

# Ultrasonography

- Ultrasonography is a diagnostic technique that allows your veterinarian to look inside your pet's body without surgery.
- Ultrasonography uses reflected sound waves to create images of organs or spaces inside your pet's body.
- Ultrasonography is painless and noninvasive. In many situations, it can be conducted while the pet is awake.

### What Is Ultrasonography?

Ultrasonography is a type of diagnostic technique known as an *imaging study*. This means that when a doctor performs ultrasonography (sometimes called an *ultrasound study*) he or she can see pictures, or “images,” of parts of the patient's body. Other examples of imaging studies include x-rays (radiography) and MRI (magnetic resonance imaging).

Ultrasonography uses high-frequency sound waves—ultrasound—to create a picture of what is inside your pet's body. It is a noninvasive, painless way to diagnose and evaluate many common diseases. Ultrasonography is a very good method for evaluating fluid-filled structures (like the bladder) as well as organs like the liver, spleen, kidneys, and heart.

### How Does It Work?

Ultrasonography requires a special machine that can create ultrasound waves. This machine is connected to a small probe that your veterinarian can hold against your pet's skin. The probe sends out painless ultrasound waves that bounce off of structures (e.g., organs) in your pet's body and return to a sensor inside the ultrasound machine. The ultrasound equipment collects these reflected “echoes” and uses them to generate images that are viewable on a screen.

In ultrasound images, dense areas (e.g., bone) appear whiter or brighter because they reflect more sound waves back to the sensor; less dense areas, such as fluid, reflect fewer sound waves and appear darker. The term “echogenicity” refers to how reflective an object is—that is, how many echoes

it sends back. The denser the object, the higher its echogenicity.

### What Is It Used For?

Ultrasound waves can generate excellent images of abdominal organs, such as the following:

- Liver
- Spleen
- Gallbladder
- Adrenal glands
- Pancreas
- Kidneys and urinary tract
- Parts of the stomach and intestine
- Reproductive organs

Ultrasonography can also detect the presence of fluid, such as blood or urine. Ultrasound waves cannot penetrate bone, so ultrasonography cannot be used to see objects hidden behind bones, such as the brain.

Ultrasonography uses reflected sound waves to create images of organs or spaces inside your pet's body.

Because ultrasonography creates images that the doctor sees right away, it can be used to evaluate the heart as it beats for the motion of heart valves and chambers, blood flow through the heart, and contractions of the heart muscle. It can also be used to assess the heart for defects.

Ultrasonography is useful for assessing fetal health and monitoring pregnancy in breeding animals.

Ultrasonography can also play a role in diagnosing and “staging” cancer. Tumors and masses can be located, counted, and measured using ultrasonography, which can be valuable when a veterinarian is looking for evidence of cancer spread. In the same way,

## Tests and Procedures

ultrasonography can help in monitoring a patient's response to cancer therapy.

### The Ultrasonography Examination

In most cases, ultrasound examinations are conducted while the pet is awake. Tranquilizers and anesthesia are generally not required, and food and water restrictions are usually not necessary. The haircoat will be clipped over the area to be scanned. This allows the ultrasound probe to be placed directly

against the skin without interference from body hair. A nonirritating gel will be placed on the pet's skin before the examination. This gel provides lubrication, allowing the probe to slide over the skin. It also prevents any air from getting between the probe and the tissue being scanned; this improves the quality of the ultrasound image. The ultrasound examination is noninvasive and painless and typically takes less than 40 minutes to complete. Ultrasonography is a minimally invasive diagnostic option.