The science of medicine.
The compassion to heal.
This teaching booklet is designed to introduce you to electrophysiology studies of the heart. In the following pages, we try to answer frequently asked questions about the procedure and its purpose. We also encourage you to ask questions of your physician and other personnel who are involved in preparing you for the procedure. Before your electrophysiology study, the physician will discuss the procedure along with any possible risks.

Some of the best heart care in the nation is found at St. Peter’s Hospital, named one of America’s Top 100 Cardiovascular Hospitals. Independent healthcare quality experts have repeatedly honored St. Peter’s Hospital for its documented excellent performance in caring for patients with heart disease. Furthermore, St. Peter’s has received awards for patient safety, stroke care and overall clinical services. St. Peter’s has also received nursing’s highest honor – national Magnet™ Hospital status – for consistent excellence in nursing services. While we are grateful for and humbled by the prestigious awards and accolades, we are even more proud of what they represent – dedicated people committed to a culture of excellence.
**Electrophysiology Studies**

**What Are They?**

Electrophysiology studies (EPS) are procedures used to evaluate the electrical function of the heart. Because you have already experienced symptoms of arrhythmias (abnormal heartbeats), or have documented arrhythmias, your physician wants to look more closely at the electrical function of your heart.

Electrophysiology studies are performed in a laboratory by an electrophysiologist – a heart specialist (cardiologist) who has additional training in this area. Specially trained staff will be assisting the physician during the procedure. During the study, catheters are placed in specific areas of the heart. By stimulating your heart with these catheters, your physician will be able to evaluate the electrical conduction of your heart.

An EP study will help your physician diagnose your arrhythmias and what affect they may have on your future health. In addition, EPS will help your physician determine the treatment options that are most appropriate for you.

While these studies are specifically used to diagnose the source of arrhythmia symptoms, EP studies are also used as follows:

- To evaluate the effectiveness of certain medications in controlling the heart rhythm disorder
- To predict the risk of a future cardiac event such as a potentially life-threatening arrhythmia
- To assess the need for an implantable device (pacemaker or implantable cardioverter defibrillator) or a treatment procedure (radiofrequency ablation)

**Electrical Conduction of the Heart**

As you probably know, the beating action of your heart pumps blood to and from the parts of your body. What is also important to know is that your heart is able to beat because the body produces electricity that travels over the heart muscle and stimulates it to beat.

Normally, the electrical signal starts from a small area in the upper right chamber (atrium) called the SA (sino atrial) node. The impulse travels throughout the heart muscle and stimulates it to contract. This contraction squeezes the blood out of the heart and into the rest of your body.
Sometimes the heart will beat too slow, too fast, or in an uncoordinated, irregular fashion. When this happens, the pumping action of your heart is inefficient. This causes you to experience a variety of symptoms such as unexplained fatigue, shortness of breath, palpitations (fluttering), dizziness and fainting. This is why you will have an EP study – to determine how the electrical system of your heart is functioning, and what treatment is best for you.

Before Your Procedure

Preparing For The Procedure

• You should not eat or drink anything after midnight on the day of the procedure.
• Some of the heart medications you normally take may be withheld for two to three days before the study. Prior to the procedure, your physician will instruct you regarding daily medications. If you are a diabetic, ask your physician if you should adjust your diabetic medications. If you have any questions, please consult your physician.
• Bring a list of all the medications you currently take to the hospital. Be sure to include exact medication names, dosages and frequency.
• It is recommended that all jewelry and valuables be left at home.
• Make arrangements for someone to drive you to and from the hospital. You will not be permitted to drive after the procedure.

On The Day Of The Procedure

• When you arrive at the hospital unit, a nurse will ask you some questions regarding your general health. If you notice any symptoms similar to those you have experienced in the past, such as palpitations, dizziness, shortness of breath or discomfort, notify your nurse immediately.
• Before the EP study, you will have several blood tests, X-rays and an electrocardiogram.
You will be asked to sign a consent form for the procedure.
You will be asked to empty your bladder by urinating prior to the procedure.
You will wear a hospital gown during the test. You may wear your eyeglasses; however, contact lenses should be removed.
You will have an IV (intravenous) line placed in a vein in your arm. It will be used to give you any medications and fluids that may be necessary during the test. Once the IV is in place, you should not feel any discomfort from it.
You will be away from your room for approximately two to four hours. However, it is important to note that these procedures vary in length of time. You will be brought back to your room following the procedure.
Your family will be instructed as to where to wait while the test is being performed.

