotypes linked with phenotypic types of hypertension such as salt-sensitive hypertension, obesity hypertension, and hypertension among diabetics.



Ongoing clinical trials at Jefferson test new medications for the treatment of diabetes and related complications. Comprehensive clinical programs support management of weight loss as well as all forms of diabetes and related complications.

Endocrinology and Cardiology Risk Factors

Research has shown that the American epidemic of obesity leads to the “metabolic syndrome,” which heightens cardiovascular risk. Current research studies in Jefferson’s Endocrinology Division have identified potential links between a protein secreted by fat tissue called adiponectin and abnormalities in blood vessels that contribute to the development of atherosclerosis.

In NIH-funded laboratory studies, Jefferson physicians are exploring the cellular mechanisms triggered by adiponectin in blood vessels in order to determine therapeutic targets that reduce the risk of cardiovascular disease. The Division of Endocrinology, Diabetes, and Metabolic Diseases offers a number of patient-centered programs for cardiovascular disease prevention, including nutritional counseling for overweight patients and education for patients with diabetes.

Division of Endocrinology
Outpatient Education Programs
215-955-1925
www.JeffersonHospital.org/endocrinology

Preventive Health Care Program

For 20 years, the Preventive Health Care Program of Thomas Jefferson University’s Division of Internal Medicine has helped the business community in the Delaware Valley protect employees’ health by stressing the preventive aspects of medical care. The program uses thorough, periodic physical examinations to identify risks for disease before illness occurs, as well as a range of other services tailored to the needs of each participant. This approach helps maintain a healthy and productive workforce while also controlling healthcare costs.

Cardiovascular health is at the forefront of Jefferson’s preventive care concerns. Examinations include a review of personal and family history, nutrition review and education, as well as a detailed risk analysis for cardiovascular disease, cancer, and osteoporosis. Also available are personalized nutrition consultations, analysis of medical history and lab results, treadmill electrocardiograms, and more.

Preventive Health Care Program
215-955-0726
www.JeffersonHospital.org/bhs







Advanced Heart Failure and Cardiac Transplant Center

The Advanced Heart Failure and Cardiac Transplant Center, established in 2004, offers the latest in cardiovascular medicine, including a multidisciplinary approach to care and improvements to the efficiency of cardiac function with left-ventricular assist devices, pace-makers, and heart transplantation.

The program offers sophisticated support systems for patients with end-stage heart failure (Class III and IV) in preparation for device assistance and other bridging techniques leading to cardiac transplantation. The Cardiac Transplant Program, which began in 2004, performed seven heart transplants in 2005. More than 1,900 new patients visited the Advanced Heart Failure and Cardiac Transplant Center in its first two years.

A unique approach, a critical need

The Jefferson program makes it possible to respond to the rapidly growing number of patients with heart failure with a comprehensive approach to the disease process. Jefferson's aggressive program stresses interpersonal patient care and a multidisciplinary approach that integrates science, health, psychosocial and social work to create an optimum environment for each patient's return to health. Jefferson's Heart Institute is based at a 19,000-square-foot space at 925 Chestnut Street in Philadelphia, offering state-of-the-art facilities.

Advanced Heart Failure Center
215-955-2050
www.JeffersonHospital.org/heart

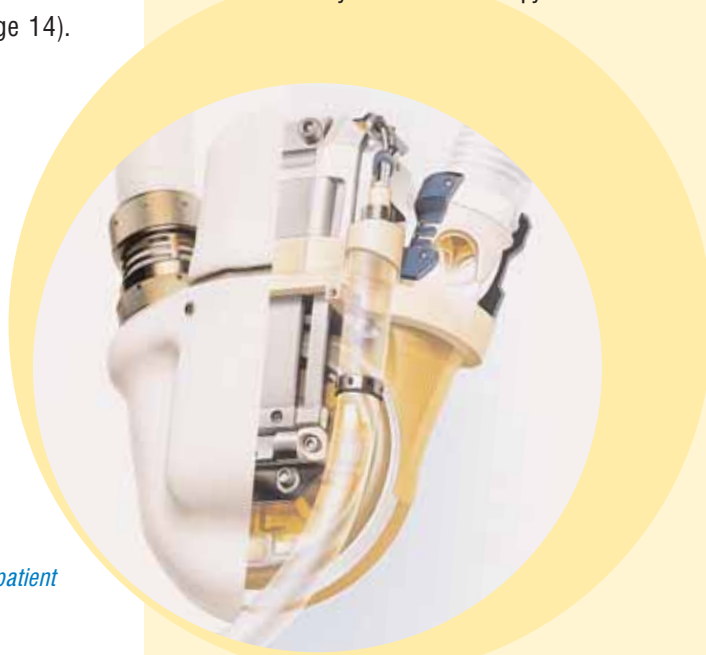
Diverse and extensive experience

The Advanced Heart Failure and Cardiac Transplant Center's cardiologists and surgeons have combined experience of more than 1,100 heart transplants and 35 years in end-stage heart failure and cardiac transplantation. Heart failure cardiologists work alongside transplant nurses and heart failure coordinators, who assist with dietary issues, social work needs, and any related kidney and liver problems. For heart transplants, the Heart Failure Center teams with the surgical transplant team in the Division of Cardiothoracic Surgery (see page 18).

Inspiring and using the latest research

In addition to conducting heart failure outcomes analyses, the Advanced Heart Failure and Cardiac Transplant Center has embarked on a multidisciplinary research initiative and works closely with Jefferson's Center for Translational Medicine to bring state-of-the-art research "from the bench to the bedside" (see page 14).

- The Advanced Heart Failure and Cardiac Transplant Center has linked with the Center for Translational Medicine to participate in an NIH-funded study of findings indicating that normalization and enhancement of dysfunctional bAR signaling can hasten reverse remodeling after unloading, and that the bAR kinase (bARK1) can play a critical role in the pathogenesis of heart failure.
- Members of Jefferson's Heart Failure program lead the research to develop efficacy of biventricular pacing in patients with heart failure.
- The Center participates in a wide variety of multi-center heart failure trials, including MOMENTUM on the efficacy of the Orqis™ Medical Cancion™ Cardiac Recovery System (CRS), designed to unload and rest the heart while temporarily assisting in the perfusion of the organs and tissues of the body.
- The Center carries out multiple studies with the Division of Electrophysiology, including the CareLink® Internet-based remote monitoring service for patients with implanted cardiac devices as well as studies designed to enable physicians to identify those patients most likely to benefit from resynchronization therapy.



Novacor® LVAD is the first mechanical circulatory device to support a single patient for more than six years.

Clinical Electrophysiology



The Cardiac Electrophysiology Laboratory suite, opened in August 2005, is equipped with two large laboratories for invasive cardiac electrophysiology procedures, a room for more limited procedures, and an area for patients and families.

Jefferson is a regional leader in the diagnosis and treatment of cardiac arrhythmias. Patients with a variety of heart rhythm disorders are referred to the medical staff of the Electrophysiology Laboratory for evaluation and management. The physicians evaluate patients with a number of noninvasive tests, such as continuous ambulatory ECG monitoring, and prescribe appropriate therapy.

