

The Best Cardiac Care, in the Heart of Southern Maryland

At MedStar Southern Maryland Hospital Center's new electrophysiology laboratory, patients can receive a wide range of treatments for heart rhythm disturbances.

After a year of planning and months of construction, MedStar Southern Maryland Hospital Center celebrated the opening of its new, state-of-the-art electrophysiology (EP) laboratory. And that's good news for Southern Maryland residents.

The EP lab is an exciting addition to MedStar Health's Heart & Vascular Institute's award-winning heart attack and stroke treatment programs. With the addition of this EP lab, MedStar Southern Maryland Hospital Center can now offer patients in our region a full range of cardiac diagnostic and treatment procedures—not just for coronary artery disease, peripheral artery disease, and heart attacks, but for heart rhythm problems as well.

The human heart brings to mind a wealth of analogies. We may say that a kind, generous person is warm-hearted or has a big heart, and we might even call a person who lacks those qualities "heartless." All of these ideas may be poetic, but Sung W. Lee, MD, FACC, medical director of the hospital's new EP lab, has another heart-related image he wants you to think about.

"The heart is a pump," Dr. Lee said, referring to a commonly used medical analogy. "But it's also important to remember that, just as many other pumps do, the heart relies on an electrical system to tell that pump when and how to work."

The electrical impulses that prompt the heart to beat are just as important as the arteries and veins through which the heart pumps blood. In a properly functioning heart, the sinoatrial node works as a natural pacemaker, regulating the heartbeat and speeding or slowing its rhythm as needed. But when there is a problem with a person's heart rhythm, the heart may beat too slowly, too quickly, or irregularly. These heart rhythm problems are called arrhythmias.

There are several types of arrhythmias, depending on what kind of heart rhythm disturbance it is and where it originates. Some abnormal heart rhythms are the result of the natural pacemaker malfunctioning, while others are caused by problems with the heart's wiring itself.

Symptoms of Arrhythmia

If a person's heart is beating too slowly, that person is likely to experience dizziness and fatigue. He or she may also have fainting spells. At the other end of the spectrum, a rapid heartbeat causes the sensation that the heart is racing or skipping beats. People may also experience shortness of breath, chest pains, dizziness, and fainting.

Some arrhythmias are not serious, although many patients choose to seek treatment because symptoms are often bothersome. Other arrhythmias, however, are life threatening. The most serious of these is ventricular fibrillation

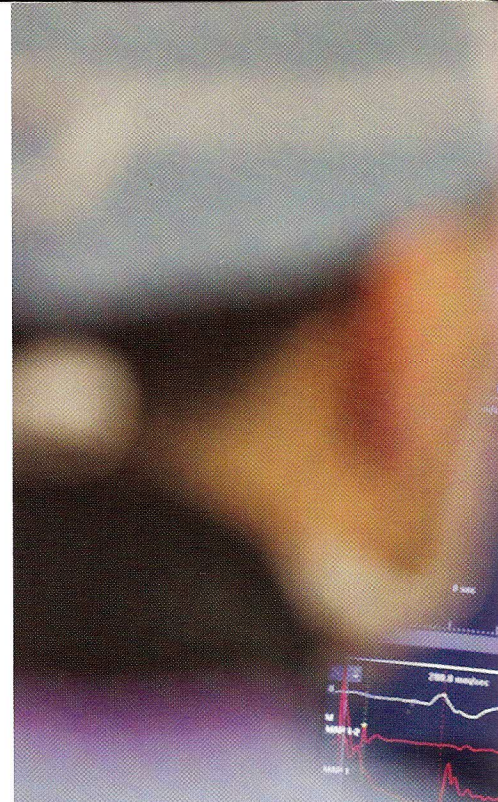
(sometimes referred to as V-fib), in which the heart's lower chambers twitch or quiver, leaving the heart unable to pump any blood. Without medical intervention to "jump start" the heart, cardiac death occurs in minutes.

Expanded Treatment Options

Before considering a procedure to correct an arrhythmia, Dr. Lee tries more conservative measures, including medication or dietary changes. If these options do not relieve the patient's symptoms, Dr. Lee schedules a patient for a diagnostic or treatment procedure in the EP lab.

