TRANSTHORACIC ECHOCARDIOGRAM

What is an Echocardiogram: An echocardiogram is a test in which ultrasound is used to examine the heart. The equipment is far superior to that used by fishermen. In addition to providing single-dimension images, known as M-mode echo that allows accurate measurement of the heart chambers, the echocardiogram also offers far more sophisticated and advanced imaging. This is known as two- dimensional (2-D) Echo and is capable of displaying a cross-sectional "slice" of the beating heart, including the chambers, valves and the major blood vessels that exit from the left and right ventricle

An echocardiogram can be obtained in a physician's office or in the hospital. For a resting echocardiogram, no special preparation is necessary. Clothing from the upper body is removed and covered by a gown or sheet to keep you comfortable and maintain the privacy of females. The patient then lies on an examination table or a hospital bed

Sticky patches or electrodes are attached to the chest and shoulders and connected to electrodes or wires. These help to record the electrocardiogram (EKG or ECG) during the echocardiography test. The EKG helps in the timing of various cardiac events (filling and emptying of chambers). A colorless gel is then applied to the chest and the echo transducer is placed on top of it. The echo technologist then makes recordings from different parts of the chest to obtain several views of the heart. You may be asked to move form your back and to the side. Instructions may also be given for you to breathe slowly or to hold your breath. This helps in obtaining higher quality pictures. The images are constantly viewed on the monitor. It is also recorded on photographic paper and on videotape. The tape offers a permanent record of the examination and is reviewed by the physician prior to completion of the final report

What is a Doppler Examination? Doppler is a special part of the ultrasound examination that assesses blood flow (direction and velocity). In contrast, the M-mode and 2-D Echo evaluates the size, thickness and movement of heart structures (chambers, valves, etc.). During the Doppler examination, the ultrasound beams will evaluate the flow of blood as it makes it way though and out of the heart. This information is presented visually on the monitor (as color images or grayscale tracings and also as a series of audible signals with a swishing or pulsating sound

What information does Echocardiography and Doppler provide?
Echocardiography is an invaluable tool in providing the doctor with important information about the following:

Size of the chambers of the heart, including the dimension or volume of the cavity and the thickness of the walls. The appearance of the walls may also help identify certain types of heart disease that predominantly involve the heart muscle. In patients with long standing hypertension or high blood pressure, the test can determine the thickness and "stiffness" of the LV walls. When the LV pump function is reduced in patients with heart failure, the LV and RV tends to dilate or enlarge. Echocardiography can measure the severity of this enlargement. Serial studies performed on an annual basis can gauge the response of treatment.

Pumping function of the heart can be assessed by echocardiography. One can tell if the pumping power of the heart is normal or reduced to a mild or severe degree. This measure is known as an ejection fraction or EF. A normal EF is around 55 to 65%. Numbers below 45% usually represent some decrease in the pumping strength of the heart, while numbers below 30 to 35% are representative of an important decrease.

Valve Function: Echocardiography identifies the structure, thickness and movement of each heart valve. It can help determine if the valve is normal, scarred from an infection or rheumatic fever, thickened, calcified (loaded with calcium), torn, etc. It can also assess the function of prosthetic or artificial heart valves.
The additional use of Doppler helps to identify abnormal leakage across heart valves and determine their severity. Doppler is also very useful in diagnosing the presence and severity of valve stenosis (pronounced stee-no-sis) or narrowing

Other Uses: Echocardiography is useful in the diagnosis of fluid in the pericardium (the sac that surrounds the heart). It also determines when the problem is severe and potentially life-threatening. Other diagnoses (plural for diagnosis) made by Doppler or echocardiography include congenital heart diseases, blood clots or tumors within the heart, active infection of the heart valves, abnormal elevation of pressure within the lungs, etc.

How safe is echocardiography? Echocardiography is extremely safe. There are no known risks from the clinical use of ultrasound during this type of testing.

How long does it take? A brief examination in an uncomplicated case may be done within 15 to 20 minutes. The additional use of Doppler may add an additional 10 to 20 minutes. However, it may take up to an hour when there are multiple problems or when there are technical problems (for example, patients with lung disease, obesity, restlessness, and significant shortness of breath may be more difficult to image).

When can I expect to receive the results? If a doctor is present during the test or reviews it while you are still in the office, you may be able to get the results before you leave. However, the doctor is not routinely present during the test and you may have to wait from one to several days before the images have been reviewed by a physician and the results are sent to you by phone or mail. Some physicians will discuss your case before the study is performed and will contact you if there are significant unexpected findings. For example, if you are expected to have a finding or known to have a given disease, your physician may indicate that he or she will call you only if there are significant unexpected findings. You may also be contacted if echocardiography reveals a finding that influences a change in treatment. For example, the presence of a distended inferior vena cava (discussed above) may result in increasing the dose of your diuretic or water pill, if it is indicated by other aspects of your condition.
If you are anxious or confused about the results feel free to contact the physician's office staff. They can usually clarify a question for you.

Video Examples of A Transthoacic Echocardiogram

Echo showing left atrial tumor –
http://www.kcheart.com/video/Echoshowingleftatrialtumor.mpg

Echo showing vegetation of mitral valve –
http://www.kcheart.com/video/Echoshowingvegetationofmitralvalve.mpg