In some cases, physicians may refer patients to the Cardiac Electrophysiology Laboratory, where they perform invasive procedures, utilizing computer-aided diagnostic and evaluation techniques – including computerized mapping systems – to precisely characterize and locate arrhythmias. As appropriate, the EP physicians perform radiofrequency (RF) catheter ablation, a nonsurgical alternative to treat arrhythmias such as supraventricular tachycardia, atrial flutter, and atrial fibrillation. Following RF ablation most patients are free of symptoms without the need for drug therapy.

Jefferson is also a regional leader in implanting devices to treat

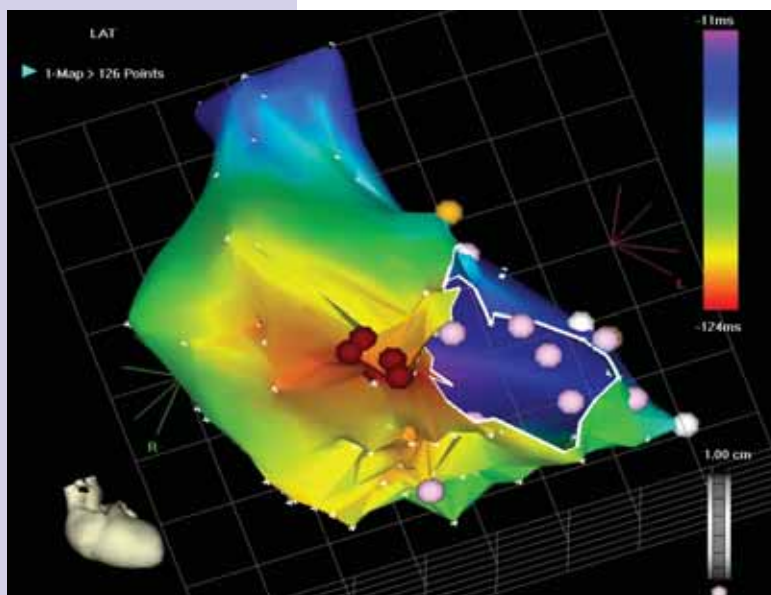
cardiac arrhythmias. These include permanent pacemakers to treat bradyarrhythmias and implantable cardioverter-defibrillators (ICDs) to treat life-threatening ventricular arrhythmias. EP physicians implant both pacemakers and ICDs in Jefferson's state-of-the-art Cardiac Electrophysiology suite.

Select patients with congestive heart failure may be candidates for cardiac resynchronization therapy (CRT), a new procedure that involves implantation of pacing leads in both the right and left ventricle to coordinate cardiac contraction. In cases where intracardiac leads must be removed due to infection or malfunction, the EP physicians perform lead extraction procedures using a laser sheath, to prevent the need for removal by open-heart surgery.

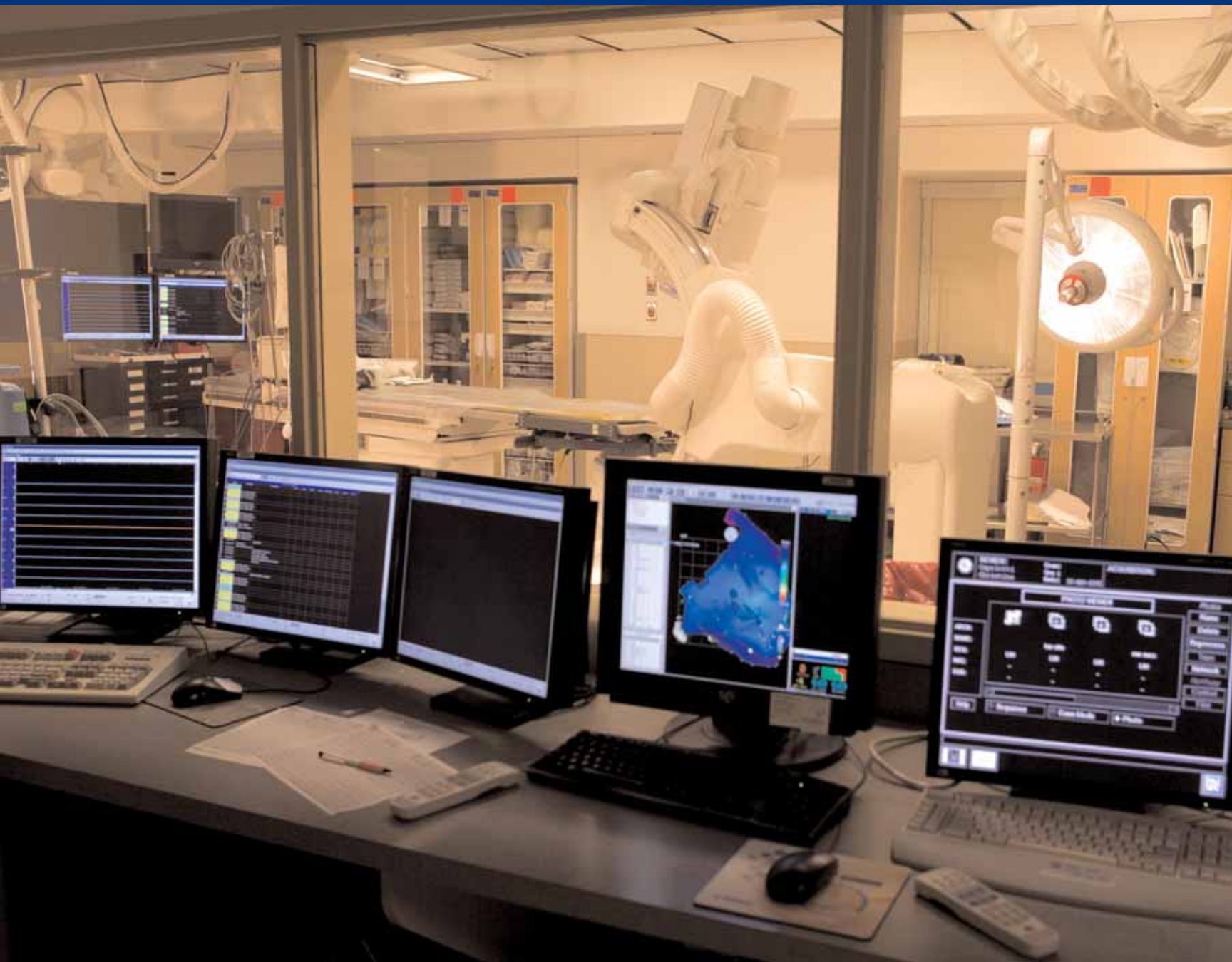
The EP program is also involved in a number of clinical research studies, in which the staff investigates new drugs and devices to treat a variety of cardiac arrhythmias. This work dovetails with Jefferson's Clinical Research Program (see page 16).

Jefferson has three full-time physicians, who are board-certified in Clinical Cardiac Electrophysiology (CCEP). They also supervise the Fellowship Program in CCEP, which trains new physicians each year and is certified by the American Council for Graduate Medical Education (ACGME).

