

## HEART BIOPSY

AT CHILDREN'S HOSPITAL OF PITTSBURGH OF UPMC, we believe that parents and guardians can contribute to the success of this procedure and we invite you to participate. Please read the following information to learn about the procedure and how you can help.

### Fast Facts About Heart Biopsy

- A heart biopsy is a type of heart catheterization that can be done as an outpatient procedure in the cardiac catheterization laboratory or "cath lab."
- A cardiac catheterization or "heart cath" is a minimally invasive procedure which allows the doctor to look inside the heart through just a few pokes in the skin.
- In the biopsy, a catheter is inserted into a vein, usually in the neck or leg, and directed into the chambers of the heart using a type of x-ray called fluoroscopy.
- A special catheter with tiny tweezers on the end is put through the catheter and tiny samples of heart tissue are taken.
- The catheter is removed and the tissue is sent to the lab to be looked at under a microscope. The biopsy can detect abnormalities in the heart muscle tissue.
- Your child may have general anesthesia or sedation for the heart biopsy, depending on what your child's doctor decides. General anesthesia will make him or her sleep throughout the entire procedure; sedation will make him or her very drowsy.
- When anesthesia or sedation is needed, there are special rules for eating and drinking that must be followed in the hours before the heart biopsy.
- A heart biopsy can take about 45 minutes to 1 hour to complete, but recovery may take several hours.

### What Is A Heart Biopsy?

A heart biopsy is a test to see if there are any abnormalities in the muscle tissue of the heart. A biopsy may be ordered if the doctor wants to check for weaknesses or changes in the heart muscle structure, weak heart pumping, other heart function problems, or to check for rejection after a heart transplant.

The heart biopsy is done during a heart catheterization or "heart cath." The heart cath is a minimally invasive procedure which allows the doctor to look at and get information about the heart from the inside using special catheters and a type of x-ray called fluoroscopy (*floor-OS-co-pee*). The doctor uses very thin, flexible tubes called "catheters" placed in the neck vein, or sometimes the leg vein, to get information about the heart. The catheter will be inserted into these large blood vessels in the same way an intravenous (IV) line is placed. The catheter is gently pushed through the blood vessels and into the heart using fluoroscopy to guide the placement of the catheter.



Once the catheter is in position inside the heart, the doctor will insert a smaller catheter through it. This smaller catheter has a set of tiny tweezers on the end of it. The tweezers will take a tiny sample of heart tissue that will be pulled back through the catheter. Getting this small amount of tissue for testing is what is known as a biopsy (*BY-op-see*). The tissue sample will be sent to the lab to be processed. Results from the biopsy will be available by the next day.

At the Heart Institute, the doctors and nurses work as a team with many other medical professionals. Among the team members who may be in the cath lab with your child is a pediatric anesthesiologist, who will give your child any medications needed to make him or her sleep, and monitor his or her vital signs during the procedure. The cath lab staff also will be involved by preparing your child for the procedure and getting equipment needed by the doctor. A transplant cardiologist will do the heart cath and biopsy, and may work with a cardiology fellow, who is a pediatric doctor training to be a cardiologist.

### What Are the Benefits and Risks of the Heart Biopsy?

A biopsy may be needed to check for heart muscle abnormalities or rejection after a heart transplant. Rejection is a serious condition that requires treatment. A heart biopsy can give your child's cardiologist important information to guide the treatment and management of your child's condition. As with any medical procedure, there are some risks involved. These risks will be discussed with you prior to the procedure:

- Infection
- Arrhythmia, or abnormal heart beat

## HEART BIOPSY cont'd

- Bleeding
- Vessel damage or blockage
- Tricuspid valve injury
- Effusion
- Pneumothorax
- Cardiac arrest

### Home Preparation

**When sedation or general anesthesia is needed, there are important rules for eating and drinking that must be followed the night before and the day of the procedure.** One business day before your child's procedure, you will receive a phone call from a scheduling nurse between 1 p.m. and 9 p.m. (Nurses do not make these phone calls on weekends or holidays.) Please have paper and a pen ready to write down these instructions. Your transplant coordinator may also call you. Please follow the directions your coordinator gives you regarding your immuno-suppressant medications or obtaining lab work prior to arriving at the Same Day Surgery Center.

- The nurse will ask you about your child's medical history, current medications, and readiness for the heart cath. If you have any questions, you may ask the nurse at this time.
- The nurse will tell you what time you should arrive at the hospital. Allow enough time for travel and parking. Arriving late may delay your child's procedure or cause it to be postponed.
- The nurse will give you specific instructions for eating and drinking. For children older than 12 months, the instructions usually are:
  - No solid food or non-clear liquids after midnight the night before the test. That includes milk, formula, juices with pulp, and chewing gum or candy.
  - Only clear liquids up to 2 hours before the scheduled arrival time. Clear liquids include water, Pedialyte™, Kool-Aid®, and juices you can see through, such as apple juice.
  - No tooth brushing on the morning of the test.
  - Nothing to eat or drink in the 2 hours before the scheduled arrival time.
- Children younger than 12 months may have different eating and drinking instructions. No matter what age your child is, *you should follow the specific instructions given to you on the phone by the nurse.*
- For the safety of your child, it is important to follow these specific times for eating and drinking. Remember: If your child does eat or drink after the scheduled times, it will delay the test or cause it to be rescheduled for another day.
- Dress your child in comfortable, two-piece clothing or pajamas.
- You should not use any cream, lotion, powder, or baby oil on your child's chest on the day of the heart biopsy.
- If your child is sick with a mild cold or cough in the days leading up to the heart biopsy, in many cases he or she can still have the heart biopsy as scheduled. If your child has a severe cold, fever,

or flu in the days before the heart biopsy, the procedure might need to be rescheduled until your child feels better. Please call our office to discuss your concerns.

