

## Echocardiogram - children

### Definition

An echocardiogram is a test that uses sound waves to create pictures of the heart. It is used with children to help diagnose defects of the heart that are present at birth (congenital). The picture is more detailed than a regular x-ray image. An echocardiogram also does not expose children to radiation.

### Alternative Names

Transthoracic echocardiogram (TTE) - children; Echocardiogram - transthoracic - children; Doppler ultrasound of the heart - children; Surface echo - children

### How the Test is Performed

Your child's health care provider may do the test in a clinic, in a hospital, or at an outpatient center. Echocardiography in children is done either with the child lying down or lying in their parent's lap. This approach can help comfort them and keep them still.

For each of these tests, a trained sonographer performs the test. A cardiologist interprets the results.

#### TRANSTHORACIC ECHOCARDIOGRAM (TTE)

TTE is the type of echocardiogram that most children will have.

- The sonographer puts gel on the child's ribs near the breastbone in the area around the heart. A hand-held instrument, called a transducer, is pressed on the gel on the child's chest and directed toward the heart. This device releases high-frequency sound waves.
- The transducer picks up the echo of sound waves coming back from the heart and blood vessels.
- The echocardiography machine converts these impulses into moving pictures of the heart. Still pictures are also taken.
- Pictures can be two-dimensional or three-dimensional.
- The entire procedure lasts for about 20 to 40 minutes.

The test allows the provider to see the heart beating. It also shows the heart valves and other structures.

Sometimes, the lungs, ribs, or body tissues may prevent the sound waves from producing a clear picture of the heart. In this case, the sonographer may inject a small amount of liquid (contrast dye) through an IV to better see the inside of the heart.

#### TRANSESOPHAGEAL ECHOCARDIOGRAM (TEE)

TEE is another type of echocardiogram that children can have. The test is done with the child lying under sedation.

- The sonographer will numb the back of your child's throat and insert a small tube into the child's food pipe (esophagus). The end of the tube contains a device to send out sound waves.
- The sound waves reflect off the structures in the heart and are displayed on a screen as images of the heart and blood vessels.
- Because the esophagus is right behind the heart, this method is used to get clearer pictures of the heart.

### How to Prepare for the Test

You can take these steps to prepare your child before the procedure:

- Do not allow your child to eat or drink anything prior to having a TEE.
- Do not use any cream or oil on your child before the exam.
- Explain the test in detail to older children so they understand that they should remain still during the test.
- Younger children less than 4 years of age may need medicine (sedation) to help them stay still for clearer pictures.
- Give children older than 4 a toy to hold or have them watch videos to help them stay calm and still during the test.

### **How the Test will Feel**

- Your child will need to remove any clothes from the waist up and lie flat on the exam table.
- Electrodes will be placed on your child's chest to monitor the heart beat.
- A gel is applied on the child's chest. It may be cold. A transducer head will be pressed over the gel. The child might feel pressure due to the transducer.
- Younger children may feel restless during the test. Parents should try to keep the child calm during the test.

### **Why the Test is Performed**

This test is done to examine the function, heart valves, major blood vessels, and chambers of a child's heart from outside of the body.

- Your child may have signs or symptoms of heart problems.
- These may include shortness of breath, poor growth, leg swelling, heart murmur, bluish color around the lips when crying, chest pains, unexplained fever, or germs growing in a blood culture test.

Your child may have an increased risk for heart problems due to an abnormal genetic test or other birth defects that are present.

The provider may recommend a TEE if:

- The TTE is unclear. Unclear results may be due to the shape of the child's chest, lung disease, or excess body fat.
- An area of the heart needs to be looked at in more detail.

### **Normal Results**

A normal result means that there are no defects in the heart valves or chambers and there is normal heart wall movement.

### **What Abnormal Results Mean**

An abnormal echocardiogram in a child can mean many things. Some abnormal findings are very minor and do not pose major risks. Others are signs of serious heart disease. In this case, the child will need more tests by a specialist. It is very important to talk about the results of the echocardiogram with your child's provider.

The echocardiogram can help detect:

- Abnormal heart valves
- Abnormal heart rhythms
- Birth defects of the heart
- Inflammation (pericarditis) or fluid in the sac around the heart (pericardial effusion)
- Infection on or around the heart valves
- High blood pressure in the blood vessels to the lungs

- How well the heart can pump
- Source of a blood clot after a stroke or TIA

## Risks

TTE in children does not have any known risk.

TEE is an invasive procedure. There may be some risks with this test. Talk with your provider about risks associated with this test.

## References

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