Ultrasound, Venous

You are having a special test to see if you have blood flow problems or clots in your veins. The following is a description of this type of testing.

Ultrasound uses sound waves instead of x-rays to take pictures of the inside of your body. A device is held up against your body that captures the pictures of the inside of your body (*transducer*). This type of ultrasound is called 2D, or two-dimensional ultrasound. These continually changing images can be recorded on videotape or film. Diagnostic ultrasound imaging is commonly called *sonography* or *ultrasonography*.

Doppler ultrasound is a special form of ultrasound commonly used to evaluate blood flow. Doppler ultrasound also is used to evaluate blood flow in your legs. Doppler ultrasound is particularly well suited to evaluating problems within your veins and arteries. These problems might be blockages or clots. Because we have blood vessels throughout our bodies, Doppler ultrasound may be used almost anywhere. Some of the most common sites where Doppler ultrasound is used are in the neck, heart, abdomen, and legs. Several types of Doppler ultrasound are used for this including:

- *CONTINUOUS WAVE DOPPLER ULTRASOUND*. This type of ultrasound uses the change in pitch of the sound waves to provide information about blood flow through a blood vessel. Your caregiver listens to the sounds produced by the transducer. This sound will help them evaluate the blood flow through an area that may be blocked or narrowed. This type of ultrasound can provide a rapid estimate of the extent of blood vessel damage or disease.
- *DUPLEX DOPPLER ULTRASOUND*. Duplex Doppler ultrasound uses standard ultrasound methods to produce a picture of a blood vessel and surrounding organs. In addition, a computer provides information about the speed and direction of blood flow through the blood vessel. With this type of Doppler ultrasound, it is possible to see the structures inside the body (2D) and evaluate blood flow within those structures at the same time. To do this, the ultrasound machine uses the 2 methods of ultrasound simultaneously. Blood flow in individual blood vessels is most commonly evaluated by duplex Doppler ultrasound.
- *COLOR DOPPLER ULTRASOUND*. Color Doppler ultrasound uses standard ultrasound methods to produce a picture of a blood vessel (2D). In addition, a computer converts the Doppler sounds into colors that are overlaid on the image of the blood vessel. These colors represent the speed and direction of blood flow through the vessel.
- *POWER DOPPLER ULTRASOUND*. Power Doppler ultrasound is a new ultrasound technique. It is up to 5 times more sensitive than color Doppler ultrasound. Power Doppler ultrasound can also get images that are difficult or impossible to get using standard color Doppler ultrasound. Power Doppler ultrasound is used most commonly to evaluate blood flow through vessels within organs, such as the liver or kidneys.

WILL IT HURT? ARE THERE ANY SPECIAL PREPARATIONS FOR THE EXAM?

There is no pain in an ultrasound examination. For most Doppler ultrasound exams, no preparation is necessary. Your caregiver may ask you not to eat the morning of your exam if the ultrasound scan involves your upper abdomen. A gel is applied to your skin and the transducer is then placed on the area to be examined. This gel may feel cool. This gel wipes off easily, but it is a good idea to wear clothing that is easily washable.

WHAT CAN I EXPECT DURING THE EXAM?

The images from inside your body are displayed on one or more monitors, which look like small television screens. In addition, returning sound waves of moving blood can be heard on speakers in the instrument. The sounds may be similar to the sound of wind blowing through the trees. The room is usually darkened during the examination. This makes it easier to see the images on the monitor.

HOW LONG WILL THE EXAM TAKE?

The ultrasound exam should take 30 to 60 minutes. The length of the exam depends on many things including

the portion of your body to be examined and the complexity of the anatomy. An ultrasound that looks at hardening of the arteries (*arteriosclerosis*) may take more scanning time.

WHO WILL PERFORM THE EXAM?

A Doppler ultrasound examination may be done by a doctor, or by a vascular technologist or sonographer - individuals specially trained to perform ultrasound exams. A doctor will interpret the examination results.

WILL I NEED MORE THAN ONE EXAM?

In many cases, follow-up exams are necessary to check on your condition or your response to therapy.

IS ULTRASOUND SAFE?

There are no known harmful effects. Ultrasound has been used for many years and has not shown any harmful effects. Studies in humans have shown no direct link between the use of ultrasound and adverse outcomes. Harmful effects may be identified in the future, but current information show that the benefits far outweigh the risks.

HOW MUCH DOES THE EXAM COST?

The price of an ultrasound scan varies widely. The cost depends on the reason for the exam, its complexity, and the type of equipment used. Generally, insurance companies will help cover the cost of the examination.

Information courtesy of The American Institute of Ultrasound in Medicine (AIUM) - an association of doctors, sonographers, and scientists - AIUM has provided these questions and answers to explain how ultrasound works.

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