

COMPUTED TOMOGRAPHY

Computed Tomography (CT or CAT) is a noninvasive, painless imaging exam used to help diagnose and treat an array of medical conditions. CT scans are similar to conventional x-rays, but provide better clarity of internal organs, bone, soft tissue and blood vessels. Numerous x-ray beams and a set of electronic x-ray detectors rotate around you, measuring the amount of radiation being absorbed throughout your body. At the same time, the examination table is moving through the scanner, so the x-ray beam follows a spiral path. A special computer program processes the series of pictures, or slices, to create two-dimensional cross-sectional images which are then displayed on a monitor. Enhancements in detector technology allow modern CT scanners to obtain multiple slices in a single rotation. These scanners are called multi slice CT enabling multiple, thinner slices to be acquired in a shorter period of time, resulting in more detail and additional view capability.

For some CT exams, contrast materials are used which can be swallowed or injected intravenously.

Shoshone Medical Center's 16 slice CT scanner offers physicians a better look at internal organs for a more accurate diagnosis. High resolution images with a low x-ray dose are just what the doctor ordered.

Facilities using scanners with the same dose reduction technology are reporting a 40% dose reduction on average to patients.

CT Studies:

Abdomen and Pelvis

Abdomen Only

Chest

Chest - High resolution

Head

KUB – Plain Abdomen/Pelvis

Liver Biopsy

Low-Dose Chest Screening

Lung Biopsy

Myelogram

Pelvis Only

Sinus

Soft Tissue Neck

Spine (C, T, L)

Urogram

CT Angiography:

Abdomen

Abdomen with runoff

Carotid

Chest/Pulmonary

Head

Preparing for a CT:

Allergies: Contrast material used in CT is iodine-based. Alert your medical provider as well as Shoshone Radiology if you have any allergies especially to iodine.

Clothing: Wear comfortable clothing such as a plain sweatshirt and pants without logos, snaps, or zippers. You may be asked to change into a hospital gown or scrubs. All jewelry and body piercings must be removed prior to exam.

Diabetes: If you are a diabetic and using Glucophage (Metformin) or Avandamet, you need to be off the medication for 48 hours after the exam and repeat BUN/Creatinine lab work with your medical provider's office before resuming medication.

Renal Problems: If you have renal function problems and are scheduled for an exam requiring contrast, you need to have satisfactory BUN/Creatinine lab work within 90 days of the exam.

Medications: See "Diabetes" for instructions regarding Glucophage (Metformin) and Avandamet. Continue taking other medications as prescribed.

Nursing Mothers: If you are given an intravenous injection, there is a very small percentage of iodinated contrasted material that is excreted into the breast milk and absorbed by the infant. Available data suggest it is safe to continue breast-feeding. However if you are concerned, you may abstain from breast feeding for 12 to 24 hours (express and discard breast milk).

Over 40 Years of Age: If you are over 40 years of age and scheduled for an exam requiring intravenous contrast you need to have satisfactory BUN/Creatinine lab work within 90 days of the exam.

Things to remove prior to your exam: Jewelry, eyeglasses, hairpins, hearing aids, and other metal objects need to be removed prior to your exam.

INSTRUCTIONS for SPECIFIC CT EXAMS:

Abdomen and/or Pelvis: Do not eat solid foods after midnight. Drink only clear liquids (i.e. water, clear broth, clear juice, Jell-O gelatin). On the day of the appointment, drink 1 bottle of oral prep (Breeza) 2 hours prior to the exam. Refrigerate prep and shake well before drinking. You may be given a contrast via IV injection. Approximate exam time: 45 min- 1 hr.

Angiogram (Head, Carotid, Renal, Pulmonary, Peripheral): Drink only clear liquids (i.e. water, clear broth, clear juice, Jell-O gelatin) six hours before the exam. No solid foods. Approximate exam time: 30 min.

Myelogram: Be sure to make arrangements for a driver. Do not eat solid foods after midnight. Drink only clear liquids (i.e. water, clear broth, clear juice, Jell-O gelatin). Approximate exam time: 2-3 hrs.

Forms:

CT contrast consent

Frequently Asked Questions:

What is CT Scanning?

CT (computed tomography), sometimes called CAT scan, uses special x-ray equipment to obtain image data from different angles around the body and then uses computer processing of the information to show a cross-section of body tissues and organs. CT imaging is particularly useful because it can show several types of tissue—lung, bone, soft tissue and blood vessels—with great clarity. Using specialized equipment and expertise to create and interpret CT scans of the body, radiologists can more easily diagnose problems such as cancers, cardiovascular disease, infectious disease, trauma and musculoskeletal disorders.

What are some common uses of CT?

Because it provides detailed, cross-sectional views of all types of tissue, CT is one of the best tools for studying the chest and abdomen. It is often the preferred method for diagnosing many different cancers, including lung, liver and pancreatic cancer, since the image allows a physician to confirm the presence of a tumor and measure its size, precise location and the extent of the tumor's involvement with other nearby tissue. CT examinations are often used to plan and properly administer radiation treatments for tumors, to guide biopsies and other minimally invasive procedures and to plan surgery and determine surgical respectability. CT can clearly show even very small bones as well as surrounding tissues such as muscle and blood vessels. This makes it invaluable in diagnosing and treating spinal problems and injuries to the hands, feet and other skeletal structures. CT images can also be used to

measure bone mineral density for the detection of osteoporosis. In cases of trauma CT can quickly identify injuries to the liver, spleen, kidneys or other internal organs. Many dedicated shock-trauma centers have a CT scanner in the emergency room. CT can also play a significant role in the detection, diagnosis and treatment of vascular diseases that can lead to stroke, kidney failure or even death.

How does CT work?

In many ways CT scanning works very much like other x-ray examinations. Very small, controlled amounts of x-ray radiation are passed through the body and different tissues absorb radiation at different rates. With plain radiology, an image of the inside of the body is captured when special film is exposed to the absorbed x-rays. With CT the film is replaced by an array of detectors that measure the x-ray profile. Inside the CT scanner is a rotating gantry that has an x-ray tube mounted on one side and an arc-shaped detector mounted on the opposite side. An x-ray beam is emitted in a fan shape as the rotating frame spins the x-ray tube and detector around the patient. Each time the x-ray tube and detector make a 360-degree rotation and the x-ray passes through the patient's body, the image of a thin section is acquired. During each rotation the detector records about 1,000 images (profiles) of the expanded x-ray beam. Each profile is then reconstructed by a dedicated computer into a two-dimensional image of the section that was scanned. Multiple computers are typically used to control the entire CT system. This data is extrapolated into images showing multiple imaging plans and even 3D images.

What are the benefits of CT?

Unlike other imaging methods, CT scanning offers detailed views of many types of tissue including the lungs, bones, soft tissues and blood vessels. CT scanning is painless, noninvasive and accurate. CT examinations are fast and simple. For example, in trauma cases they can reveal internal injuries and bleeding quickly enough to help save lives. Diagnosis made with the assistance of CT can eliminate the need for invasive exploratory surgery and surgical biopsy. CT scanning can identify normal and abnormal structures, making it a useful tool to guide radiotherapy, needle biopsies and other minimally invasive procedures. CT has been shown to be a cost-effective imaging tool for a wide range of clinical problems.