



Interventional cardiologists Dr. F. Joseph Hallal (left) and Dr. Albert A. Del Negro of Inova Fairfax Hospital.

Photography by Keith Weiler

physician when chest pain occurs so that the appropriate treatment can be initiated promptly to increase myocardial blood flow and avert an MI.

Dr. Hallal notes that "Inova Fairfax Hospital offers the advantage of a fully equipped tertiary care cardiac center that is nationally recognized for its excellence, yet it functions in the community setting and affords people excellent care without forcing them to leave the area."

Depending on the extent of the coronary disease and the nature of the plaque—which can vary from soft to hard—treatment options include percutaneous transluminal coronary angioplasty (PTCA), rotational atherectomy and stent insertion. The latter may be performed in conjunction

with PTCA or atherectomy. Inova physicians constantly assess newer procedures, such as those using laser technology, to ensure that the most effective intervention is available. They perform each with minimal incisions, and many patients go home the same day.

PTCA or Balloon Angioplasty

To reach the affected portion of the heart, the interventional cardiologist inserts a thin tube called a catheter through the skin and into an artery, then threads it through the blood vessel to the entrance of the affected coronary artery. The physician injects dye into the artery and takes an x-ray to show the narrowing caused by plaque inside the blood vessel. After locating the narrowing, the cardiologist positions a balloon-tipped catheter within the narrowed portion of the artery. The specialist inflates the balloon, which compresses the plaque and opens the artery to allow increased blood flow to the heart. This is called coronary angioplasty.

Rotational Coronary Atherectomy

The coronary plaque, or atheroma, may have a hardened consistency that makes it less responsive to balloon compression. In these cases, the physician can grind the plaque into tiny pieces with

Maintaining Healthy Hearts at the Inova Heart Center

"We've got an outstanding team here, with each physician, nurse and technician focused on early, skilled intervention to help people," states F. Joseph Hallal, M.D., Medical Director of the Cardiac Catheterization Laboratory at Inova Fairfax Hospital, one of 50 top-ranked cardiac centers named by *US News & World Report* (July 1999). As part of the Inova Heart Center, Dr. Hallal and his colleagues performed more than 10,000 cardiology procedures last year on infants, children and adults. For patients with coronary artery disease, there are multiple treatment options, including balloon angioplasty, rotational atherectomy and stent insertion.

Electrical disturbances of the heart (arrhythmias) affecting young and old are also a special area of expertise for Inova physicians, who are advancing the diagnosis and treatment of these conditions with radiofrequency ablation, internal defibrillators and the latest "smart" pacemakers.

The number and variety of all cardiac interventions and the exceptional results achieved attest not only to the national recognition earned by the Inova Heart Center, but also to the high level of satisfaction felt by patients and their families. Ninety-nine percent of outpatients and 98 percent of inpatients say they would

recommend the Inova Heart Center for cardiac care.¹

Coronary Artery Disease

Using leading-edge technologies to identify the specific heart problem and select the most appropriate treatment is one of the Inova Heart Center's hallmarks of excellence. Heart disease is often categorized as either "congenital" (present at birth) or "acquired" (developing after birth). The most common form of acquired heart disease, coronary artery disease (CAD), develops when an artery supplying blood to the heart muscle, the myocardium, becomes progressively narrowed by the buildup of plaque—a combination of cholesterol and other fats, calcium and additional elements in the blood.

As the amount of plaque increases, less blood reaches the heart muscle, reducing the supply of oxygen and nutrients. Insufficient blood flow to the heart can produce a form of chest pain called "angina," a warning signal of the presence of CAD. When blood flow through a coronary artery is completely blocked, the portion of the myocardium previously nourished by that artery dies, or "infarcts," producing a myocardial infarction (MI). Because angina occurs in heart muscle that is jeopardized but still alive, it is vital that patients contact their

a small, diamond-studded burr. This opens the artery, thereby increasing blood flow to the heart. The technique used to position the special atherectomy catheter in the coronary artery is similar to that used for PTCA. In another form of atherectomy called directional coronary atherectomy, the cardiologist uses a circular cutter within a small casing to shave off the plaque, which is collected in the housing.

Stent Insertion

A stent is a small mesh tube mounted onto a deflated catheter balloon which is positioned within the narrowed coronary artery. The physician expands the stent by inflating the balloon, which is then deflated and removed, leaving the opened stent in place. This keeps the artery from collapsing or narrowing again. Inova physicians may insert one or more stents, in conjunction with either PTCA or coronary atherectomy.