Electrophysiology Laboratory
215-955-7305
www.JeffersonHospital.org/heart



Electroanatomic map of a right atrial tachycardia along with the sites where radiofrequency catheter ablation was delivered and successfully terminated the tachycardia (red dots).



Left: Recordings from a patient with symptomatic Wolff-Parkinson-White Syndrome (pre-excitation) demonstrate surface ECG as well as intracardiac electrograms. This shows a recording from a probe at the successful target site for radiofrequency ablation.

Right: Intracardiac recordings in the same patient during supraventricular tachycardia, which was induced by programmed electrical stimulation.



Non-Invasive Cardiology

Since non-invasive methods are critical to the accurate diagnosis of heart disease, Jefferson physicians utilize them to focus on early diagnosis and expert treatment. Jefferson's non-invasive cardiovascular diagnostic testing laboratories utilize a wide array of tests to help detect heart disease without causing patients discomfort. These include transthoracic echocardiography (ultrasound); stress tests; stress echocardiography testing; electrocardiography; dobutamine, dipyridamole, and adenosine pharmacologic stress studies; and nuclear stress tests employing dual isotope (thallium and technetium) techniques (done in conjunction with the division of nuclear radiology).

Echocardiography employs the latest echocontrast and tissue doppler advances to enhance the imaging quality and hence provide more reliable diagnostic information to the referring physician. Jefferson performs thousands of these studies each year on inpatients and outpatients, utilizing the latest technological advances available.

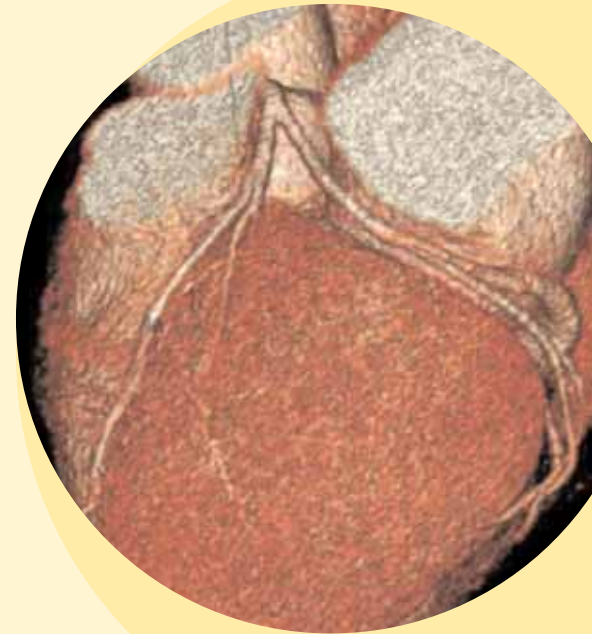
Non-Invasive Cardiology
215-955-5050
www.JeffersonHospital.org/heart

Echocardiography Laboratory

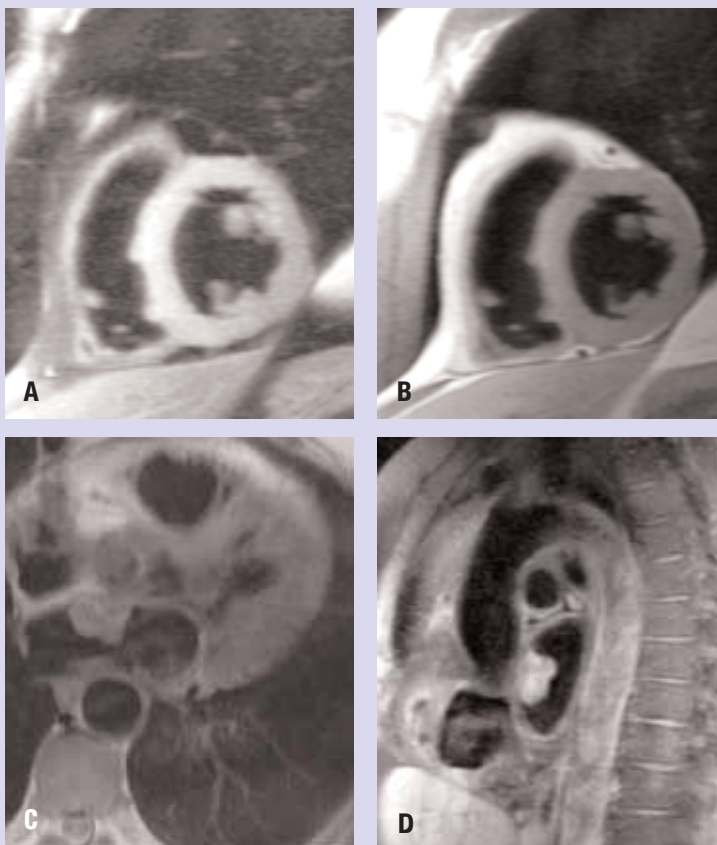
The Echocardiography Laboratory at Jefferson is actively involved in the investigation of new real time 3D echocardiographic technology, and is engaged in a feasibility study of exercise stress echo and a 3D

assessment of different forms of valvular disease. Jefferson participates in several multi-center trials of echo contrast in the evaluation of cardiac perfusion compared to nuclear imaging and angiographic findings. The laboratory also collaborates with the Radiology Department in the development of CT perfusion imaging and a potentially exciting new technology for non-invasively imaging the coronary arteries.

Echocardiography Laboratory
215-955-7100
www.JeffersonHospital.org/news/2002/article7939.html



A 3-D volume rendering of a coronary CT angiogram showing normal left main, left anterior descending, and left circumflex arteries. Courtesy of the Department of Radiology, Thomas Jefferson University Hospital



Images A and B show short axis of left ventricle and right ventricle outflow in normal, cardiac-gated, during suspended respiration (at 1.5T): blood-suppressed fast-spin echocardiogram (with and without fat suppression).

Abnormal views show transverse (C) and sagittal (D) blood-suppressed, fat-suppressed images.

Invasive (diagnostic and interventional) Cardiology

The Cardiac Catheterization Laboratory is conducting a clinical trial of a minimally invasive procedure in which an interventional cardiologist threads, through an incision in the patient's right or left femoral vein and continuing to the PFO flap, a sheath that houses a small device that looks like a two-sided umbrella. Once the device is in position, the cardiologist opens it up on each side of the PFO and applies to seal the flap.

