

Let's Talk About...

Cardiac Catheterization for You or Your Child

What is cardiac catheterization?

Cardiac catheterization helps healthcare providers evaluate your child's heart and blood vessels. During this procedure, a **cardiologist** (heart doctor) inserts a long, flexible tube called a **catheter** into a blood vessel in your child's groin or neck. The catheter is then threaded to the heart and major blood vessels of the lung and body.

The catheter is used to measure blood pressure and to take pictures of blood vessels and the chambers of the heart. Special catheters have also been designed to treat problems in the heart or blood vessels.

Why might my child need it?

Cardiac catheterization gives healthcare providers detailed information about the heart and blood vessels. It may be used for the following reasons:

- To **evaluate** the heart and blood vessels of patients with **heart or lung conditions**, including birth defects of the heart, heart diseases, heart failure, or lung diseases.
- To **treat heart and blood vessel problems**, such as holes in the heart, narrow heart valves, or abnormal blood vessels.
- To **evaluate** the heart and blood vessels of a patient after a **heart transplant**.

How should we prepare?

- **Arrange for a ride.** Someone needs to be available to drive your child to and from the hospital.
- Get clear instructions about the **foods, drinks, and medications** that are allowed before the procedure. You will be called by a nurse in Same Day Surgery unless your child is already in the hospital. Depending on your child's age, there are different instructions on stopping food and liquids before the procedure.

Note: if you are an adult having this procedure at Primary Children's Hospital, please substitute "you" for "your child" in the text.

- When you are scheduling the procedure, make sure your child's cardiologist is aware of **other medical problems**. Patients with diabetes, asthma, and other diseases may need additional care before, during, or after the procedure.
- **Tell your cardiologist if your child is currently ill.** It may be best to reschedule the procedure if your child has a runny nose, cough, fever, vomiting, diarrhea or diaper rash.
- Bring a list of your **current medications**. Include over-the-counter medications, herbs, and other supplements.
- Tell your cardiologist about previous **adverse (bad) reactions to drugs, dyes and foods**.

What happens before the procedure?

Here's what happens before the procedure begins:

- A healthcare provider will take a history and do a physical examination.
- The cardiologist will obtain consent to do the procedure. This is your chance to tell the doctor your concerns and ask questions. (See the list of potential benefits, potential risks, and alternatives at the end of this fact sheet.)
- Blood tests and urine tests might be done.
- Your child might have an IV placed to receive medication.
- Your child might be given a sedative by mouth.

