

Let's Talk About...

Electrophysiology (EP) study and cardiac ablation

An electrophysiology (EP) study is a test that measures how electrical signals move through your child's heart. Cardiac ablation is a procedure used to treat some types of heart rhythm problems.



Why does my child need an EP study?

Your child may need an EP study to catch an abnormal heart rhythm event. During an EP study, a doctor can use a catheter to provoke the unstable heart rhythm. Measurements recorded while the heart is in an unstable rhythm can help doctors determine its cause, where it starts, and even what medicines control it best.

An EP study can be more effective than other sensitive tests like ECGs (electrocardiograms), cardiac echo tests, or Holter monitors for recording abnormal heart rhythm events.

Why does my child need cardiac ablation?

Your child may need cardiac ablation to treat an unstable heart rhythm. During cardiac ablation, a healthcare provider puts a catheter next to the heart cells creating abnormal electrical signals. A device on the catheter then uses radiofrequency energy or liquid nitrogen to destroy abnormal cells in a small area. This can restore your child's heart to a normal rhythm.

Usually your child can have an ablation procedure at the same time as an EP study. The doctor will tell you if your child is scheduled for an EP study, an ablation procedure, or both.

What are the risks of cardiac ablation and EP studies?

Risks of both cardiac ablation and an EP study are rare but may include:

- Bleeding or infection where the catheter was inserted
- Allergic reaction to x-ray dye
- Artery or heart damage
- Heart attack or stroke
- The need to use an electric shock to restore a normal heartbeat during the procedure
- Low blood pressure
- Fluid buildup in the sac that contains the heart
- Clots at the tip of the catheter

Rarely, cardiac ablation can cause damage to the heart's electrical system. If this happens, the doctor may need to insert a permanent pacemaker.

How do I prepare for my child's procedure?

To make your child's EP study or cardiac ablation go more smoothly:

- Tell your child's doctor about medicines and allergies. This includes prescriptions, over-the-counter drugs, herbs, and vitamins.
- Follow the doctor's directions about medicines. Your child may need to stop taking certain blood thinners before the procedure.

- Have your child fast (have no food or drink) for 6–8 hours before the surgery. If the surgery is in the morning, your child should not eat or drink anything after midnight the night before.
- Tell the doctor if your child is ill the day of the procedure with a cold, the flu, or anything else.
- Bring your child’s favorite book or toy from home so they have it after the procedure.

What happens before my child’s procedure?

Here’s what happens before the procedure:

- You will fill out some paperwork, including a consent form.
- Your child will change into a hospital gown, and a nurse may draw blood for lab work.
- An IV (intravenous) tube may be placed in your child’s arm or hand to give her fluids. They may also receive medicine by mouth or through a mask before the IV is placed.
- Your child will be moved to the EP lab. The room may feel cool, but they will be covered with sterile draping and a blanket for the procedure.

What happens during my child’s procedure?

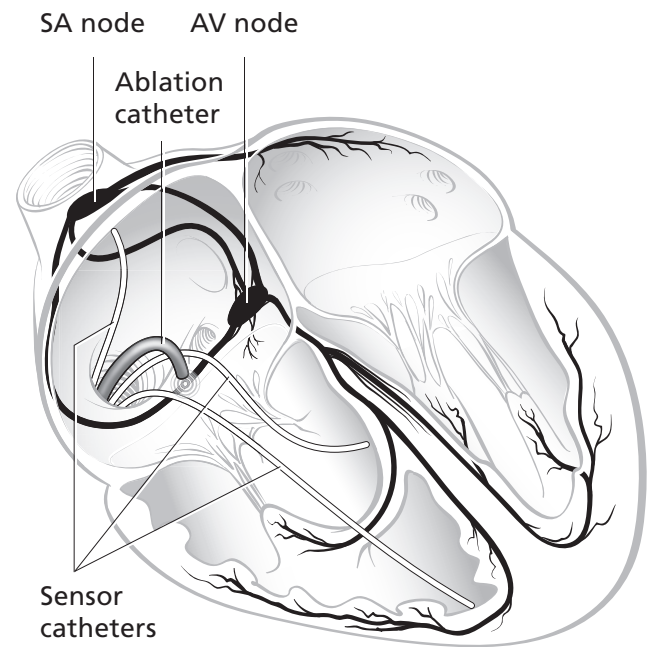
To prepare for an EP study and cardiac ablation:

- A healthcare provider gives your child medicine so they will sleep through the procedure.
- A nurse will prepare each patch of skin where a catheter will be inserted.
- Your child will have monitoring devices attached to check their heart rate, breathing, and other information.
- Your child’s doctor will first insert a sheath (short plastic tube) into a blood vessel. Each catheter will be put into the sheath and threaded through the blood vessel to the heart. X-ray imaging will help guide the doctor.

EP study:

During an EP study:

- The healthcare team uses sensors in the catheters to gather information about how electrical signals travel through your child’s heart.



- The doctor uses a catheter to stimulate the heart. The goal is to reproduce your child’s heart rhythm problem and measure the electrical signals while the problem happens.
- A healthcare provider may give your child medicines through the IV to see whether they help reduce the problem.

Cardiac ablation:

During cardiac ablation:

- An EP study confirms where the tissue causing the rhythm problem is.
- A healthcare provider puts an ablation catheter connected to a specialized device next to the abnormal tissue.
- The doctor uses precisely focused radiofrequency energy (heating) or liquid nitrogen (freezing) at the catheter tip on the abnormal tissue cells. This ablates (creates a tiny scar in) the cells, preventing them from interfering with the heart’s normal electrical pathway.

Finishing the procedure:

At the end of either procedure, the doctor will:

- Apply numbing medicine to the catheter sites
- Thread each catheter back through the vein and remove it

- Remove the sheath
- Have a nurse apply pressure to the site to prevent bleeding
- Seal the catheter site with a bandage or pressure bandage

An EP study usually takes 1–2 hours, and a cardiac ablation procedure takes 1–2 hours. A combined procedure (EP and ablation) may take 3–4 hours or longer.

What happens after my child’s procedure?

After the procedure, a nurse will monitor your child while they wake up and until they’re ready to go home.

- Your child will be moved to a recovery unit and connected to a telemetry monitor that shows their heart rate and rhythm.
- Your child will need to lie flat for 4–12 hours. They can watch movies, listen to music, or read a favorite book during this time.

Some children can go home at the end of the day, while others will need to stay overnight. Your child’s doctor will decide when they are ready to leave the hospital.

What can I expect after my child’s procedure?

Your child may feel sore from several hours of lying flat, but this will go away in a day or so. The catheter site will be bruised for about a week. Your child’s heartbeat might feel strange to them at times as the heart muscle adjusts to the healthier heartbeat.

How do I take care of my child when they go home?

After your child goes home:

- Make sure they don’t bend or squat for the first 48 hours after the procedure. They should also avoid intense activity like climbing stairs, running, or lifting heavy objects.

- Have them take 5–10-minute walks several times a day.
- Give them a stool softener, if necessary, to relieve constipation.
- Have them avoid baths, hot tubs, or swimming pools for the first 5 days or until the wound is closed. Showers are okay after 48 hours.
- Make sure they take any medicine the doctor prescribed after the EP study, even after they feel better.
- Keep any follow-up appointments so healthcare providers can continue to monitor your child’s heart.
- Ask their doctor when they can return to school.

When should I call my child’s healthcare provider?

Call your child’s healthcare provider if your child has:

- A fever higher than 101°F
- Redness, swelling, drainage, bleeding, or severe pain near the catheter site
- Coldness or numbness in their arm or leg
- Severe tiredness, or tiredness that continues
- Trouble swallowing or eating
- Lightheadedness or dizziness (or faints)
- A very fast or slow heartbeat
- Trouble getting enough breath
- Swelling in their hands or ankles

Call 911 if your child has severe chest pain that doesn’t go away with medicine.

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