Cardiac Catheterization Laboratory

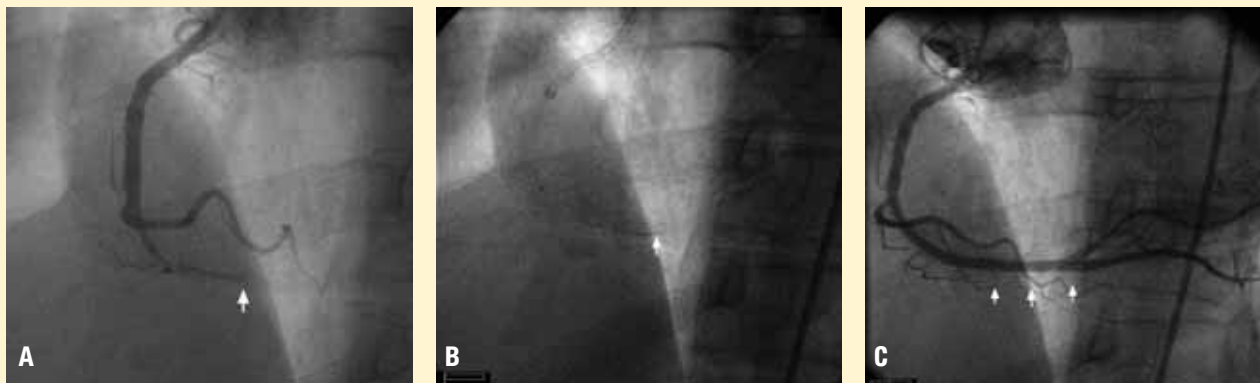
Thomas Jefferson University Hospital's Cardiac Catheterization Laboratory offers the region's widest variety of alternatives to surgery for opening blocked coronary arteries. These techniques and technologies include balloon angioplasty; coronary artery stenting; excimer laser angioplasty; intracoronary ultrasound; and rotational, directional, and transluminal extraction atherectomy.

Jefferson Hospital cardiologists have also pioneered some of the newest interventional procedures, including:

- Drug-coated stents. In 2003, Jefferson became one of the nation's first hospitals to use coated stents to treat coronary blockage.

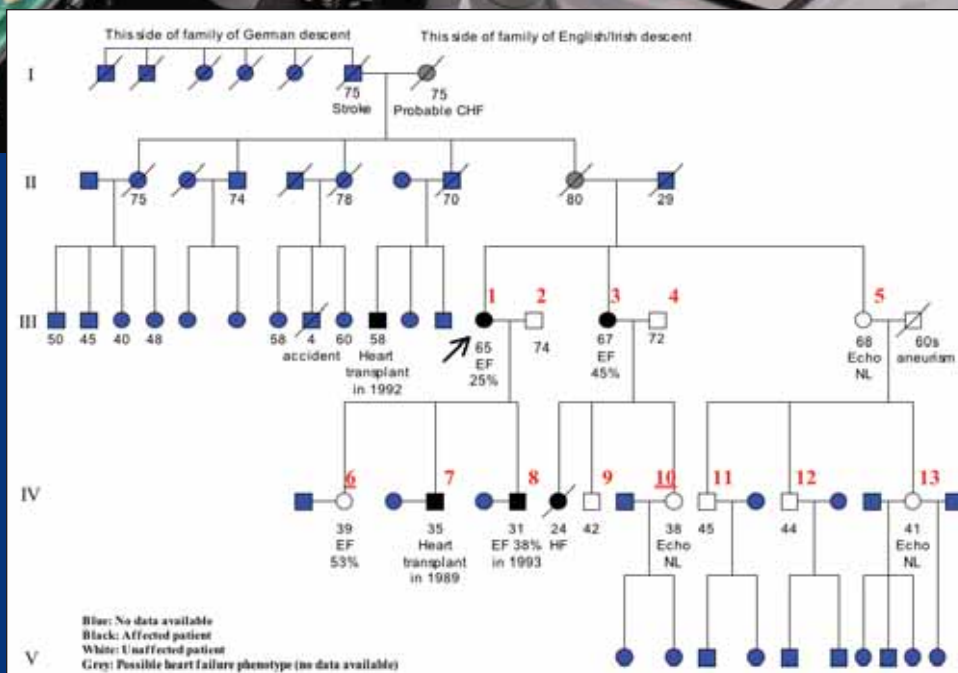
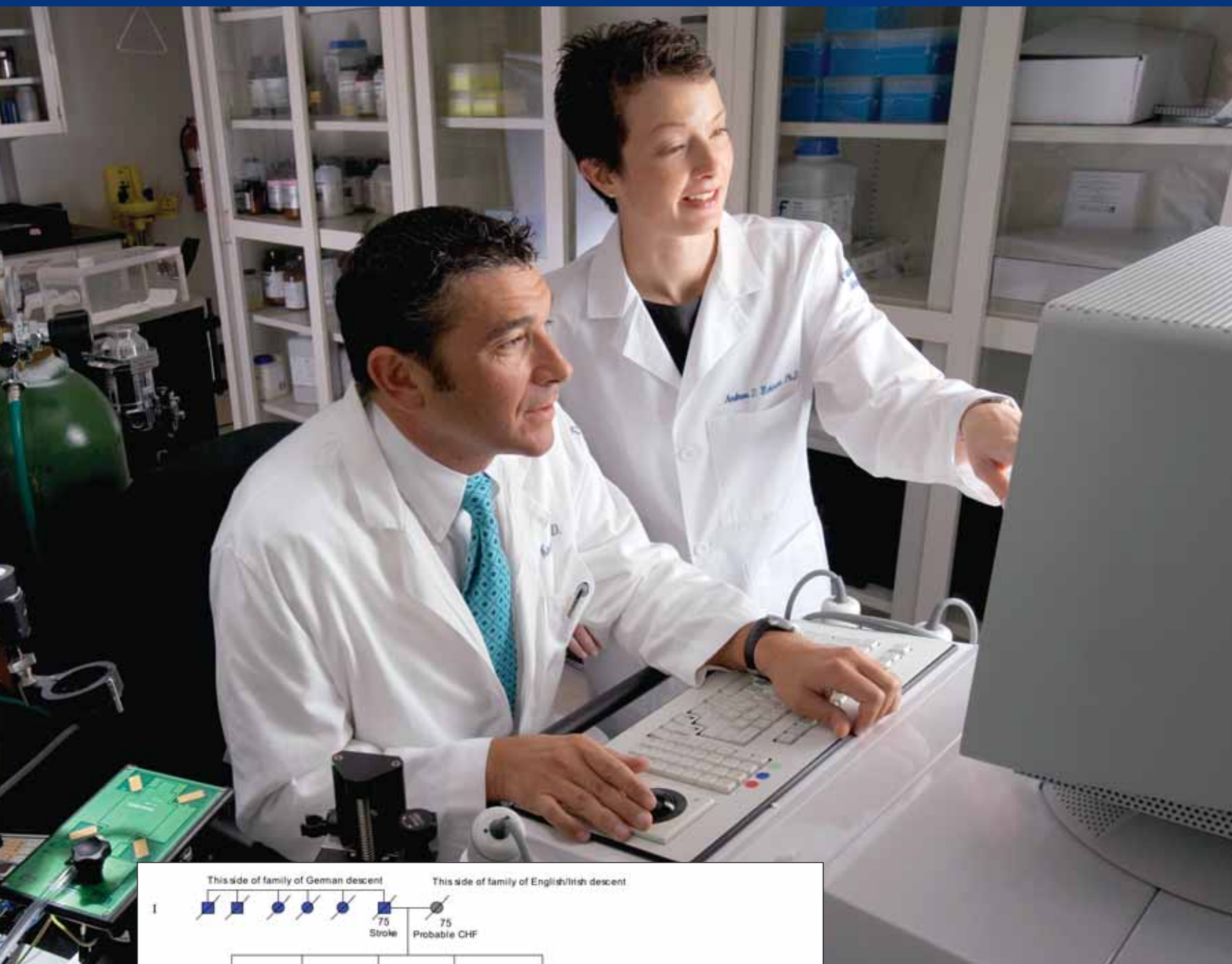
- Angioject thrombectomy, which utilizes a catheter to clear clotted bypass grafts of patients who have undergone bypass surgery.
- Small-vessel intracoronary stents. Jefferson doctors were among the first to use stents in small coronary arteries.
- Brachytherapy. Jefferson was one of the first in the world to offer this low-dose radiation therapy, in collaboration with the Department of Radiation Oncology.
- New at Jefferson Heart Institute: Peripheral vascular angioplasty and stents, used to open occluded blood vessels outside of the heart.
- Sealing of the Patent Foramen Ovale (PFO) in patients with cryptogenic stroke

