Intermountain® Healthcare

Electrophysiology (EP) study and radiofrequency ablation (RFA)

What are these procedures, and why are they used?

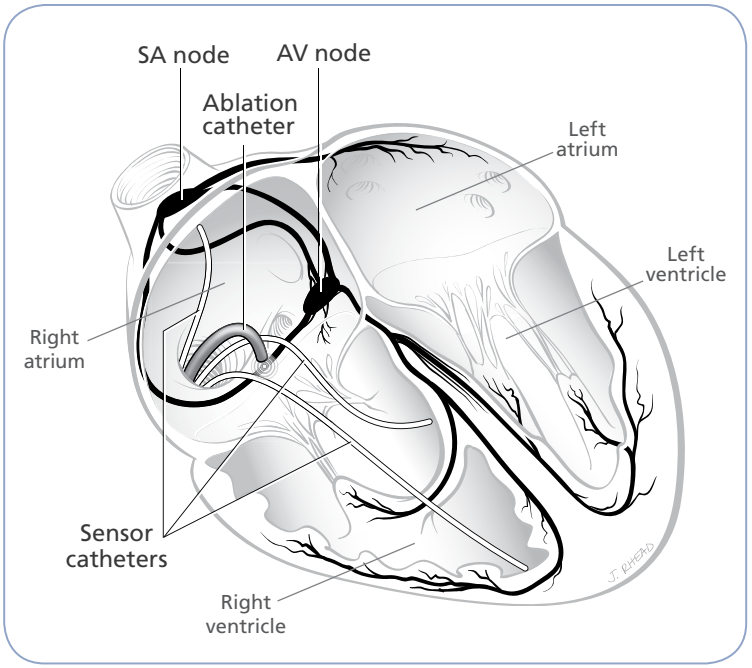
An **EP study** is a test that shows how electrical signals move in pathways through your heart. When the pathway is normal, your heart beat is regular. When these signals are abnormal, your heartbeat is irregular. An irregular heartbeat is called an **arrhythmia** (ahr-RITH-mee-ah). **RFA** is a procedure used to treat some types of arrhythmias. In most cases, it can be done at the same time as an EP study. Your doctor will tell you if you are scheduled for an EP study, an RFA procedure, or both.

Heart rhythm problems

Heart rhythmn problems are often caused when cells in the heart muscle start sending electrical signals when they shouldn't. This activity can cause:

- **Extra electrical pathways** that make the signals move in a circle or re-enter areas they already went through.
- **Extra electrical signals in the heart's upper chambers** (atria) that may make them beat rapidly or irregularly.
- **Extra electrical signals in the heart's lower chambers** (ventricles) that may make them beat quickly, before the chambers are completely filled with blood.

Symptoms of an arrhythmia are different in each person. They can include a pounding or rapid heartbeat, a heart "flutter," dizziness or feeling lightheaded, or shortness of breath.



What happens during an EP study?

An EP study uses one or more **catheters** (flexible tubes) that are moved through a vein into your heart. The catheters contain tiny sensors that measure how electric signals move through your heart.

During an EP study, a doctor can also use a catheter to cause a temporary irregular heartbeat. Measurements taken during this period help your doctor understand what is causing the irregular heartbeat, where it starts, and the best way to treat it.

What happens during RFA?

During RFA, a catheter is placed next to the heart cells that are creating the abnormal electrical signals. The tip of the catheter sends radiofrequency energy to destroy the abnormal cells in that area. This can bring the heart back to a normal rhythm.

How do I prepare?

To get ready for an EP study or an RFA you need to:

☐ **Follow your doctor's directions about medicines.** You may be asked to stop taking blood thinners or adjust your diabetes medicines if you are taking them. Always check with your doctor before stopping any medicines.

☐ **Arrange for a ride.** You will need to have a responsible adult take you home afterward.

☐ **Follow your doctor's instructions about food.** Your doctor or nurse may ask you not to eat or drink anything after midnight the night before the procedure.

☐ **Tell your doctor** if you have a cold, flu, or other illness the day of the procedure.

☐ **Bring a list of all your current medicines with you.** Write down everything including over-the-counter medicines (like cough syrup or allergy pills), herbs, supplements, and vitamins.

☐ **Tell your doctor about any allergies** to any medicines or dyes.

What happens during EP or RFA?

An EP study usually takes 1 to 2 hours. An RFA procedure also takes 1 to 2 hours. It may take 3 to 4 hours to do both procedures. If you are awake, your doctor may give you directions during the procedure.

- A nurse will prepare the area where a catheter will be put into your blood vessel.
- You'll receive medicine through the IV to make you feel relaxed and drowsy. Depending on your type of heart rhythm problem, you might receive general anesthesia so you sleep through the procedure.
- A sheath (a short plastic tube) will be placed into a blood vessel. You may feel some pressure at first. Each catheter will be put into the sheath and moved through the blood vessel to your heart. You won't feel this. The doctor uses special x-rays to see the catheter as it moves through your body.