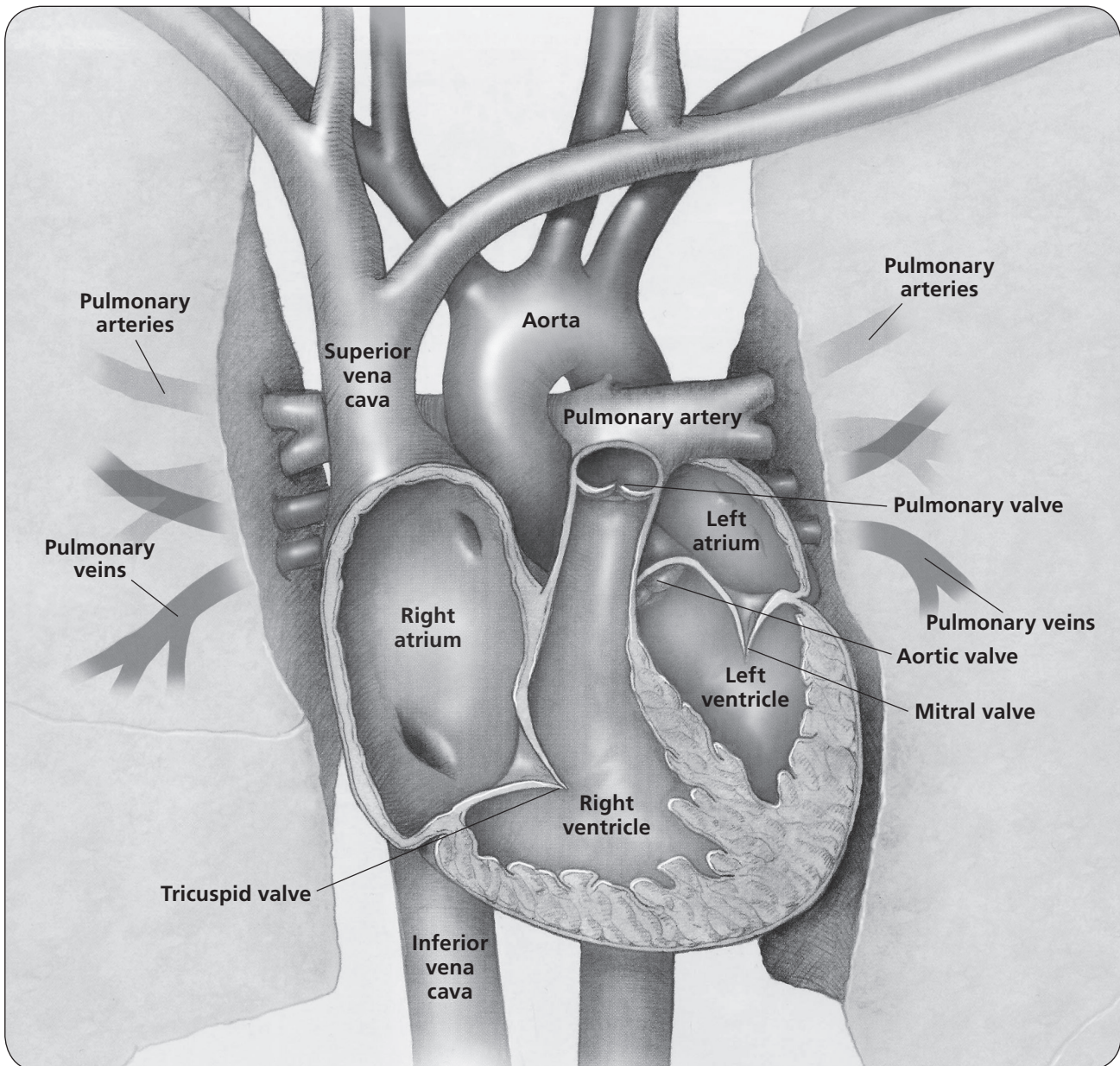
What happens during cardiac catheterization?

Cardiac catheterization usually lasts 2 to 3 hours. It includes **preparing** your child, one or more **procedures**, and **closing** the catheterization sites.

Preparing

- Your child will lie down on a soft table. Monitors will be attached to record your child's heart rate and blood oxygen during the procedure.
- An IV will be placed if it was not placed before the procedure.

- Medications will be given to keep your child comfortable and free of pain. The medication might also make your child sleep through the procedure.
- An anesthesiologist might place a tube through the mouth to the lung, to help your child breathe safely while sleeping during the procedure.
- The cardiologist will numb the skin where the catheters will be inserted.
- The cardiologist will insert catheters into a vein in the leg or neck, and an artery of the leg or arm.



Procedures

After the catheters are threaded to the appropriate area, the cardiologist will perform one or more procedures. These are listed below, and your doctor might use this section to check the procedure(s) your child will have.

- Diagnostic catheterization:** measuring the pressure and oxygen in the blood to assess the heart and blood vessels.
- Angiography:** taking pictures of the heart chambers and/or blood vessels, using x-rays and x-ray dye (also called “contrast”).
- Heart biopsy:** removing small pieces of muscle from the inner surface of the heart. This helps doctors see what the heart muscle cells look like. This is typically done after a heart transplant. It may also be done if the doctor suspects an infection in the heart muscle.
- Balloon valvuloplasty or balloon angioplasty:** using a catheter with a balloon to enlarge a narrow heart valve or blood vessel. This helps the blood flow more freely through the heart and blood vessels.
- Closing a septal defect:** Using a catheter to place a device that closes a hole between two chambers of the heart.
- Balloon atrial septostomy:** Using a catheter with a balloon to enlarge a hole between the upper chambers of the heart. For babies with certain heart defects, this allows them to have more oxygen in their blood before the defects are repaired.
- Occlusion of blood vessels:** Closing abnormal blood vessels with a metal coil or a device that is delivered through a catheter. This prevents the blood vessels from causing various problems, depending on their location in the body.
- Stent placement:** Using a catheter to insert and expand a **stent** (a wire support) to keep a blood vessel open.
- Pericardiocentesis:** Inserting a catheter through the skin below the breastbone to remove an abnormal collection of fluid around the heart.