The EP lab is customized for cardiac electrophysiology procedures. It is a hybrid operating room with anesthesia capability, fully outfitted with electrophysiology-specific equipment in addition to the rapid X-ray fluoroscopy standard in a catheterization lab. The EP lab also includes upgrades such as a 52-inch plasma screen and a control room with a two-way communication system. In this facility, physicians can perform complex diagnostic EP studies, tilt-table testing, ambulatory electrocardiographic monitoring, 3-D cardiac rhythm mapping, and catheter ablations, in addition to implanting devices such as pacemakers and defibrillators.

Pacemakers and implantable cardioverter-defibrillators (ICD)



monitor the heartbeat constantly and step in to regulate it when there is a problem. For a heart that beats too slowly, a pacemaker prompts the heart to "keep pace" at a regular rhythm. It also contains the functions of an ICD. Like external defibrillator paddles, an ICD shocks the heart back into a regular rhythm. Unlike paddles, an ICD works directly on the heart muscle.

Once the leads are securely in place, they are attached to the ICD's battery pack, which is small enough to fit easily in the palm of the hand. The electrophysiologist places the battery pack beneath the patient's skin, tests the ICD, and closes the incision.

In addition to device implantation procedures, the EP lab is also the site of diagnostic EP studies, which use

a catheter to map the heart's electrical activity. Electrophysiologists also use the lab to perform catheter ablation therapy, which allows the physician to cure some types of arrhythmia. Ablation is used to treat arrhythmias that are caused by an abnormal electrical circuit in the heart. After accessing the blood vessels through the femoral vein in the patient's groin, the electrophysiologist threads a catheter up into the heart muscle, finds the area that is short-circuiting, and uses radiofrequency energy to destroy it.

"For many patients, this procedure can cure their arrhythmia," Dr. Lee said.

Top-level Cardiac Care

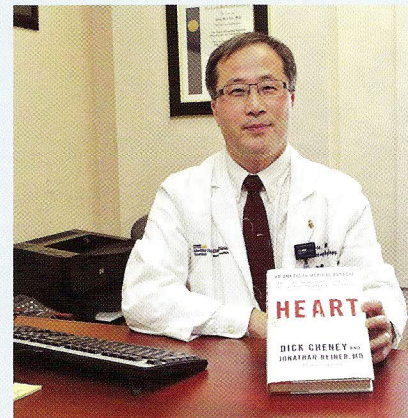
Dr. Lee encourages residents with symptoms to see their cardiologist or their primary care physician. "People should know that we are providing top-of-the-line cardiac care here in Southern Maryland," he said.

"It's unquestionably better for patients and their families to get these procedures done locally," Dr. Lee said. "But patients don't need to sacrifice anything in terms of quality of care. They can get it all right here."

For more information or to schedule an appointment with Sung Lee, MD, at the MedStar Heart & Vascular Institute, please call **301-877-5677**.

Device implantations are performed in the EP lab and require only a small incision. The electrophysiologist accesses a vein in the patient's chest, just under the collarbone. Using the lab's rapid imaging technology to see inside the patient in real time, the electrophysiologist threads thin, insulated wires, or leads, through a small, flexible tube called a catheter and attaches them to the heart muscle.

White House Calling



At one time it was common for physicians to make house calls for patients needing medical care. But few physicians get a call from the White House.

In 2001, Sung Lee, MD, performed an ICD implantation for Vice President Dick Cheney. Cheney and his cardiologist, Jonathan Reiner, MD, co-wrote a book called *Heart* and told the story about the day of the surgery:

Sung was a graduate of the Medical College of Virginia and had completed a residency in internal medicine at the University of Maryland before spending four years as a research fellow at the National Institutes of Health. He is a smart, easygoing guy with a warm spirit, but in the electrophysiology (EP) lab, he is all business.

With the Vice President asleep on the examination table, Sung introduced catheter into a vein in Mr. Cheney's leg and maneuvered it to the heart. Without much difficulty, Sung was able to induce ventricular tachycardia by stimulating the heart with three premature impulses, additional evidence that the Vice President was prone to this arrhythmia. Outside the hospital, this heart rhythm could lead to death, but in the controlled environment of the electrophysiology lab, Sung quickly terminated the dangerous rapid rhythm.

Dick Cheney and Jonathan Reiner, MD, Heart: An American Medical Odyssey (New York: Scribner, 2013).