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The D-H Commitment to Imaging Safety

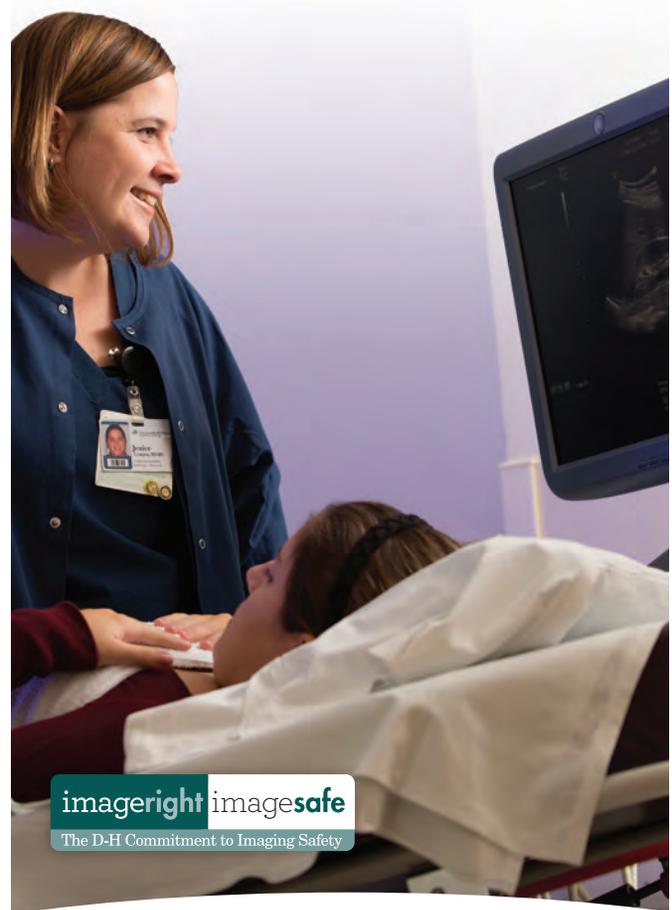
 **Dartmouth-Hitchcock**

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Ultrasound

Information for Patients

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What is ultrasound?

Ultrasound imaging, also called ultrasonography, uses sound waves to produce pictures of the inside of the body.

When the sound waves strike an object, they bounce back and produce echoes.

By measuring these echo waves, it is possible to determine how far away the object is and its size, shape and consistency (whether the object is solid, filled with fluid or both). Because ultrasound images are captured in real-time, they can show the structure and movement of the body's internal organs, as well as blood flowing through blood vessels or movement of joints or tendons in the musculoskeletal system.

Ultrasound exams do not use ionizing radiation, which is a type of radiation that has the potential to cause some level of damage to human tissue.

Is ultrasound harmful?

Ultrasound does not use ionizing radiation so there is no radiation exposure during an ultrasound exam. No studies in humans have shown ultrasound to have harmful effects.

What are the uses of ultrasound?

Ultrasound examinations are used to help diagnose a variety of conditions. Ultrasound may be helpful to evaluate symptoms such as pain, swelling, infection and blood in the urine. Ultrasound is a useful way of examining many of the body's internal organs, including but not limited to the:

- Bladder
- Brain and hips in infants less than six months old
- Fetus in pregnant patients
- Gallbladder
- Blood vessels, including the abdominal aorta and its major branches
- Kidneys
- Liver
- Scrotum (testicles)
- Spleen
- Thyroid
- Uterus and ovaries

Ultrasound is also used to guide procedures such as needle biopsies, in which needles are directed into abnormal or suspicious areas to obtain tissue for laboratory testing.

How is the ultrasound exam performed?

A clear water-based gel is applied to the area of the body being studied to help the transducer make secure contact with the body. The gel helps to eliminate any air pockets that might form between the transducer and the skin. The ultrasound technologist presses the transducer firmly against the skin in various locations, sweeping over the area of interest or angling the sound beam to better see an area of concern. In some ultrasound examinations, such as transrectal and transvaginal, the transducer is inserted into a natural opening in the body. After your exam, a radiologist will interpret the images and generate a report. Your physician will share your ultrasound results with you.

What are the limitations of ultrasound?

Ultrasound waves are disrupted by air or gas; therefore, ultrasound is not the best way to image the bowel, lungs or organs that may be blocked by the bowel. Heavy-set patients are also more difficult to image by ultrasound. This is because tissue weakens the sound waves as they pass deeper into the body. Because ultrasound waves have a hard time going through bone, ultrasound is not routinely used to evaluate bone structures.

What are the benefits and risks of ultrasound?

Benefits

- Most ultrasound exams are noninvasive and usually painless.
- Ultrasound is often less expensive than other imaging modalities such as CT scans and MRIs.
- Ultrasound does not use ionizing radiation, which makes it particularly ideal for imaging children.
- Ultrasound provides real-time imaging, making it a good tool for guiding biopsy procedures.

Risks

- For standard diagnostic ultrasound exams, there are no known harmful effects to humans.