Closing

At the end of the procedure:

- The catheters are usually removed.
- Bleeding is controlled by applying direct pressure to the site for several minutes.
- The site is covered with a large bandage that applies a little pressure, until it is removed the next day.

What happens after the procedure?

- **Monitoring:** A nurse will monitor your child’s recovery for several hours to make sure your child awakens from sedation and has no complications.
- **Nutrition:** Your child will be given fluids and food, if she can tolerate it.
- **Managing nausea:** If your child has nausea or vomiting, healthcare providers may need to monitor your child longer, or give her medication or IV fluids.
- **Going home:** The nurse will send you home with instructions from the cardiologist when your child has recovered adequately from sedation and the procedure.

What should I do after we go home?

- **Remove the bandages** from the catheter sites the day after the procedure. It is okay to apply an antibiotic ointment and/or a band-aid to the site for a couple of days, if desired.
- **Keep the catheter sites from getting under water** for at least 2 days. Avoid the bathtub, hot tubs, and swimming pools. Your child may shower the day after the procedure.
- Your child should **walk only short distances** until 24 hours after the procedure. If capable, after a few days your child should be able to walk normally.
- Your child should **avoid exercise for 2 days** after the procedure. The doctor may give further instructions about exercise restrictions for your child.
- Make a **follow-up appointment** with your personal cardiologist.

When should I call the doctor?

Call your personal cardiologist or the “on call” cardiologist if:

- A catheter site bleeds, the bruise gets larger, or the site remains painful for more than a few days.
- You see signs of infection. These signs include a fever, fluid draining from the catheter site, or redness and warmth of the skin around the catheter site.
- You see signs that your child’s leg doesn’t have enough blood flow. These signs include the leg being cool, mottled, or discolored below the catheter site.

Call 911 if any unexpected serious events occur.

These include:

- Fainting or difficulty breathing
- A large amount of bleeding
- Your child being abnormally sluggish or inactive

Talking with your doctor before this procedure

It’s important for you to understand the potential benefits, risks and potential complications, and alternatives for cardiac catheterization listed in the table below. Other benefits and risks may apply to your situation. Talking with your doctor is the most important part of learning about these benefits and risks. Don’t be afraid to ask questions. All of your questions or concerns should be addressed before you agree to a recommended procedure.

Potential benefits	Risks and potential complications	Alternatives
<ul style="list-style-type: none"> • It may provide information that helps healthcare providers select the best medications to treat your child’s heart and blood vessels. • It may identify problems that will enable a heart surgeon to repair your child’s heart and blood vessels. • It may provide a way to repair a heart problem that would otherwise require an operation. Catheterization does not usually involve incisions (cuts), and may allow your child to recover more rapidly. 	<ul style="list-style-type: none"> • Pain, discomfort, or bruising where a catheter was inserted • Enough blood loss to require a transfusion • Injury to the leg below a site where a catheter was inserted • Injury to the heart, lung, or major blood vessel by a needle or catheter • Exposure to x-ray energy, which can slightly increase your child’s lifetime cancer risk (for more information, see Intermountain’s <i>Guide to Understanding Radiation</i>) • Bad reactions to the fluid or dye used to take x-ray pictures of the heart • Changes in heartbeat that may occur when a catheter is moved through the heart • Loss of a piece of catheter or loss of a device into the heart or blood vessels • Injury to the brain or other organ from an air bubble, blood clot, catheter, or device • Death <p>Serious risks and complications are rare.</p>	<p>Other tests may provide adequate information about the heart. These include:</p> <ul style="list-style-type: none"> • Echocardiography (Echo) • Exercise tests • Computed tomography angiography (CT scan) • Magnetic resonance imaging (MRI scan) <p>Ask your child’s cardiologist to compare the benefits and risks of cardiac catheterization to the benefits and risks of alternative procedures.</p>