



## New test radically improves diagnosis of heart disease

### Creates 3-D digital image of a patient's coronary arteries

Local medical providers who suspect a patient has coronary artery disease, the leading cause of death in the United States, can now order a test at Medical Imaging of Fredericksburg that generates an interactive 3-D computer model of the patient's coronary arteries. The test — HeartFlow Analysis — shows providers the extent of any coronary blood vessel blockages and their effect on the patient's heart.

"This test is a radically new way of diagnosing coronary artery disease. It's changing the paradigm," said Dr. Neil B. Green, physician director of cardiac imaging for Radiologic Associates of Fredericksburg.

"HeartFlow is a safe, non-invasive, rapid test completed in only one breath-hold that provides a highly accurate assessment of a patient's heart," he explained. "Too many patients have layered or multiple tests to answer the essential two questions of whether their symptoms are due to an artery blockage and if that blockage restricts blood flow to their heart muscle. HeartFlow is the one non-invasive test that can answer both of these important questions in a single visit."

A major benefit is that the test provides a non-invasive alternative to more invasive procedures used for similar purposes, including cardiac catheterization. According to a 2014 study published in the *American Heart Journal*, 58 percent of patients undergoing invasive testing were found to have no blockages that significantly limited blood flow.

A second benefit is overall savings in cost of care, according to a 2016 study in the *Journal of the American College of Cardiology*.

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## Innovative procedure for carotid artery disease now available

The Centers for Disease Control and Prevention estimate that in the United States, someone experiences a stroke every 40 seconds. Carotid artery disease—a condition where the two main arteries that deliver oxygen-rich blood to the brain become narrowed due to plaque buildup—has been shown to be a factor in an estimated one-third of strokes.

A new procedure now being performed by Virginia Interventional and Vascular Associates (VIVA) provides patients a less-invasive option for treating carotid artery disease, with a lower risk of stroke during the procedure and faster recovery time. It is an option for high-risk patients who may not have been candidates for previously available treatments.

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Trans-carotid artery revascularization, known as TCAR, is a carotid stenting procedure that lowers the risk of stroke during procedure by temporarily reversing the flow of blood in the artery being stented away from the brain, ensuring that any bits of plaque dislodged do not cause a stroke.

Dr. Victor J. D’Addio, a Board-Certified, Fellowship-Trained vascular surgeon at VIVA, says candidates for TCAR include patients over 75 years old, or those who have had a previous stroke or mini-stroke, diabetes, coronary artery disease, prior head or neck injury or physiological issues that would rule out open surgery as an option for treating carotid artery disease.

“This is a clear advancement in the treatment of carotid artery disease and stroke prevention,” Dr. D’Addio said.

TCAR won FDA approval for high-risk patients in 2015. VIVA brought it to the Fredericksburg region in 2021.

### A new option for patients

In addition to TCAR, VIVA also offers the two previously available procedures for treating carotid artery disease. These are transfemoral carotid angioplasty and stenting (TF-CAS), where a stent is fed into the carotid on a line that is inserted into the femoral artery in the leg, and carotid endarterectomy (CEA), an open-surgery procedure where the carotid is accessed through an incision in the neck.

TCAR was developed specifically to decrease potential risks associated with these two procedures. For example, compared with TF-CAS, TCAR shortens the path to access the carotid, reducing the likelihood that any plaque dislodged during the procedure could flow toward the brain and cause a stroke. CEA is not an option for patients with high risk factors, or who have physiological characteristics that make the carotid arteries hard for a surgeon to access.

Dr. D’Addio pointed out that all three procedures are available at VIVA, and he and his fellow vascular surgeon, Dr. Larry Koenig III, can help assess which procedure is right for each individual.

“If you come see a vascular surgeon, whatever your issue is, high-risk, low-risk, whatever the intervening factors are, we can treat it,” he said. “If you want the variety of options considered for any treatment, you should see a vascular surgeon.”