Cardiac Catheterization Laboratory
215-955-7109
www.JeffersonHospital.org/heart



This series of images shows the sequence of a complex angioplasty in a 53-year-old man with a totally occluded artery. Image A demonstrates the right coronary artery with the point of total occlusion (see arrow). Image B shows a SafeCross infrared guidewire (see arrow) successfully traversing the obstruction, which previously was impenetrable by conventional guidewires. The tip of the wire is equipped with an infrared light that reflects off the plaque and has the capacity for radiofrequency ablation, which facilitates successful passage through the occlusion. Image C reveals the widely patent artery restored after placement of drug-eluting stents.





Studies are in progress at the Center's Clinical Genomics Core to identify the disease-causing mutation in an extended pedigree with a dominant inherited form of heart disease.

Center for Translational Medicine

Bringing discoveries from the laboratory bench to the patient's bedside

The Center for Translational Medicine is the focal point for research in the Department of Medicine at Jefferson. The Center aims to bridge basic scientific discoveries with physicians' needs for their patients. At the forefront of academic health care, the Center focuses on leading-edge basic molecular biomedical research and its translation into the most efficient and tailored forms of diagnosis and treatment as well as modes of prevention.

The Center relies on Jefferson clinicians as a source of patients and information. Sharing novel aspects of research it undertakes with the entire Department of Medicine, the Center helps divisions to work together to initiate new clinical trials. The Center also works with the Office of Technology Transfer to develop new intellectual property born from this research.

Center for Translational Medicine
215-955-9982
www.jefferson.edu/translational

Cardiovascular Research at the Center

A core devoted to Animal Models of Disease and Cardiac Physiology was established in 2003 to provide support for animal studies involving cardiac diseases and measuring in vivo physiology. In addition, the Center has established active core facilities in Clinical Genomics and Gene Therapy.

The Center also organizes all cardiology research at Thomas Jefferson University Hospital and Jefferson Medical College, campus-wide. A virtual cardiology research institute is in progress.

The Eugene Feiner Laboratory for Vascular Biology and Thrombosis

Much of the research in the Feiner Laboratory is in the area of hypertension: understanding how receptors—the proteins that help to establish blood pressure by binding hormones including epinephrine—change their signaling in vascular smooth muscle under disease conditions. As antihypertensive therapeutic strategies are currently inadequate to decrease high blood pressure in a significant proportion of patients with this disease, researchers at the Feiner Lab have already developed a method to decrease blood pressure using a novel inhibitor of certain receptor pathways important in causing vasoconstriction. This is currently being studied in animal models of the disease, but researchers intend

that strategies such as this may be advanced to clinical trials, thus making it possible to develop new antihypertensive drugs and methods of treatment for the disease.

Researchers in the Feiner Lab consult regularly with Internal Medicine and Cardiology to explore possibilities to directly incorporate clinical observations into novel uses of research.

The George Zallie and Family Laboratory for Cardiovascular Gene Therapy

The multidisciplinary work of the Gene Therapy Core introduces human genes into any organ in the body—heart, lung, kidney, muscle—in order to change the function of targeted organs or cells. The genes turn on (or off) certain mechanisms, such as the production of certain proteins. Gene therapy includes putting genes into cells to:

- replace defective genes (as in cystic fibrosis, metabolic diseases)
- change the function of normal genes (heart failure, angiogenesis)

The research includes mouse models as well as larger animal models, in order to validate before testing in humans. Genes are introduced into the system via a virus and are delivered either through cardiopulmonary bypass, or by subselective catheterization (similar to the use of angioplasty/stent). All research is disease-based.

Multidisciplinary Programs



Jefferson offers resources for patients with heart failure, arrhythmias and conduction problems, device problems, and mixed hyperlipidemia. Cardiology has developed close working relationships with the Divisions of Pulmonary Medicine and Endocrinology, in particular for patients with diabetes mellitus and metabolic syndrome.

Vascular Disease Center

The Vascular Disease Center at Jefferson incorporates Neurosurgery, Neurology, Radiology, Cardiology, and Vascular Surgery, as well as clinical and interventional services, research, and education. Venous disease, arterial disease, research, and educational programs distinguish the Vascular Diseases Center from other programs in the area. Jefferson's outpatient anticoagulation program (JATS) has treated more than 500 patients through the Division of Cardiology.

The Jefferson arterial disease program offers Inpatient and Outpatient Peripheral Arterial Disease Consultation Services, including preoperative evaluation as well as peripheral arterial disease management.

Jefferson provides an Endovascular Peripheral Arterial Disease Program that combines the expertise of Cardiology, Cardiovascular Interventional Radiology, Neurosurgery, and Vascular Surgery. Non-invasive (ultrasound) and invasive (arteriography) testing is also available.

Vascular disease research incorporates the efforts of the Eugene Feiner Laboratory for Vascular Biology and Thrombosis in the Center for Translational Medicine (see page 14), the Division of Endocrinology, the Department of Physiology, the Department of Clinical Pharmacology, and the Cardeza Blood Foundation.

Vascular Disease Center: 215-955-6540
For referrals: 215-873-6075

Clinical Research Program

Clinical research plays an important part of Jefferson's role as a leader in fighting cardiovascular disease. Faculty at the Jefferson Heart Institute participate in a number of clinical trials, as an enrolling center. There are also a number of Jefferson-centric protocols being developed by faculty members in the area of cardiovascular disease.

In the area of heart failure, Jefferson faculty have developed a number of related activities:

- multicenter clinical protocols including examinations of sleep apnea in heart failure patients with biventricular pacemakers, the use diagnostic data from implanted heart devices during hospitalizations, and the evaluation of heart failure disease management strategies. These studies seek to assess the efficiency of clinical treatments for patients with heart failure.

- trials to examine disparities and access to care in underserved populations with heart failure in Philadelphia.
- in collaboration with the Center for Research in Medical Education and Health Care, an outcomes database for all Jefferson researchers to make all internal clinical resources available for future studies.
- an ongoing, NIH-funded study called HF-ACTION, a multicenter program examining exercise and its benefits for patients who have heart failure.

HF-ACTION Program
215-955-2007
www.hfaction.org

Jefferson's Clinical Research Network

Demonstrating its region-wide leadership, Jefferson has recently created the Mid-Atlantic Research Consortium (MARC), a clinical research network that offers a substantive infrastructure to support the complex needs of patient-oriented research.

