

# ULTRASOUND

Ultrasound, also known as sonography, uses a small transducer (probe) and ultrasound gel to create high-frequency sound waves. Echoes produced by the sound waves are recorded and displayed as real-time, visual images. Ultrasound is commonly used in obstetrics as well as breast, thyroid, renal, liver, scrotum, vascular, and other pelvic and abdominal imaging. Additionally, several biopsy procedures are done under ultrasound guidance. No ionizing radiation is involved in ultrasound imaging making it safe for pregnant women and children.

## Ultrasound and Ultrasound-Guided Biopsy

- Abdomen
- Breast
- Breast Biopsy
- Carotid
- Liver Biopsy
- Obstetric
- Pelvis
- Renal
- Scrotum
- Thyroid
- Thyroid FNA
- Venous

## Preparing for an Ultrasound procedure:

### Abdomen:

Fast for 6-8 hours and do not chew gum prior to your exam. Wear comfortable, loose-fitting clothing. You may be asked to wear a gown for your exam.

### Bladder:

Finish drinking 32 oz. of water 1 hour prior to your exam and do not use the restroom. Wear a loose-fitting, two-piece outfit. Only the lower abdomen will be exposed for the procedure.

### Breast:

You will be asked to wear a gown.

### Carotid or Chest:

Wear a comfortable, loose-fitting, open necked shirt. You may be asked to wear a gown.

### Obstetric:

Finish drinking 32 oz. of water 1 hour prior to your exam and do not use the restroom. Wear a loose-fitting, two-piece outfit. Only the lower abdomen will be exposed for the procedure.

Pelvis:

Finish drinking 32 oz. of water 1 hour prior to your exam and do not use the restroom. You will be asked to wear a gown. This procedure includes abdominal and transvaginal exams.

Renal, Scrotum, or Transvaginal:

You will be asked to wear a gown.

Thyroid:

Wear a comfortable, loose-fitting, open necked shirt. You may be asked to wear a gown.

Venous:

Wear comfortable, loose-fitting clothing. You may be asked to wear a gown.

### Frequently Asked Questions:

What is Ultrasound Imaging?

Ultrasound imaging, also called ultrasound scanning or sonography is a method of obtaining images from inside the human body through the use of high-frequency sound waves. The reflected sound wave echoes are recorded and displayed as a real-time visual image. No ionizing radiation (x-ray) is involved in ultrasound imaging. Obstetric ultrasound refers to the specialized use of sound waves to visualize and thus determine the condition of a pregnant woman and her embryo or fetus. Ultrasound is a useful way of examining many of the body's internal organs, including but not limited to the heart, liver, gallbladder, spleen, pancreas, kidneys and bladder. Because ultrasound images are captured in real time, they can show movement of internal tissues and organs and enable physicians to see blood flow and heart valve functions. This can help to diagnose a variety of heart conditions and to assess damage after a heart attack or other illness.

What are common uses for Ultrasound?

Millions of expectant parents have seen the first "picture" of their unborn child with pelvic ultrasound examinations of the uterus and fetus. Ultrasound imaging is used extensively for evaluating the eyes, pelvic and abdominal organs, heart and blood vessels, and can help a physician determine the source of pain, swelling or infection in many parts of the body. Because ultrasound provides real-time images it can also be used to guide procedures such as needle biopsies, in which needles are used to sample cells from organs for laboratory testing. Ultrasound is now being used to image the breasts and to guide biopsy of breast cancer. Ultrasound is also used to evaluate superficial structures such as the thyroid gland and scrotum (testicles).

How does Ultrasound work?

Ultrasound imaging is based on the same principles involved in the sonar used by bats, ships at sea and anglers with fish detectors. As the sound passes through the body, echoes are produced that can be used to identify how far away an object is, how large it is, its shape and its consistency (fluid, solid or mixed). The ultrasound transducer functions as both a generator of sound (like a speaker) and a detector (like a microphone). When the transducer is pressed against the skin it directs inaudible, high-frequency sound waves into the body. As the sound echoes from the body's fluids and tissues the transducer records the strength and character of the reflected waves. With Doppler ultrasound the microphone captures and records tiny changes in the sound wave's pitch and direction of the sound.

These echoes are instantly measured and displayed by a computer, which in turn creates a real-time picture on the monitor. The "live" images of the examination are usually recorded on videotape but one or more frames of the moving picture may be "frozen" to capture a still image.

What are the benefits of Ultrasound?

Ultrasound scanning is noninvasive (no needles or injections in most cases) and is usually painless. Ultrasound uses no ionizing radiation and is the preferred image modality for diagnosis and monitoring of pregnant women and their unborn infants. Ultrasound provides real-time imaging, making it a good tool for guiding minimally invasive procedures such as needle biopsies. Ultrasound images can visualize structure, movement and live function in the body's organs and blood vessels.