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For patients

Body CT

Computed tomography (CT) of the body uses sophisticated x-ray technology to help detect a variety of diseases and conditions. CT scanning is fast, painless, noninvasive and accurate. In emergency cases, it can reveal internal injuries and bleeding quickly enough to help save lives.

Tell your doctor if there's a possibility you are pregnant and discuss any recent illnesses, medical conditions, medications you're taking, and allergies. You will be instructed not to eat or drink anything for a few hours beforehand. If you have a known allergy to contrast material, your doctor may prescribe medications to reduce the risk of an allergic reaction. Leave jewelry at home and wear loose, comfortable clothing. You may be asked to wear a gown.

What is CT scanning of the body?

Computed tomography, more commonly known as a CT or CAT scan, is a diagnostic medical imaging test. Like traditional x-rays, it produces multiple images or pictures of the inside of the body.

A CT scan generates images that can be reformatted in multiple planes. It can even generate three-dimensional images. Your doctor can review these images on a computer monitor, print them on film or via a 3D printer, or transfer them to a CD or DVD.

CT images of internal organs, bones, soft tissue, and blood vessels provide greater detail than traditional x-rays. This is especially true for soft tissues and blood vessels.

Using specialized equipment and expertise to create and interpret CT scans of the body, radiologists (http://www.radiologyinfo.org) can more easily diagnose problems such as cancer, cardiovascular disease, infectious disease, appendicitis, trauma and musculoskeletal (http://www.radiologyinfo.org) disorders.

What are some common uses of the procedure?

CT imaging is:

- one of the fastest and most accurate tools for examining the chest, abdomen and pelvis because it provides detailed, cross-sectional views of all types of tissue.
- used to examine patients with injuries from trauma such as a motor vehicle accident.
- performed on patients with acute symptoms such as chest or abdominal pain or difficulty breathing.
- often the best method for detecting cancers in the chest, abdomen and pelvis, such as lymphoma (https://www.radiologyinfo.org/en/info/lymphoma) and cancers of the lung, liver, kidney, ovary and pancreas. It's considered the best method since the image allows a physician to confirm the presence of a tumor, measure its size, identify its precise location and determine the extent of its involvement with other nearby tissue.
- an examination that plays a significant role in the detection, diagnosis and treatment of vascular diseases that can lead to stroke, kidney failure or even death. CT is commonly used to assess for pulmonary embolism (a blood clot in the lung vessels) as well as for aortic aneurysms.

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In pediatric patients, CT imaging is often used to evaluate:

- lymphoma
- neuroblastoma
- kidney tumors
- congenital malformations of the heart, kidneys and blood vessels
- cystic fibrosis
- complications of acute appendicitis
- complications of pneumonia
- inflammatory bowel disease
- severe injuries

Radiologists and radiation oncologists often use the CT examination to:

- quickly identify injuries to the lungs, heart and vessels, liver, spleen, kidneys, bowel or other internal organs in cases of trauma.
- guide biopsies and other procedures such as abscess drainages and minimally invasive tumor treatments.
- plan for and assess the results of surgery, such as organ transplants or gastric bypass.
- stage, plan and properly administer radiation treatments for tumors as well as monitor response to chemotherapy.
- measure bone mineral density for the detection of osteoporosis.

Who interprets the results and how do I get them?

A radiologist (https://www.radiologyinfo.org/en/info/article-your-radiologist) , a doctor specially trained to supervise and interpret radiology exams, will analyze the images. The radiologist will send an official report to the doctor who ordered the exam.

You may need a follow-up exam. If so, your doctor will explain why. Sometimes a follow-up exam further evaluates a potential issue with more views or a special imaging technique. It may also see if there has been any change in an issue over time. Follow-up exams are often the best way to see if treatment is working or if a problem needs attention.

What are the benefits vs. risks?

Benefits

- CT scanning is painless, noninvasive, and accurate.
- A major advantage of CT is its ability to image bone, soft tissue, and blood vessels all at the same time.
- Unlike conventional x-rays, CT scanning provides very detailed images of many types of tissue as well as the lungs, bones, and blood vessels.
- CT exams are fast and simple. In emergency cases, they can reveal internal injuries and bleeding quickly enough to help save lives.
- CT has been shown to be a cost-effective imaging tool for a wide range of clinical problems.
- CT is less sensitive to patient movement than MRI.
- Unlike MRI, an implanted medical device of any kind will not prevent you from having a CT scan.
- CT imaging provides real-time imaging, making it a good tool for guiding needle biopsies (http://www.radiologyinfo.org) and needle aspirations (http://www.radiologyinfo.org) . This is particularly true of procedures involving the lungs, abdomen,

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pelvis, and bones.

- A diagnosis via CT scan may eliminate the need for exploratory surgery and surgical biopsy.
- No radiation remains in a patient's body after a CT exam.
- The x-rays used for CT scanning should have no immediate side effects.

Risks

There is no conclusive evidence that radiation at small amounts delivered by a CT scan causes cancer. Large population studies have shown a slight increase in cancer from much larger amounts of radiation, such as from radiation therapy. Thus, there is always concern that this risk may also apply to the lower amounts of radiation delivered by a CT exam. When a CT scan is recommended by your doctor, the expected benefit of this test outweighs the potential risk from radiation. You are encouraged to discuss the risks versus the benefits of your CT scan with your doctor or radiologist, and to explore whether alternative imaging tests may be available to diagnose your condition.

- The radiation dose for this procedure varies. *See the Radiation Dose (https://www.radiologyinfo.org/en/info/safety-xray) page for more information.*
- Women should always tell their doctor and x-ray or CT technologist if there is any chance they are pregnant. *See the Radiation Safety (https://www.radiologyinfo.org/en/info/safety-radiation) page for more information about pregnancy and x-rays.*
- Doctors do not generally recommend CT scanning for pregnant women unless medically necessary because of potential risk to the unborn baby.
- IV contrast manufacturers indicate mothers should not breastfeed their babies for 24-48 hours after contrast material is given. However, the most recent American College of Radiology (ACR) Manual on Contrast Media reports that studies show the amount of contrast absorbed by the infant during breastfeeding is extremely low. *For further information please consult the ACR Manual on Contrast Media (https://www.acr.org/Clinical-Resources/Contrast-Manual) and its references.*
- The risk of serious allergic reaction to contrast materials (https://www.radiologyinfo.org/en/info/safety-contrast) that contain iodine is extremely rare, and radiology departments are well-equipped to deal with them.
- Because children are more sensitive to radiation, they should have a CT exam only if it is essential for making a diagnosis. They should not have repeated CT exams unless necessary. CT scans in children should always be done with low-dose technique.

What are the limitations of body CT scanning?

Soft-tissue details in areas such as the brain, gallbladder (http://www.radiologyinfo.org) , internal pelvic organs, and joints (such as knees and shoulders) can often be better evaluated with magnetic resonance imaging (http://www.radiologyinfo.org) (MRI). In pregnant women, while CT can be performed safely, other imaging exams not involving radiation, such as ultrasound or MRI, are preferred but only if they are likely to be as good as CT in diagnosing your condition.

A person who is very large may not fit into the opening of a conventional CT scanner. Or, they may be over the weight limit—usually 450 pounds—for the moving table.

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