Echocardiograms

An echocardiogram (often called "echo") is a graphic outline of the heart's movement. During this test, high-frequency sound waves, called ultrasound, provide pictures of the heart's valves and chambers. This allows the technician, called a sonographer, to evaluate the pumping action of the heart. Echo is often combined with Doppler ultrasound and color Doppler to evaluate blood flow across the heart's valves.

Why Do I Need an Echo?

Your doctor may perform an echocardiogram to:

- Assess the overall function of your heart.
- Determine the presence of many types of heart disease.
- Follow the progress of Heart valve disease over time.
- Evaluate the effectiveness of medical or surgical treatments.

What Are the Types of Echocardiograms?

- **Transthoracic echocardiogram:** This is the standard echocardiogram. It is a painless test similar to X-ray, but without the radiation. The procedure uses the same technology used to evaluate a baby's health before birth. High frequency sound waves (ultrasound) are bounced off the heart structures (using a device called a transducer) producing images and sounds that can be used by the doctor to detect heart damage and disease.
- **Transesophageal echocardiogram (TEE):** This test requires that the transducer be inserted down the throat into the esophagus (the swallowing tube that connects the mouth to the stomach.) Because the esophagus is located close to the heart, clear images of the heart structures can be obtained without the interference of the lungs and chest.
- **Stress echocardiogram:** This is an echocardiogram that is performed while the person exercises on a treadmill or stationary bicycle. This test can accurately visualize the motion of the heart's walls and pumping action when the heart is stressed; it may reveal a lack of blood flow that isn't always apparent on other heart tests. The echocardiogram is performed just prior and just after the exercise.
- **Dobutamine or adenosine stress echocardiogram:** This is another form of stress echocardiogram. However, instead of exercising to stress the heart, the stress is obtained by giving a drug that stimulates the heart and makes it "think" it is exercising. The test is used to evaluate your heart and valve function when you are unable to exercise on a treadmill or stationary bike. The test is also used to determine how well your heart tolerates activity, determine your likelihood of having coronary artery disease (blocked arteries), and evaluate the effectiveness of your cardiac treatment plan.
- **Intravascular ultrasound:** This is a form of echocardiography performed during cardiac catheterization. During this procedure, the transducer is threaded into the heart blood vessels via a catheter in the groin. It is often used to provide detailed information about the atherosclerosis (blockage) inside the blood vessels.

How Should I Prepare for the Echocardiogram?

On the day of the test, eat and drink as you normally would. Take all of your medications at the usual times, as prescribed by your doctor.

What Happens During the Test?

During the test, you will be given a hospital gown to wear. You will be asked to remove your clothing from the waist up. A cardiac sonographer will place three electrodes (small, flat, sticky patches) on your chest. The electrodes are attached to an electrocardiograph monitor (ECG or EKG) that charts your heart's electrical activity.

The sonographer will ask you to lie on your left side on an exam table. He or she will place a wand (called a sound-wave transducer) on several areas of your chest. The wand will have a small amount of gel on the end, which will not harm your skin.

Sounds are part of the Doppler signal. You may or may not hear the sounds during the test. You may be asked to change positions several times during the exam in order for the sonographer to take pictures of different areas of your heart.

You should feel no major discomfort during the test. You may feel coolness from the gel on the transducer and a slight pressure of the transducer on your chest.

The test will take about 40 minutes. After the test, you can get dressed and go about your daily activities.

What Should I Do to Prepare for a Stress Echo?

On the day of the test, do not eat or drink anything except water for four hours before the test.

Do not take the following heart medications on the day of your test unless your doctor tells you otherwise: Beta-blockers (for example, Tenormin, Lopressor, Toprol, or Inderal); Isosorbide dinitrate (for example, Isordil, Sorbitrate); Isosorbide mononitrate (for example, Ismo, Indur, Monoket); Nitroglycerine (for example, Deponit, Nitrostat, Nitropatches). Your doctor may also ask you to stop taking other heart medications on the day of your test. If you have any questions about your medications, ask your doctor. Do not discontinue any medication without first talking with your doctor.

What Should I Do if I Have Diabetes?

- If you take insulin to control your blood sugar, ask your doctor what amount of your medication you should take the day of the test. Often, your doctor will tell you to take only half of your usual morning dose and to eat a light meal four hours before the test.
- If you take pills to control your blood sugar, do not take your medication until after the test is complete.
- Do not take your diabetes medication and skip a meal before the test.

- If you own a glucose monitor, bring it with you to check your blood sugar levels before and after your test. If you think your blood sugar is low, tell the lab personnel immediately.
- Plan to eat and take your blood sugar medication following your test.

What Happens During the Test?

First, a technician will gently rub 10 small areas on your chest and place electrodes (small, flat, sticky patches) on these areas. The electrodes are attached to an electrocardiograph monitor (ECG or EKG) that charts your heart's electrical activity during the test.

An intravenous line (IV) will be inserted into a vein in your arm so dobutamine medication can be delivered directly into your bloodstream. The technician will perform a resting EKG, measure your resting heart rate and take your blood pressure. The doctor or nurse will administer the dobutamine into the IV while the technician continues to obtain echo images. The medication will cause your heart to react as if you were exercising.

At regular intervals, the lab personnel will ask how you are feeling. Please tell them if you feel chest, arm or jaw pain or discomfort; short of breath; dizzy; lightheaded or if you have any other unusual symptoms.

The lab personnel will watch for any changes on the ECG monitor that suggest the test should be stopped. The IV will be removed from your arm once all of the medication has entered your bloodstream.

The dobutamine may cause a warm, flushing feeling and in some cases, a mild headache. If you begin to notice these symptoms or other symptoms of concern such as chest discomfort, excessive shortness of breath or irregular heartbeats, tell the lab personnel immediately.

The appointment will take about 60 minutes.

What Happens During the Transesophageal Echo?

Before the test, you will be asked to remove dentures and lie down on your left side on the exam table. You will be given some intravenous fluids and a mild sedative (medicine to help you relax). Your heart rate and blood pressure will be monitored throughout the procedure. Finally, an anesthetic spray is sprayed into the throat to reduce the gag reflex.

Then a small transducer attached to along tube is inserted into the esophagus via the mouth. This won't affect breathing, but swallowing may be temporarily affected. Next the doctor will perform the test to visualize the heart.

When completed, the tube is withdrawn. Vital signs will be monitored for about 20-30 minutes. You cannot eat or drink until the anesthetic spray wears off -- about an hour.

The test takes about 90 minutes to perform.

You will need to arrange transportation home since you may feel groggy from the sedative.