### TCAR procedure

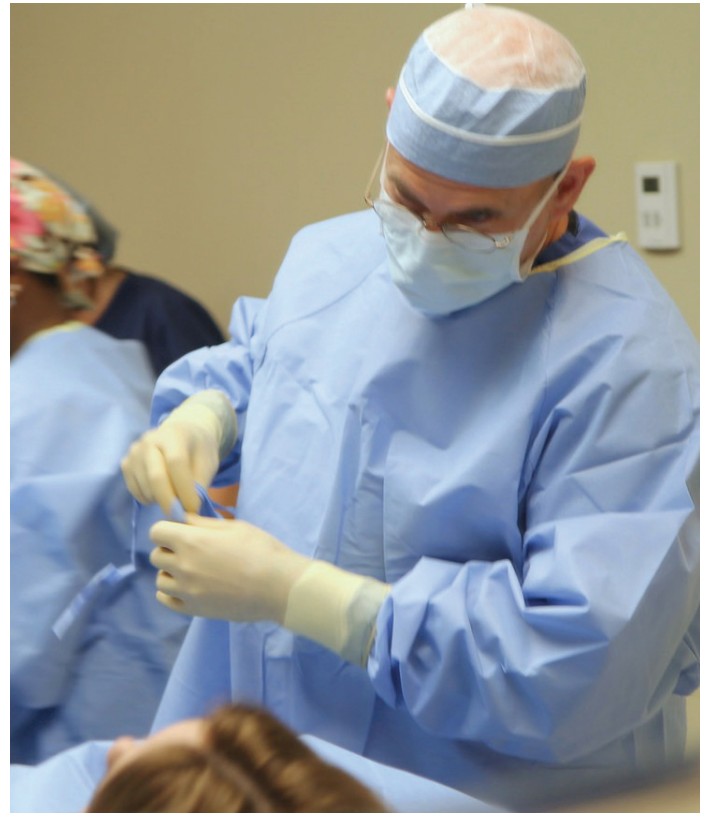
The procedure takes about an hour and is performed at Stafford Hospital. Dr. D’Addio said VIVA so far has been placing patients under general anesthesia for TCAR, but it can be performed under local anesthesia.

The surgeon makes a 2-cm incision at the base of the neck. This is far smaller than the 10-cm incision typically made for the CEA procedure. Once the carotid artery is accessed, a tube is placed into the artery. The tube runs out of the body, through a filter, and connects to the femoral vein in the groin. The surgeon then places a clamp on the carotid artery that reverses the flow of blood away from the brain, and into the tubing mechanism with the filter.

“This way, if anything breaks off while we are placing the stent—and pieces of plaque will break off during the procedure—it washes out of the body, gets caught in the filter and does not pose a risk of causing a stroke,” Dr. D’Addio said.

The surgeon then places a stent in the carotid artery to correct the stenosis, or narrowing, caused by the patient’s carotid artery disease. Afterward, the clamp is removed and blood flow resumes its normal direction.

After a one night stay in the hospital, patients are placed on a regimen of aspirin,



**Dr. Victor J. D’Addio of VIVA**

a statin and a blood thinner. They typically experience very little pain and can resume normal activities—with a caution to take it easy—when they return home.

Having TCAR available for patients locally without having to travel to Richmond or Washington, D.C., for treatment is a benefit to the region, and part of what motivates VIVA’s team of interventional radiologists and vascular surgeons to constantly seek innovation and advancement in the treatment of the intricate network that carries blood throughout the body.

“We are constantly on top of the latest developments in vascular surgery, and work to incorporate those into our practice,” Dr. D’Addio said. ■



### RAF welcomes Dr. Lynn Ivey

Radiologic Associates of Fredericksburg (RAF) welcomes Dr. Lynn Ivey to the practice.