Clinical Outcomes

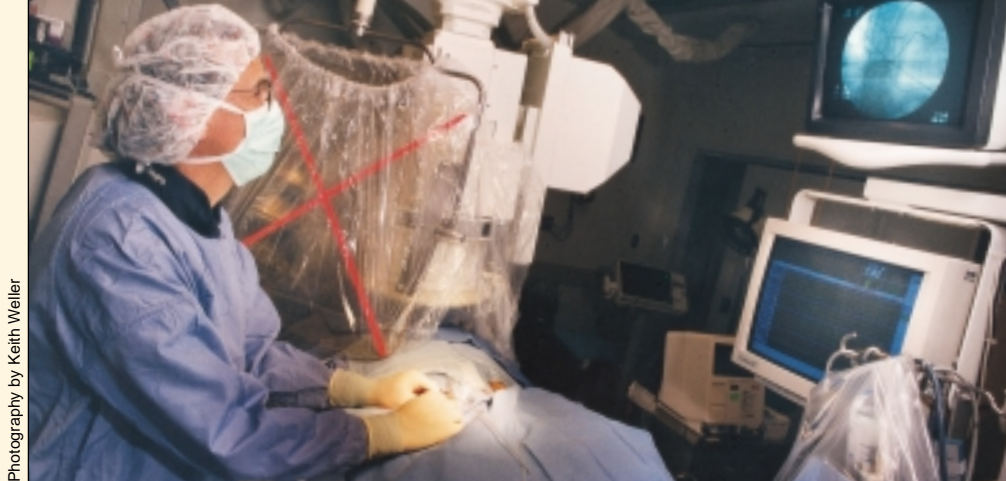
The Inova Heart Center experiences exceptional outcomes for interventional cardiology procedures. In 1998, Inova specialists performed a total of 1,537 such procedures with a mortality rate of only 0.4 percent, compared to the most recent American College of Cardiology benchmark of 1.66 percent.²

Electrical Disorders of the Heart

Although coronary artery disease can damage the heart's electrical circuitry that regulates and conducts impulses to the pumping chambers of the heart, arrhythmias can also be caused by "faulty wiring" which can produce life-threatening conditions in children and adults. Physicians specially trained in cardiac electrophysiology can locate the origin of the problem and determine the most appropriate intervention. "We're able to record the electrical activity and draw a map of its passage through the heart," explains Albert A. Del Negro, M.D., electrophysiologist and Cardiovascular Section Chief for Inova Fairfax Hospital.

If the heart contracts too slowly (bradycardia) to keep up with the body's minute-by-minute demand for blood, the physician can insert a pacemaker to stimulate the heart to beat faster, thereby increasing blood flow to the body. Pacemakers available at the Inova Heart Center are individually programmed to respond to the unique demands of each patient.

In some patients the problem is not a slow heart rate, but an excessively fast rate (tachycardia) or a disjointed rate (fibrillation). In the past, interventions were limited to risky surgery or life-long drug therapy that caused unpleasant side-effects and often failed to control the disorder. Newer forms of treatment



Photography by Keith Weiler

Using radiofrequency waves, Dr. Del Negro cures a patient's irregular heartbeat.

are much more successful. The electrophysiologist can implant an internal cardiac defibrillator (ICD), which emits a small electrical shock that terminates the inefficient contractions. Patient and family participation in Inova's ICD support group enhances the treatment by providing education and a forum for sharing experiences.

One of the most exciting advancements is the use of radiofrequency waves to ablate, or destroy, the side where the arrhythmia originates. Using a percutaneous transvenous catheter, electrophysiologists locate and destroy tissue that is causing irregular or rapid heartbeats. "There are certain electrical patterns that tell us when the catheter is at the right spot for ablation," according to Dr. Del Negro, who adds, "There are very few things in medicine that are curable, however, rhythm disturbances are among them."

The Inova radiofrequency ablation program, headed by Ted D. Friebling, M.D., is one of the largest in the region and treats more children with arrhythmias than most other medical centers in the nation. This can be especially reassuring to patients and their families because recent research has shown that catheter ablation is most likely to be successful in

medical centers that perform the greatest number of procedures each year.³

Making further progress for persons with irregular heart rhythms, the Inova Heart Center is one of 10 medical centers in the United States participating in a study of a new therapy for intermittent atrial fibrillation, according to Dr. Del Negro. And Inova is the only Washington-area organization using a new non-fluoroscopic mapping and imaging system to diagnose and treat arrhythmias.

The comprehensive care provided by the Inova Heart Center has earned it a national reputation for excellence and leading edge technology, and the personalized approach is earning high praise from patients. "Our goal is not only to provide the latest treatment options," says Dr. Del Negro, "but also to offer an effective, individualized plan of care for each patient needing our help."

For more information on maintaining a healthy heart, or a physician referral, call (703) 204-3366. ■

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¹*Patient Satisfaction Survey: 1998, Inova Heart Center*

²*ACC National Cardiovascular Data Registry Summary Report: 1996: 19*

³*Circulation: 1999; 99: 262-270*

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Women's Health Conference Saturday, October 23, 8:00 a.m. Inova Fairfax Hospital, Falls Church, VA

Light lunch, health screenings and presentations on:

- Women and Coronary Disease—Anne Summers, MD
- Osteoporosis and Menopause—Ermine Cay Masters, MD
- Headaches—Vanda Sharma, MD
- Wellness for Women—Mary Ryder, MD

Registration required; \$15 fee. Call (703) 204-3366.