Great Lakes Heart Center of Alpena
Patient Education Handout

WHAT IS AN ELECTROPHYSIOLOGIC STUDY (EPS)?

An electrophysiologic study (EPS) is an invasive procedure used to find the source of abnormal heart rhythms.

The heart's electrical system is tested by several methods. The speed at which electrical impulse travels through the hearts conduction (electrical) system is measured. Electrical pathways (tracts) that are in the wrong place can be located. In patients with symptoms suggestive of an arrhythmia, rapid pacing is used to provoke abnormal rhythms.

HOW IS AN EPS PERFORMED?

- The patient is placed on a special fluoroscopy (x-ray) table. The groin (and sometimes the neck) is then carefully cleaned.
- Electrodes are attached to the skin and then connected to monitors.
- The patient is then covered with sterile drapes keeping the previously cleaned areas exposed.
- The patient may be given sedatives to relieve the patient's anxiety.
- After local anesthetic is infiltrated catheters are inserted through a small puncture or cut.
- The catheters are advanced through the blood vessels toward the heart. The catheters are navigated using a fluoroscopy that generates images of the catheter and heart muscle.
- The catheters are placed in the right atrium and right ventricle. Unlike the hollow catheters used for coronary angiography (cardiac catheterization) and angioplasty, the catheters used to perform an EPS are solid and have metallic electrodes at the tip.
- The electrodes are then used to make a variety of electrical measurements and pinpoint the site of the faulty electrical site (a process called mapping).
- Rapid pacing may then be performed to see if an arrhythmia can be provoked.
- Report any symptoms.
- If anarrhythmia develops, IV medications maybe given to test their effectiveness in treatment.
- A small amount of energy/shock may be needed to terminate an arrhythmia cardioversion or defibrillation).
- At the end of the procedure the catheters are removed and pressure applied. In most cases, the patient can get up and walk after 3 to 6 hours.
- An EP study may takes one to four hours to perform. This may take longer if catheter ablation is then performed.

WHEN IS AN EPS USED?

- To evaluate syncope (loss of consciousness) that may be cardiac in cause.
- Evaluating survivors of cardiac arrest in patients with no evidence of cardiac damage.
- Evidence of abnormal conduction pathways that may cause very fast heart rates (tachycardia).
- Diagnosing the source of symptoms (that maybe due to arrhythmias).
- Evaluate the effectiveness of arrhythmia treatment.
- Predict the risk of a future cardiac event, such as Sudden Cardiac Death
- Determine the need for a pacemaker or ICD or radio frequency catheter ablation.

PREPARATION

- Ask what medications to take. Some medications may be stopped one to five days before the EP study. Patients with diabetes will be instructed on how to adjust their medication doses.
- Do not eat or drink anything after midnight the evening before the study. Take medication with only with a small sip of water.
- Wear comfortable clothes. Do not wear jewelry.
- Bring a companion to drive you home.

RISKS

- Bleeding around where the catheters were inserted.
- Puncture of the cardiac chambers leading to dangerous bleeding into the hearts pericardium (called tamponade).
- A heart rhythm problem sometimes starts during EPS that needs treatment with an electric shock across the chest. This treatment, called defibrillation, restores the heart rhythm to normal. You will not feel any discomfort from the shock.
- Stiffness and discomfort from lying still for hours.

A. Salacata, M.D., FACC