Dr. Ivey graduated from Virginia Commonwealth University School of Medicine and subsequently completed her diagnostic radiology residency and fellowship in breast imaging there. She has special interest in complete breast health with emphasis on using imaging modalities to aid in the early detection of breast pathologies. ■

## Radiologist Spotlight: Roni F. Talukdar, MD

Dr. Roni Talukdar, a board-certified radiologist with Radiologic Associates of Fredericksburg (RAF), brings to the practice dual areas of expertise. As a fellowship-trained breast imager, he specializes in breast imaging and serves as medical director of the Imaging Center for Women in Fredericksburg. He also is fellowship-trained in body imaging and provides diagnostic radiology services for RAF, specializing in complex oncology, computed tomography, magnetic resonance imaging, and evaluation of tumors throughout the body.

### An early affinity for medicine

Dr. Talukdar was born in Sweden, where his father served with the Swedish Finance Ministry. From that point, in his words, he “grew up all over the place.” His family lived for a time in Iran but then immigrated to the U.S. in 1979 to escape the Ayatollah Khomeini regime.

When he began a new life in the U.S., Dr. Talukdar was just five years old. As he remembers, that’s the age he knew he would grow up to be a doctor. Several physicians were part of his extended family, including his mother, who practiced family medicine in Iran and is now a child and adult psychiatrist.

The family lived in Missouri and Mississippi before moving to Austin, Texas, where Dr. Talukdar attended junior high and high school, as well as college at the University of Texas at Austin.

He received his medical degree from the University of Texas Southwestern School of Medicine at Dallas in 2003. Interested initially in orthopedic surgery, he switched to radiology after completing his internship at the University of California San Francisco. He began with the goal of being an interventional radiologist, but changed course while a radiology resident at Kansas University Medical Center in 2009.

“One of my mentors suggested I consider specializing in breast imaging,” Dr. Talukdar said. “What appealed to me most about this specialty is being able to directly care for patients, seeing them through a complete clinical scenario—from breast cancer detection to treatment through leading-edge technologies and therapies.”

In 2010, after completing a fellowship in breast and body imaging at Memorial Sloan Kettering Cancer Center in New York, he joined RAF.

### A collaborative approach

Dr. Talukdar brings leadership in women’s imaging throughout the Fredericksburg area in his role as director of the Imaging Center for Women, a partnership of RAF and Mary Washington Healthcare (MWHC). The center provides highly advanced mammography, ultrasound, and biopsy testing to detect cancer at its earliest, most treatable stages, guided by the expertise of diagnostic radiologists who are breast imaging specialists.

“One in eight women will have breast cancer in their lifetime,” Dr. Talukdar said. “When we look at all the factors that impact survival of breast cancer, the biggest factor is how early we detect it. Since the start of regular screenings in the early 1990s, we’ve seen about a 40 percent reduction in death from breast cancer. Although the number of patients who get breast cancer has increased, the number who die has decreased.”

Key to the center’s success is a collaborative approach among health care professionals. RAF, MWHC, oncologists, radiation treatment specialists, surgeons, interventional radiologists, and other medical and support teams work together to deliver the highest level of care that saves, extends, and enriches patients’ lives.



### Happiness in the Old Dominion

Unlike many of his colleagues, Dr. Talukdar did not have any ties to the area before moving to Virginia. He did, however, have a fondness for Washington, D.C., as that’s where he had his first date with Najla Ahmad, then a Boston resident who would become his wife. Najla has a PhD in machine learning and artificial intelligence and works for Capital One. The two married in 2006 and have two daughters, Zara and Saria.

“Making Virginia our home was the right decision,” he added. “Najla didn’t want to go any further south and I didn’t want to go any further north. Here, we have the best of both worlds—the congeniality of the south with the appeal of a big city.”