In the Electrophysiology Laboratory

The Electrophysiology Lab contains special X-ray equipment, computers and heart monitoring equipment. The staff consists of specially trained registered nurses and cardiovascular technicians.
You will be asked to lie on your back on a special table. The staff will apply electrodes to your chest to monitor your heart rate and rhythm during the procedure. Special patches will be applied to your chest and back. These patches will be used, if necessary, to administer an electrical shock to your heart. This shock will convert your irregular heart rhythm to a normal heart rhythm.
A nasal cannula (soft, plastic tubing) will be placed in your nose to deliver oxygen throughout the procedure. Another device will be placed on your finger to continuously monitor the oxygen level in your blood during the procedure. A blood pressure cuff will be applied to your arm and intermittent blood pressures will be taken.
Your groin area will be shaved and cleansed with a special solution in preparation for the catheter insertion. In some cases, the area below the collarbone or right side of the neck is also prepared. Sterile drapes will be placed over you to minimize the risk of infection. You will be asked to keep your arms at your sides so that the drapes are not disturbed. The staff will assist you as required.
The nurse will administer medications to keep you sedated during the procedure.
**What To Expect**

- You will be given local anesthetic in the area where the catheter is to be inserted. This injection causes slight discomfort and creates a stinging sensation.
- The inside of your thigh (femoral approach) is used during the study. A flexible plastic sheath is inserted into the groin area. The catheter is slipped into the sheath and into the vein leading to the heart.
- The placement of the catheters should not cause any real discomfort, but you may feel some pressure. If you feel any discomfort, please let the staff know.
- The X-ray equipment allows for accurate positioning of the catheters within the heart. The lights in the room may be dimmed and you may hear the noise of the X-ray equipment as it moves.
- When the catheters are in place, the physician will begin to obtain valuable measurements of the electrical conduction of your heart. These catheters are attached to equipment that allow the physician to stimulate your heart through pacing. The physician will stimulate your heart to try to induce the same arrhythmia you have had in the past. If the physician is able to reproduce the same arrhythmia, you may feel a rapid heart rate, dizziness, nausea or chest discomfort. If you experience any of these symptoms, let the staff know immediately.
- There are three ways the arrhythmia may stop after it begins: It may stop on its own (self-terminating); the physician may be able to stop it by using catheters to pace the heart faster than it is beating on its own; or the arrhythmia may need to be converted by an electrical shock. If it is necessary, the shock will be delivered through patches placed on the chest and back. Prior to this, you will be medicated for comfort.
- If the irregular heart rhythm is stimulated in the laboratory, medication may be administered at that time through your IV.
- Once the procedure is completed, the catheters and sheath will be removed and firm pressure will be applied to the insertion site for 10 to 15 minutes or until the bleeding stops. A small bandage will be applied.
After Your Procedure

What To Expect

• You will be carefully monitored by the nursing staff after you return to your room.
• The nurse will regularly check the insertion site for any signs of bleeding. The nurse will also regularly check your blood pressure, heart rate and foot pulses for several hours.
• Notify your nurse immediately if you develop any numbness or tingling in your arm or leg, bleeding at the insertion site, chills or fever, palpitations, dizziness, shortness of breath or pain.
• You must stay in bed for four to six hours after you return to your room. You must lie on your back and restrict movement of your leg (or legs) during that time. The head of your bed may only be elevated 30 to 45 degrees. After the bedrest, it will be important for you to walk. The nurse must assist you the first time.
• You may eat and drink after the test.
• Hydrocortisone cream will be applied to your chest if you have any skin irritation from the electrodes.
• Your physician will discuss the results of the EP study with you and your family. He or she will also let you know how long you may need to stay in the hospital, and if you need any additional testing.
• The amount of additional testing is individualized and determined by your physician. Your physician may prescribe a drug or combination of drugs that will best control your arrhythmia. Repeat electrophysiology tests may be done after you have begun taking the new medications.
• It is not uncommon that several drugs need to be tried before a suitable treatment is found. Sometimes a drug will cause side effects. If you notice any unusual symptoms when taking a new medication, notify the staff or your physician immediately.
• Your nurse will instruct you on the medication and treatment ordered by your physician. Please feel free to ask any questions and voice any concerns you might have.

If You Have Questions

We hope we have answered some of your questions about electrophysiology studies of the heart. If you have any concerns, please contact your physician or call St. Peter’s Cardiac & Vascular Center at (800) HEART-76, or (800) 432-7876.
St. Peter’s Health Care Services, a comprehensive, integrated system of care, is the Capital Region’s largest provider of health care services.

St. Peter’s Hospital is proud to be designated a national Magnet™ Hospital for consistent excellence in nursing services. St. Peter’s has also been ranked among an elite group of hospitals nationwide as a Distinguished Hospital for Patient Safety™, Top 100 Cardiovascular Hospital, Top 100 Stroke Hospital and Top 100 Hospital for overall clinical services.

St. Peter’s continues to set the pace for health care innovations. We are 5,000 professionals who know that technology is critical to treatment, but compassion is the key to healing.