### A Parent's/Guardian's Role

The most important role of a parent or guardian is to keep your child calm. The best way to keep your child calm is to be calm yourself. Knowing what to expect and explaining it to your child beforehand is the best way for both you and your child to be prepared for this procedure. Here are some guidelines to use when discussing the heart cath with your child.

### At any age

Your child may bring along a "comfort" item — such as a favorite stuffed animal or "blankie" — to hold during the procedure. There are televisions in the same day surgery rooms, but you are welcome to bring along a portable DVD player, laptop computer, or handheld video game if these items will help your child.



### Birth to 2 years

Please bring along "comfort" items for your child, such as a favorite blanket, stuffed animal, or toy.

### 2 to 7 years

The day before your child's heart cath, explain the procedure using simple words. You might explain that the doctor "will take pictures of your heart while you are taking a nap." A medical play kit can be helpful so that your child is familiar with items he or she may see. For example, you can show your child how to use a stethoscope on a teddy bear. Books about going the hospital also might be helpful.

### 7 to 11 years

Older children may benefit from discussing the heart cath about a week or so before the scheduled date. At this point, kids understand more about the body, the organs, and how they work. For that reason, they may be more afraid of pain. You might explain to your child that he or she will be getting medication that will make him or her very sleepy throughout the heart cath, and this medication will keep him or her from feeling any discomfort during the procedure. It will also make it hard to remember much about the procedure afterward.

You might add that the heart is like a pump, and the heart cath will help the doctor understand how well your child's heart is pumping. Books about going to the hospital might also be helpful.

### 12 years and up

Preteens and teens are able to understand the way the heart works, what their heart problem is, and why they need this procedure. They might ask very insightful questions. Use their questions to help guide your discussion.

## HEART BIOPSY cont'd

### The Heart Catheterization and Biopsy

You and your child will register for the heart cath and biopsy at the Same Day Surgery Center on the 4th floor of Children's Hospital in Lawrenceville. You and your child will be called to an examination room where your child's vital signs will be checked.

- Your child will be asked to take off all clothes down to his or her underpants and put on a hospital gown.
- A member of the hospital's anesthesia team will meet with you and your child to make sure he or she has not had any food or liquids before the test and to ask you any other important questions about your child's health. After speaking with the anesthesiologist, you will be asked to sign a consent form to authorize the anesthesia.
- The cardiologist performing the procedure will come to meet you and your child before the test begins. At that time, you may ask any questions you may have about the test.
- A nurse will come to get your child when it is time for him or her to move into the cath lab. Parents will be shown to the waiting area. Sometimes one parent is encouraged to walk into the cath lab with the child.
- Once your child is in the cath lab and asleep, an intravenous (IV) line will be placed into a vein in his or her arm. During the procedure, medicine will be given through the IV to keep your child asleep or drowsy. Fluids will be given through the IV to prevent dehydration.
- At the beginning of the test, an electrocardiogram, or ECG, will be done. Small plastic stickers will be placed on your child's chest; wires will be attached to the stickers and connected to the ECG machine.
- A blood pressure cuff will be wrapped around your child's arm to measure blood pressure frequently throughout the test.
- A light sensor will be taped to your child's finger to measure the amount of oxygen in his or her blood.
- When your child is ready, the cardiologist will begin the heart biopsy.
- An injection of local anesthetic will be given under the skin where the catheter is going to be inserted.
- The doctor will speak with you after the procedure is completed.

### After the Heart Biopsy

As soon as the heart biopsy is done, your child will be moved to a recovery room until the effects of anesthesia begin to wear off. You will be called to the recovery room so that you can be there as he or she wakes up. You can help by talking softly and touching your child so he or she knows you are there.

- Your child will have a pressure bandage taped in place on the site where the catheter was inserted. This tape needs to stay in place for at least 6 hours after the heart cath to minimize bleeding. Even with a pressure bandage, your child may have bruising in the area of the insertion site.

- Your child will stay in the recovery room to be watched until he or she is alert and his or her vital signs are stable. The length of time your child will spend in the recovery room will vary because some children take longer than others to wake up after anesthesia.
- When your child is fully awake, he or she will be discharged.
- After your child is discharged, he or she may still be groggy and should take it easy for the rest of the day.
- He or she usually can return to school the next day. Talk to your child's doctor about returning to school and activities, and allow your child to resume activities at the pace he or she is comfortable with.
- Your child may begin to eat and drink a little at a time and resume normal eating and drinking as long as he or she is feeling well.
- Your child may have bruising in the area where the catheter was inserted. Tylenol® or Motrin® may be given if the bruises are uncomfortable.
- You should follow up with the cardiologist if you have any further questions.

### Special Needs

If your child has any special needs or health issues you feel the doctor needs to know about, please call the Heart Institute before the procedure and ask to speak with a nurse. It is important to notify us in advance about any special needs your child might have.

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412-692-5541 Cardiac Transplant Services  
412-692-5325 Cardiologist on call (evenings, weekends, holidays)

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To see the list of all available patient procedures descriptions, please visit [www.chp.edu/procedures](http://www.chp.edu/procedures).

