

Electrophysiology study and ablation

What is an electrophysiology study (EPS)?

An electrophysiology study (EPS) is a special test done in the cardiac catheterization laboratory (cardiac cath lab). The EPS can:

- Check the electrical impulses made by the heart.
- Look for areas of abnormal electrical activity in the heart.

An EPS can also help your child's cardiologist (heart doctor) choose a treatment for the problem.

Why does my child need an EPS?

Your child needs an EPS because they have a problem with the beating rhythm of their heart. It may beat too fast (fast heart rate), too slow (slow heart rate) or have an abnormal electrical activity that needs testing.

What is an ablation?

- Ablation uses a heart catheter with a special tip. The doctor can create a small scar by heating or freezing a small amount of tissue where the abnormal electrical impulses are coming from. This is called ablating.
- Ablation is used to treat some but not all types of abnormal heart rates.
- Your child's doctor will talk with you ahead of time if your child needs an ablation and what type may be used.

What happens before the EPS?

- Someone will call you to schedule your child's EPS several weeks ahead of time.
 - The EPS will take place in the cardiac cath lab at Children's Healthcare of Atlanta at Arthur M. Blank Hospital.
 - **Please be sure to give us the CORRECT phone number to reach you.**
 - Tell the scheduler what medicines your child takes. This includes over-the-counter medicines, vitamins, herbs and supplements.
- A nurse will review the list of medicines with you and give instructions. Your child may need to stop certain medicines 5 days before the EPS.
- A nurse will call you between 3 to 5 p.m. on the day before your child's EPS. The nurse will tell you:
 - What time to get to the hospital.
 - When your child should stop eating and drinking.

In case of an urgent concern or emergency, call 911 or go to the nearest emergency department right away.

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What happens during the EPS?

During an EPS:

- Your child will get general anesthesia. General anesthesia is medicine that puts your child into a deep sleep, so they will not feel anything or have any pain.
- The doctor will use X-ray and a special 3D mapping system that uses a small amount of radiation to thread special catheters inside the heart. The catheter is a thin, soft, long tube that is put into a vein in your child's leg or neck area while your child is asleep.
- An electrode on the end of the catheter:
 - “Excites” or paces the heart. This causes the heart to beat fast. Once the heart beats fast enough, the doctor will “map” the heart.
 - Measures electrical activity in the heart to make a map.
- When the doctor maps the heart, they will move the catheter around the inside of the heart to find the area causing the abnormal heart rate.

What happens after the EPS?

After the EPS, your child:

- Will need to stay in the cardiac cath area for several hours.
 - During this time, the nurses will check your child's heart rate, breathing and blood pressure.
 - They will also check the bandages. Your child may have bandages on their neck and on both sides of the groin. The catheter sites are very small and do not need stitches.
- Will have an I.V. to give fluids and medicines to your child. A care team member will remove the I.V. and place a bandage on the site before your child goes home.
- Will need to be still in bed for about 3 to 4 hours.

After your child wakes up, they will be able to drink clear liquids.

- After drinking enough clear liquids without getting sick, your child will be allowed to eat food.
- The nurses will order your child a meal or offer crackers based on how your child is drinking

The nurse will give you home care instructions when it is time for your child to go home. You will need to schedule a follow-up visit with your child's heart doctor. Your nurse will tell you when and how to schedule the visit.

When will I get the EPS results?

Your child's doctor will give you the results before your child goes home.

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When should I call the doctor?

Call your child's heart doctor if your child has:

- Bleeding on the catheter site bandages that is larger than a quarter or that has not stopped after 5 minutes.
- Signs of infection at the catheter sites, such as:
 - Yellow, green or milky drainage
 - Drainage that smells bad
 - Increasing redness or swelling at the site
 - A temperature higher than 100.5°F (38°C) without other signs of sickness
- Nausea or vomits (throws up) more than 2 times

Also call if you have any questions or concerns about how your child looks or feels.

Common words that you might hear:

- **Arrhythmia** – a heart rate that is too fast, too slow or not regular
- **Tachycardia** – a fast heart rate
- **Bradycardia** – a slow heart rate
- **SVT** (supraventricular tachycardia) – a fast heart rate coming from the top chambers of the heart (called the atria)
- **Ventricular tachycardia** – a fast heart rate coming from the lower chambers of the heart (called the ventricles)
- **Accessory pathway** – an electrical “extra circuit” that allows a fast heart rate to happen
- **AV node** – normal heart tissue that connects the electrical impulses between the top chambers (atria) of the heart and the lower chambers (ventricles) of the heart
- **Cardiac catheterization (cardiac cath)** – a test that shows the structures of the heart and the pressure in the heart. The doctor will put a soft, long, thin tube into the big blood vessels in your child's leg or neck area and thread it into the heart. The doctor will then be able to see your child's heart using X-rays.
- **Cryoablation** – a non-surgical way to destroy tiny cells in the heart that are causing an abnormal heart rate. This is done by placing a special catheter in the heart and using a cooling method.
- **Radiofrequency ablation** – a non-surgical way to destroy tiny cells in the heart that are causing an abnormal heart rate. This is done by placing a special catheter into the heart and using a heating method.
- **Transseptal approach** – a way to get to the left side of the heart during a cardiac cath. It is used when the fast heart rate is coming from the left side of the heart. In order to get to the left side of the heart, the doctor makes a tiny hole between the right and left upper chambers of the heart. If a hole is made, it will close on its own after the test.

This teaching sheet contains general information only. Talk with your child's doctor or a member of your child's healthcare team about specific care of your child.

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