EP study

During an EP study:

- **The heart's electrical signals are recorded.** The sensors in the catheters gather information about how electrical signals travel through your heart.
- **Signals are sent to your heart with a catheter.** The goal is to make your irregular heartbeat happen again. This way, your doctors can measure the electrical signals while the problem happens. The measurements can show what's causing the problem and help doctors find the spot on the heart that isn't working right. During the study, you might feel your heart racing or pounding, or you may feel dizzy or short of breath.
- **You may be given medicines** through the IV to see if they fix or help your heartbeat problem.

RFA

During RFA:

- An ablation catheter connected to a specialized device is placed next to the abnormal tissue that was found during the EP study.
- Radiofrequency energy is sent through the catheter to the abnormal cells in your heart. This energy **ablates** or creates a tiny scar on the cells that are causing the irregular heartbeat. This keeps the abnormal cells from changing the heart's normal electrical pathway. The doctor will ask you to stay still and avoid deep breaths at this point.
- You may feel uncomfortable when the energy is used on the cells in your heart. Tell the doctor if you're feeling pain. You may need to have more pain medicine.

What happens after?

- You'll be moved to a recovery unit where nurses can monitor your heart rate and rhythm.
- Your leg may be numb or weak for a short while. Special steps will be taken to make sure you're safe when you first get up. You may be asked to use a bedpan rather than getting up to use the toilet at first.
- You will need to lie quietly for 2 to 4 hours.
- Some patients can go home at the end of the day. Other patients will need to stay overnight. Your doctor will decide when it's okay for you to leave the hospital. You'll need to have a responsible adult drive you home.

What happens when I go home?

During the first 48 hours, you may:

- **Feel sore from several hours of lying still.** This will go away in a day or so.
- **Have bruises at the catheter site**. This should go away in a week or so.
- **Have a heartbeat that feels strange at times**. This is common as your heart muscle adjusts to the new heartbeat.

You will need to:

☐ **Watch for swelling or bleeding at the catheter site** as well as shortness of breath, or swallowing problems. Also, tell your doctor if you feel fatigue or chest discomfort that is severe or that continues beyond the first few days.

☐ **Avoid bending or squatting.** Avoid intense activity such as climbing stairs, running, or lifting anything over 10 pounds.

☐ **Take short walks** of 5 to 10 minutes, several times a day.

☐ **Use a mild laxative** if you are constipated.

☐ **Care for the catheter site.**

- Avoid hot baths, hot tubs, or swimming pools for the first 5 days or until the wound is closed.
- You may take a shower after 24 hours (1 day), but don't let the spray hit the site.
- If the site is sealed with a special closure device, ask your doctor about the device and what you should watch for.

After 48 hours

- When you go back to work depends on your physical condition and the nature of your job. You can go back to work when you doctor says it's okay.
- Take any medicines exactly as prescribed by your doctor, even after you feel better. Go to all follow-up appointments so your doctor can check your heart.

When to call your doctor:

Call your doctor if you have any of these symptoms:

- A fever over 101° F
- Redness, swelling, drainage, bleeding, or severe pain near the catheter site
- Coldness or numbness in your arm or leg
- Severe tiredness, or tiredness that continues
- Difficulty swallowing or eating
- Fainting, light-headedness, or dizziness
- Very fast or slow heartbeat
- Shortness of breath
- Swelling in your hands or ankles
- **Call 911** if you have chest discomfort that is severe or is not relieved by medicine for chest pain.

What should I ask my doctor about an EP study or RFA procedure?

It's important that you talk with your healthcare provider about your surgery. Write down any questions you may have. Be sure to ask:

- How this surgery can help you.
- What risks or possible problems may come with this kind of surgery.
- If there are other ways to treat your problem besides surgery.

See the table below for the most common potential benefits, risks, and alternatives for EP studies and RFA procedures. Other benefits and risks may apply to your unique medical situation.

Potential benefits	Risks and potential complications	Alternatives
EP study • Compared with other tests, it provides better information about the electrical system of your heart. • It can help your doctor better diagnose the cause of a heart rhythm problem, find its source, and test the medicines used to treat it. **RFA procedure** • It can lessen or end the heart rhythm problem. • It can allow you to decrease or stop long-term medicine for a heart rhythm problem.	**Both procedures** • Temporary leg numbness or weakness in the first few hours afterward (rare) • Bleeding or infection where the catheter was inserted (rare) • Allergic reaction to x-ray contrast media (dye), (very rare) • Damage to the artery or heart (extremely rare) • Heart attack or stroke (extremely rare, and not typically caused by the procedure itself) • The need to use an electric shock to restore a normal heartbeat during the procedure (rare) • Low blood pressure, or buildup of fluid in the sac that surrounds the heart (rare) • Clots developing at the tip of the catheter (rare) **RFA procedure** • Damage to the heart's electrical system (rare). If this happens, a permanent pacemaker may need to be placed. • Your doctor may need to use a catheter to treat your heart rhythm problem that is not yet approved by the FDA for this specific purpose.	**EP study** Alternatives to an EP study include other heart tests, such as: • EKG (electrocardiogram) • Echocardiogram • Heart rate recorders such as a Holter monitor • Tilt table test **RFA procedure** Alternatives include other treatments such as: • Medicine • Implantable cardiac defibrillator (ICD)

 Patient and Provider Publications FS059-10/16 (Last reviewed-09/16) *Also available in Spanish.*