

Using the Latest Techniques to Correct Heart Arrhythmias

Electrophysiology, or **EP**, is a branch of cardiology that deals with the diagnosis and treatment of heart rhythm disorders.

Arrhythmias (irregular heartbeat), such as ventricular tachycardia (VT) and atrial fibrillation (AFib), can be serious and even life-threatening. They represent a common type of heart disease that interferes with the heart's ability to pump blood throughout the body effectively. They can cause blood clots, heart attacks, stroke, and even death.

In many cases, a heart rhythm problem is caused by a random event. For example, supra-ventricular tachycardia (SVT), "lone" atrial fibrillation in a healthy young person, and congenital atrioventricular block (or AV block) are considered hiccups of nature because they do not follow the general rule of heart disease affecting older adults. Electrophysiologists treat these electrical diseases of the heart.

Heart rhythm problems can also be caused by hardening of the arteries, heart attacks, long-standing high blood pressure, diabetes, sleep disorders and bad lifestyle choices.

WHAT TRAINING DOES A CARDIAC ELECTROPHYSIOLOGIST (EP) HAVE?

A cardiologist has at least ten years of medical training. This includes four years of medical school, three years of training in internal medicine, and three more years in cardiology training. He or she must then pass a test from the American Board of Internal Medicine. Cardiologists receive further training and board certification in caring for patients with diseases of the heart and blood vessels. These include heart attack, valve disease, and some arrhythmias.

An electrophysiologist is a cardiologist who gets extra training beyond that required for board certification in cardiology. He or she is certified by the American Board of Internal Medicine in the specialty of electrophysiology, which focuses on testing and treating the heart for rhythm problems.

WHEN WOULD A PATIENT SEE A CARDIAC EP?

A cardiac electrophysiologist is not your primary healthcare provider. This doctor only works with patients who need special heart-related care. A physician may refer a patient to a cardiac EP if the patient has symptoms of heart rhythm problems. These may include dizziness, fainting, and fluttering feelings in the chest. Patients may also see a cardiac EP if they have risk factors for dangerous arrhythmia, such as heart disease.

Beebe Electrophysiologists



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Dr. Islam joined Beebe Healthcare in 2016. He specializes in cardiology and electrophysiology.

WHAT DOES A CARDIAC EP DO?

Cardiac EPs test for, diagnose, and treat abnormal heart rhythms. EPs know how the heart works, what kind of arrhythmias there are, and what may cause them. They also know how to do different kinds of tests to identify rhythm disturbances. They know how to implant special devices in the body to regulate heartbeat. And they can prescribe medication, lifestyle changes, and make other recommendations. A cardiac EP can diagnose and treat conditions such as:

- **Atrial fibrillation:** This is an irregular, fast heart rhythm in the two upper chambers of the heart.
- **Bradycardia:** This is a heartbeat that is too slow.
- **Tachycardia:** This is a heartbeat that is too fast.
- **Ventricular tachycardia:** This is a dangerous type of very fast heartbeat.
- **Supraventricular tachycardia:** This is a sudden, very fast heartbeat.
- **Ventricular fibrillation:** This is a dangerous fluttering of the heart muscle that doesn't let it pump blood.
- **Sudden cardiac arrest:** This is when the heart suddenly stops beating.
- **Long QT syndrome:** This is a disorder of the heart that can cause sudden arrhythmias.
- **Wolff-Parkinson-White (WPW) syndrome:** This is a condition that causes episodes of a fast heartbeat. These are caused by an extra electrical pathway in the heart.
- **Other arrhythmias:** Arrhythmias can be caused by pregnancy, medicine interactions, or metabolic problems.

TESTING FOR ARRHYTHMIAS

To help diagnose an arrhythmia, a cardiac EP can order or perform tests such as:

- **Electrocardiogram (ECG or EKG):** This uses electrodes attached to a patient's chest to record his or her heart's electrical activity.
- **Electrophysiology study:** This is an invasive test in which a wire is put into the heart. It shows problems with the heart's electrical system.
- **Echocardiogram:** This uses sound waves to show images of heart structure.
- **Holter monitor:** This is a device that is worn for 24 hours. It records the patient's heartbeats using ECG.
- **Event recorder:** This is a device a patient wears that records any abnormal rhythms of the heart.
- **Stress testing:** This looks at how a heart performs when it is stressed with exercise.
- **Tilt table testing:** This looks at how the heart is affected when a patient's body is moved from a lying position to a standing position on a tilting table.
- **Blood tests:** These are done to check the levels of certain minerals, enzymes, and other chemicals in a patient's blood.
- **Implantable loop recorder:** This is a small device put in the chest under the skin. It records heart activity when a person feels dizzy or faint.

TREATING ARRHYTHMIAS

A cardiac EP can perform certain procedures and prescribe treatments, including:

- **Defibrillation or Cardioversion:** This is the use of a device to send a shock of electricity to the heart and make it pump regularly.
- **Catheter ablation:** In this procedure, a thin tube (catheter) is put into a blood vessel in the groin. A wire is put through the catheter and sent up to the heart. A small part of the heart that is causing arrhythmia is destroyed with radiofrequency energy.
- **Medications:** These can help control heart rhythm and prevent blood clots.
- **Lifestyle changes:** Changes in diet or exercise can help with some heart rhythm problems.

A cardiac EP can also implant devices in the body to help reset or control heart rhythm, including:

- **Pacemaker:** This is a small device that is put under the skin of the chest. It prevents the heart from beating too slowly.
- **Implantable cardioverter-defibrillator (ICD):** This is a small device that is put under the skin of the chest or in the abdomen. It can reset the heart rhythm when dangerous arrhythmias occur. The new FDA-approved ICD used at Beebe can also be used with MRI scans.
- **Biventricular pacemaker:** This is a small device that is put under the skin of the chest. It helps the lower chambers of the heart beat at the same time. This is known as cardiac resynchronization therapy.