This community of clinicians, coordinators, and research professionals from academic medical centers, suburban hospitals, and large practices collaborates in performing leading-edge clinical research and fosters bringing those advances to care for patients in the most efficient way possible.

The consortium engages in all levels of clinical research activity, including translational research—especially in the area of heart failure—the use of novel therapeutics, safety surveillance of approved drugs and devices, and research to foster a better understanding of quality-of-care outcomes.



Jefferson's Clinical Research Network brings together 18 other centers in 5 states and offers access to a network of 25,000 patients.



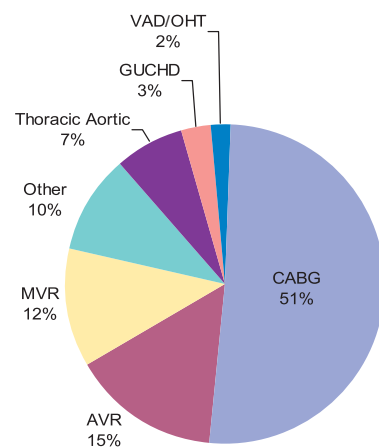
Collaborating Centers for the Mid-Atlantic Research Consortium (MARC)

Albert Einstein Healthcare Network
 Cardiology Associates of West Reading, Ltd.
 Christiana Care Health System
 Cooper University Hospital
 Drexel University, Hahnemann University Hospital
 Lehigh Valley Hospital and Health Network
 Main Line Health System, Lankenau Hospital
 Moffit Heart and Vascular Group, Pinnacle Health System
 New York Medical College—Westchester Medical Center
 New York University Medical Center, Bellevue Hospital
 Pennsylvania Heart and Vascular Group
 Penn State College of Medicine
 St. Luke's-Roosevelt Hospital
 Thomas Jefferson University
 University of Medicine and Dentistry of New Jersey—
 Robert Wood Johnson Medical School
 University of Maryland Medical Center



Cardiac Surgery Case Profile 2004

CABG	Coronary Artery Bypass Grafting
AVR	Aortic Valve Repair or Replacement with or without other procedure
MVR	Mitral Valve Repair or Replacement with or without other procedure
Other	Open or closed case including cardiac tumor and post-MI VSD
Thoracic Aortic	Aneurysm, Dissection, or Transection from root to diaphragm
GUCHD	Grown-Up with Congenital Heart Disease
VAD/OHT	Ventricular Assist Device including ECMO or Orthotopic Heart Transplant



Cardiac Surgery



Jefferson's cardiothoracic surgical team

Cardiothoracic Surgery

Collaborating with cardiologists, surgeons in Jefferson's Division of Cardiothoracic Surgery conduct an array of complex cardiac procedures. The Division has also distinguished itself in the areas of scientific research and as a training program for cardiothoracic surgery.

The Division's full-time staff of cardiothoracic surgeons performed more than 600 major cardiothoracic operations in 2005. State-of-the-art procedures included:

- Arterial revascularization
- Aortic valve replacements, mitral valve reconstructions
- Transmyocardial revascularizations (TMR)
- Coronary artery bypass graft surgery and valvular repair and replacement
- Implanted mechanical heart pump, or, as part of a research protocol, ventricular remodeling surgery, along with valvular repair

- Heart transplantation
- Off-pump coronary artery bypass

Jefferson Cardiac Surgery also offers a range of less invasive approaches to cardiac disease.

Jefferson clinicians work closely with Cardiothoracic Surgery and the Transplant services and seek to develop an oncologic cardiology service. The Division of Thoracic Surgery has expanded its patient practice at the Jefferson Heart Institute, allowing Medicine and Surgery to work side by side. An outpatient center for adult congenital heart disease supports the comprehensive care of patients with all cardiovascular problems. In addition, Jefferson conducts clinical activity at Albert Einstein Hospital's Heart and Vascular Institute in the area of adult cardiac services.

Division of Cardiothoracic Surgery
215-955-6996
www.JeffersonHospital.org/cardiothoracic

Neurosurgery

The Division of Cerebrovascular Surgery and Interventional Neuro-radiology within the Department of Neurosurgery has been very active in carotid angioplasty and stenting for over a decade.

Jefferson physicians have been involved in numerous trials involving carotid angioplasty and stenting. Most recently they are involved in the CREST trial, a randomized trial comparing carotid endarterectomy to carotid angioplasty and stenting.

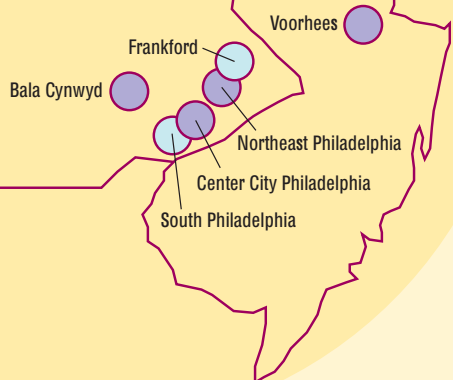
Thomas Jefferson University Hospital is accredited as a primary stroke center by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and has offered carotid angioplasty and stenting as well as intracranial angioplasty and stenting for over 10 years.

The faculty within the division has been involved in the development of new devices and techniques utilized for cerebral revascularization for patients suffering from occlusive disease of the intracerebral vessels.

Department of Neurosurgery
215-955-7000
www.JeffersonHospital.org/neurosurgery

Pennsylvania

New Jersey



Jefferson Heart Institute Locations

- **Center City Philadelphia**
925 Chestnut Street, Mezzanine
Philadelphia, PA 19107
215-955-5050
www.JeffersonHospital.org/heart
- **Main Line**
401 City Avenue, Suite 525
Bala Cynwyd, PA 19004
610-667-5555
- **Northeast Philadelphia**
9501 Roosevelt Boulevard
Northeast Philadelphia, PA 19114
215-676-8300
- **Jefferson HealthCARE—Voorhees**
443 Laurel Oak Road
Voorhees, NJ 08043
215-955-5050
www.JeffersonHospital.org/patient/article4085.html

For a complete list of Jefferson cardiology offices, see the inside back cover.

Jefferson Affiliations

- **Frankford—Torresdale Hospital**
Division of Cardiovascular
Disease/Cardiology
Red Lion and Knights Roads
Philadelphia, PA 19114
215-612-4110 or 1-800-JEFF-NOW
www.FrankfordHospitals.org/heart
- **South Philadelphia**
HGNC Cardiology Associates
1339 Porter Street
Philadelphia, PA 19148
215-289-0607