He’s quick to point out though, that when it comes to sports, he’s still true to the Lone Star State. Texas Longhorns all the way! ■

## Breathe Easier with a Lung Scan

The U.S. Preventive Services Task Force recommends yearly lung cancer screening with low-dose CT if:

- You are a smoker or quit in the past 15 years and
- Are between 50 to 80 years old and
- Have a 20 pack-year history\*

**Schedule your scan**  
Medical Imaging of Fredericksburg  
(540) 741-XRAY (9729)  
mifimaging.com

\*A 20 pack-year history = 1 pack/day for 20 years or 2 packs/day for 10 years, for example



[www.rafimaging.com](http://www.rafimaging.com)  
[www.vivassociates.com](http://www.vivassociates.com)  
**(540) 361-1000**

Ed Swager, Chief Executive Officer  
 Radiologic Associates of Fredericksburg (RAF) is the largest provider of medical imaging services in the Fredericksburg, Stafford and Spotsylvania area. RAF's interventional radiology and vascular surgery group, Virginia Interventional & Vascular Associates (VIVA), performs minimally invasive procedures, vascular lab studies and vascular surgery.

RAF publishes *Imaging Advances* periodically for referring physicians and the greater medical community.

For more information, please contact Paige Bishop, Director of Marketing, [pbishop@rafadmin.com](mailto:pbishop@rafadmin.com), (540) 361-1000.



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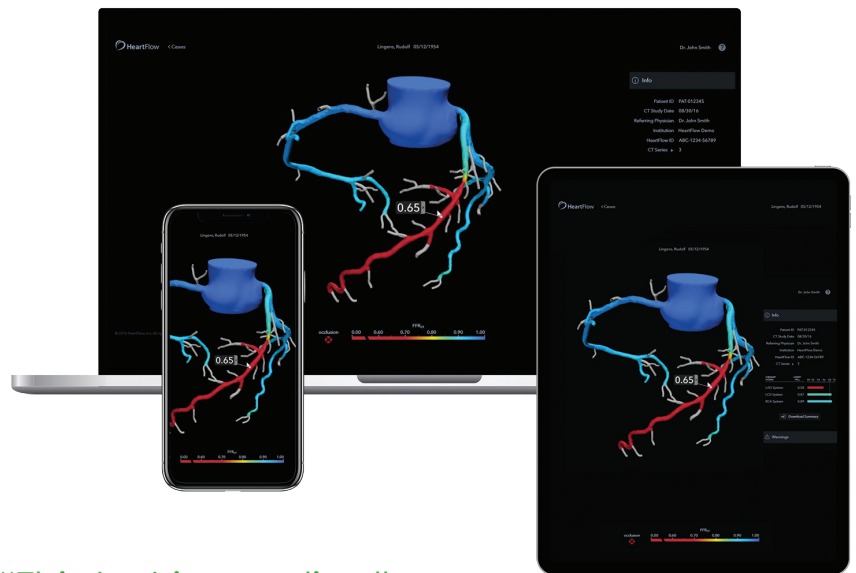
**How it works**

Referring providers order a standard coronary computed tomographic angiography (CTA) scan to look for any blockages. If more information is needed, they order the HeartFlow Analysis to better understand the impact of the blockage. Ordering the analysis requires no additional patient appointments or scans.

The HeartFlow Analysis takes data from the patient's coronary CTA scan and uses deep learning technology to create a digital 3-D model of the patient's coronary arteries. It then uses computer algorithms to simulate blood flow and assess the impact of blockages on blood flow to the heart.

Within hours, the provider receives the analysis through a secure web interface and can assess, vessel by vessel, if enough blood is reaching the heart. The results help the provider determine the best treatment path for the patient.

Medical Imaging of Fredericksburg is the only center in this region offering this test. It is covered in the outpatient setting by Medicare and most major insurers.



*“This test is a radically new way of diagnosing coronary artery disease. It's changing the paradigm.”*

**For more information**

Referring providers who would like to talk to a radiologist about the test can contact Dr. Green or other cardiac imaging subspecialists by calling the practice's Physician Concierge at **1-855-RAF-LINE (1-855-723-5463)**. ■