

Echocardiogram

Definition

An echocardiogram is a test that uses sound waves to create a moving picture of the heart. The picture is much more detailed than a plain x-ray image and involves no radiation exposure.

Alternative Names

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

Why the Test is Performed

This test is done to evaluate the valves and chambers of the heart in a noninvasive way. The echocardiogram allows doctors to diagnose, evaluate, and monitor:

- Abnormal heart valves
- Atrial fibrillation
- Congenital heart disease
- Damage to the heart muscle in patients who have had heart attacks
- Heart murmurs
- Infection in the sac around the heart (pericarditis)
- Infection on or around the heart valves (infectious endocarditis)
- Pulmonary hypertension
- The pumping function of the heart for people with heart failure
- The source of a blood clot after a stroke or TIA

Your health care provider may recommend a transesophageal echocardiogram (TEE) if:

- The regular or transthoracic echocardiogram is unclear because you have a barrel chest, lung disease, or obesity
- A much clearer picture of a certain area of the heart is needed

How the Test is Performed

TRANSTHORACIC ECHOCARDIOGRAM (TTE)

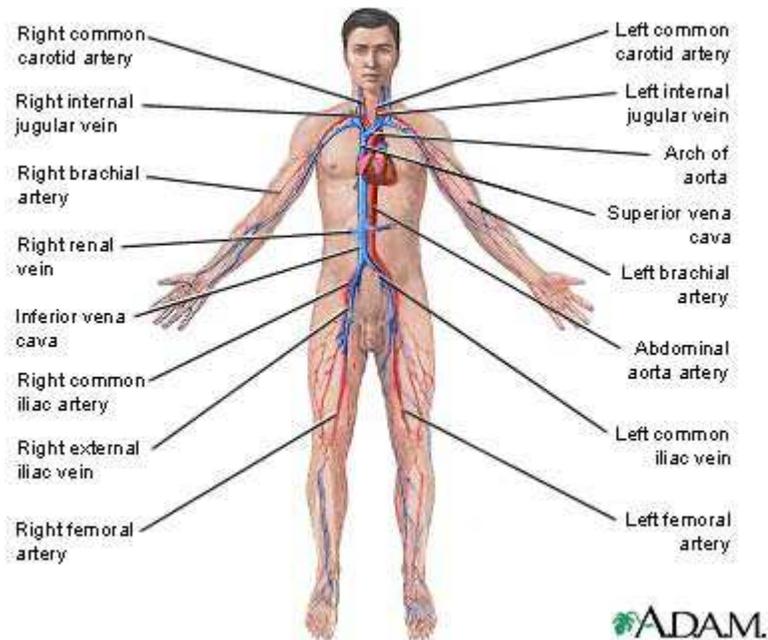
TTE is the type of echocardiogram that most people will have.

- A trained sonographer performs the test, then a heart doctor interprets the results.
- An instrument called a transducer that releases high-frequency sound waves is placed on your ribs near the breast bone and directed toward the heart. Other images will be taken underneath and slightly to the left of your nipple and in the upper abdomen.
- The transducer picks up the echoes of sound waves and transmits them as electrical impulses. The echocardiography machine converts these impulses into moving pictures of the heart.
- Pictures can be two-dimensional or three-dimensional, depending on the part of the heart being evaluated and the type of machine.
- A Doppler echocardiogram uses a probe to record the motion of blood through the heart.

An echocardiogram allows doctors to see the heart beating, and to see the heart valves and other structures of the heart.

Occasionally, your lungs, ribs, or body tissue may prevent the sound waves and echoes from providing a clear picture of heart function. If so, the sonographer may inject a small amount of liquid (contrast) through an IV to better see the inside of the heart.

Very rarely, more invasive testing using special echocardiography probes may be needed.



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TRANSESOPHAGEAL ECHOCARDIOGRAM (TEE)

The back of your throat is numbed and a scope is inserted down your throat.

On the end of the scope is a device that sends out sound waves. An experienced technician will guide the scope down to the lower part of the esophagus. It is used to get a clearer echocardiogram of your heart.

How to Prepare for the Test

There is no special preparation for the test. For a TEE, you will be asked not to eat or drink for several hours before the test.

How the Test Will Feel

You will be asked to remove your clothes from the waist up and lie on an examination table on your back. Electrodes will be placed on your chest to allow for an ECG to be done. A gel will be spread on your chest and then the transducer will be applied. You will feel a slight pressure on your chest from the transducer. You may be asked to breathe in a certain way or to roll over onto your left side.

Risks

There are no known risks associated with this test.

Considerations

Abnormal results may indicate heart valve disease, cardiomyopathy, pericardial effusion, or other heart abnormalities. This test may also be performed for the following conditions:

- Alcoholic cardiomyopathy
- Aortic dissection
- Aortic insufficiency
- Aortic stenosis
- Arrhythmias
- Arterial embolism
- Atrial fibrillation/flutter
- Atrial myxoma
- Atrial septal defect
- Cardiac tamponade
- Cardiomyopathy
- Coarctation of the aorta
- Heart attack
- Heart failure
- Hypertensive heart disease
- Mitral regurgitation; acute
- Mitral regurgitation; chronic
- Mitral stenosis
- Mitral valve prolapse
- Patent ductus arteriosus
- Patent foramen ovale
- Pericarditis; bacterial
- Pericarditis; constrictive
- Pericarditis; post-MI
- Peripartum cardiomyopathy
- Primary amyloidosis
- Pulmonary arterial hypertension
- Pulmonary valve stenosis
- Restrictive cardiomyopathy
- Right-sided heart failure
- Secondary systemic amyloidosis
- Senile cardiac amyloidosis
- Stroke
- Tetralogy of Fallot
- Transient ischemic attack (TIA)
- Transposition of the great vessels
- Tricuspid regurgitation

- Ventricular septal defect

Normal Results

A normal echocardiogram reveals normal heart valves and chambers and normal heart wall movement.

What Abnormal Results Mean

An abnormal echocardiogram can mean many things. Some abnormalities are very minor and do not pose significant risks. Other abnormalities are signs of very serious heart disease that will require further evaluation by a specialist. Therefore, it is very important to discuss the results of your echocardiogram in depth with your health care provider.



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