Cardiac Care Close to Home

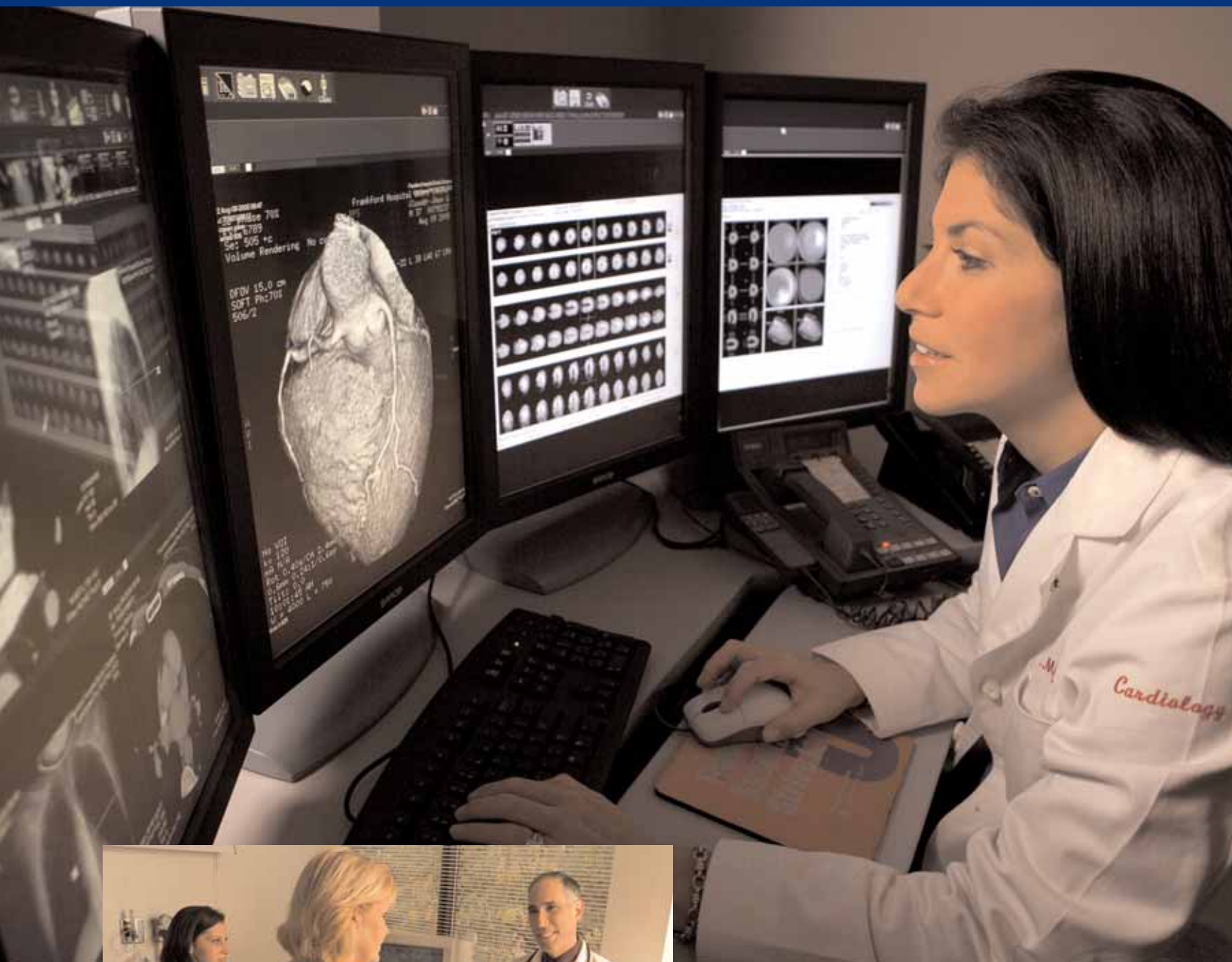
The current full-time cardiology faculty practices at the Jefferson Heart Institute at 925 Chestnut Street, with recently expanded facilities. The satellite cardiology offices are currently operational on the Main Line in Bala Cynwyd, Northeast Philadelphia, and Voorhees, New Jersey (see left). Jefferson Heart Institute cardiologists also work collaboratively with physicians of HGNC Cardiology Associates at Methodist Hospital to provide care for patients in South Philadelphia. Patients admitted to Methodist Hospital and St. Agnes Continuing Care Center can transfer to Thomas Jefferson University Hospital for tertiary and quaternary care.

Jefferson continues to expand its outpatient practice by streamlining services and utilizing the “one stop

shopping” approach to patients who enter our outpatient offices. Each of these facilities provide a cadre of clinical cardiologists on a daily basis, starting at 7:30 a.m. and ending at 5 p.m. Responding to increased demand for inpatient care at Thomas Jefferson University Hospital in Center City, Frankford Hospital has provided Jefferson faculty with an additional tertiary care facility at Frankford—Torresdale Hospital, now home for 30 to 40 patients of the Jefferson Heart Institute at any one time. These patients are admitted either through the emergency department or directly to the coronary care unit for the diagnosis and management of their cardiac problems. The Cardiac Catheterization Laboratory is also available.



Cardiologists at the main Jefferson campus support inpatient care at Thomas Jefferson University Hospital.



The latest technology at Jefferson's Frankford –Torresdale campus brings together the best of cardiology and nuclear medicine.

HGNC Cardiology Associates provide care for patients at Jefferson's Methodist Hospital in South Philadelphia.



Cardiovascular Training Program

The Division of Cardiology provides formal education for nurses, students, residents, fellows, and practicing cardiologists. The Fellowship Program in Cardiology is the largest subspecialty fellowship program in the Department of Medicine and continues to be extremely popular and highly selective.

The cardiovascular training program includes 36 months of training: 24 months of core clinical cardiovascular training and an additional 12 months in a selected area of interest, such as interventional cardiology, clinical cardiac electrophysiology, noninvasive cardiac imaging, or advanced heart failure. Jefferson also trains a group of fourth-year fellows in clinical cardiac electrophysiology, interventional cardiology, and advanced heart failure/cardiac transplantation.

Fellows are an integral part of Jefferson's clinical and basic science research programs. Their efforts result in publications in peer review journals and presentations at national meetings.

Fellows gain experience in the evaluation and management of patients with both acute and chronic cardiac disease. As part of the training program, fellows develop technical expertise in the diagnostic evaluation of patients in areas such as cardiac catheterization and cardiac angiography, invasive electrophysiologic studies, and non-invasive cardiac studies including echocardiography, stress testing, and nuclear imaging.

Clinical care is an important element of cardiology training. Through bedside teaching, physicians-in-training develop a patient-oriented approach to the evaluation and management of complex cardiac disease that leads to the appropriate selection of drugs or other treatment modalities.

Weekly conferences are an important part of the training and include topics in clinical cardiology, interventional cardiology, cardiac electrophysiology, echocardiography, nuclear cardiology, and heart failure. Visiting professors speak on new advances in various fields of cardiology.

Fellows come to the Jefferson cardiovascular training program from a number of prestigious medical schools:

Columbia University
Cook County Hospital, Chicago
Georgetown University
L.A. County & University of Southern California Medical Center
National Naval Medical Center
NYU/Bellevue Hospital Center
SUNY Downstate Medical Center, Brooklyn
SUNY Health Sciences Center, Syracuse
University of Arizona
University of Maryland
University of Medicine and Dentistry of New Jersey
University of Pittsburgh
University of Southern California
University of South Florida
University of Virginia

Cardiology Fellowship Program
215-955-1976
www.Jefferson.edu/cardiology/residency



Jefferson cardiology fellows benefit from a wide range of hands-on training under the leadership of renowned faculty members as well as the latest educational technologies. Here fellows practice lifesaving procedures on SimulationMan in consultation with Emergency Medicine.

Educating the Next Generation of Cardiologists

Jefferson University faculty includes cardiologists and other clinicians who are committed to advancing the field through education as well as publication. Faculty supplements their participation in international conferences and sponsoring of Continuing Medical Education (CME) programs with an impressive record of publications in a wide range of journals. Jefferson is proud to carry its commitment to cardiology from the medical students of today into the future through the power of the written word.

Among the prestigious journals in which Jefferson faculty members have published recent articles are:

Circulation: Journal of the American Heart Association

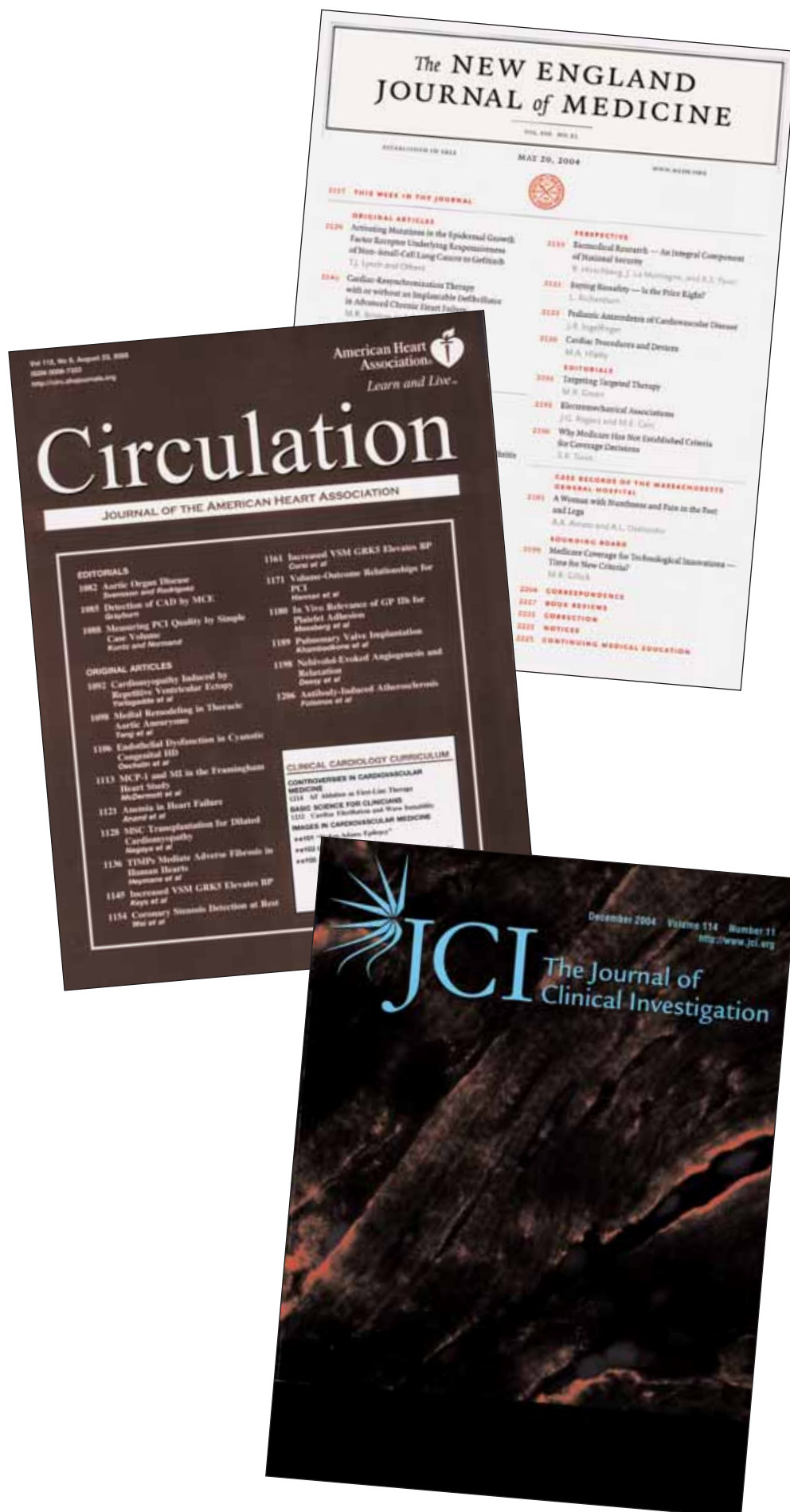
Journal of the American College of Cardiology

The Journal of Biochemistry

The Journal of Clinical Investigation

Nature

New England Journal of Medicine



Contacting Jefferson Cardiologists

Jefferson Heart Institute Locations

Center City Philadelphia

925 Chestnut Street
Mezzanine
Philadelphia, PA 19107
215-955-5050
www.JeffersonHospital.org/heart

Main Line

401 City Avenue, Suite 525
Bala Cynwyd, PA 19004
610-667-5555

Northeast Philadelphia

9501 Roosevelt Boulevard
Northeast Philadelphia, PA 19114
215-676-8300

Jefferson HealthCARE—Voorhees

443 Laurel Oak Road
Voorhees, NJ 08043
215-955-5050
www.JeffersonHospital.org/patient/article4085.html

Jefferson Affiliations

Frankford—Torresdale Hospital

Division of Cardiovascular Disease/Cardiology
Red Lion and Knights Roads
Philadelphia, PA 19114
215-612-4110 or 1-800-JEFF-NOW
www.FrankfordHospitals.org/heart

Methodist Hospital

Division of Cardiology
2301 South Broad Street
Philadelphia, PA 19148
215-952-9000
www.JeffersonHospital.org/methodist/healthcare/medicine/cardiology.html

South Philadelphia

HGNC Cardiology Associates
1339 Porter Street
Philadelphia, PA 19148
215-289-0607

Cardiothoracic Surgery Centers

Thomas Jefferson University Hospital

Department of Surgery
620 Curtis Building
1015 Walnut Street
Philadelphia, PA 19107
215-955-5654
www.JeffersonHospital.org/cardiothoracic

Albert Einstein Medical Center

Einstein Institute for Heart and Vascular Health
5501 Old York Road
Philadelphia, PA 19141
215-955-5654
www.einstein.edu/yourhealth/heart

Jefferson HealthCARE—Voorhees

443 Laurel Oak Road
Voorhees, NJ 08043
856-741-1000
www.JeffersonHospital.org/patient/article4085.html

The mission of the Jefferson Heart Institute (JHI) is to provide

exemplary comprehensive medical and surgical care to the patient needing cardiovascular care.

Through the combined impact of the high-quality clinical services, educational and research programs it sponsors, JHI seeks to contribute significantly to the diagnosis, treatment, and prevention of heart disease while training new physicians and other healthcare professionals to provide the highest quality clinical care.



925 Chestnut Street
Mezzanine
Philadelphia, PA 19107

For information on cardiovascular care
at Jefferson, please call
215-955-5050 or visit
www.JeffersonHospital.org/heart or
www.Jefferson.edu/cardiology

For an appointment with
a Jefferson physician,
please call **1-800-JEFF-NOW**.



Advanced Medicine. Superior Care.™