Computed Tomography (CT) Scan

SAFETY
HEALTH
SATISFACTION

The pillars defining our quality care

We Care Together!

S M M C St. Maarten Medical Center

Computed Tomography (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.

What is CT scanning?

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

CT images of internal organs, bones, soft tissue and blood vessels provide greater detail than traditional X-rays, particularly of soft tissues and blood vessels. By using specialized equipment and expertise to create and interpret CT scans of the body, radiologists can more easily diagnose problems such as cancer, cardiovascular disease, infectious disease, appendicitis, trauma and musculoskeletal disorders.

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 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.

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.

How should I prepare?

You should wear comfortable, loose-fitting clothing to your exam. You may be given a gown to wear during the procedure. Metal objects, including jewelry, eyeglasses, dentures and hairpins, may affect the CT images and should be left at home or removed prior to your exam. You may also be asked to remove hearing aids and removable dental work. Women will be asked to remove bras containing metal underwire. You may be asked to remove any piercings, if possible.

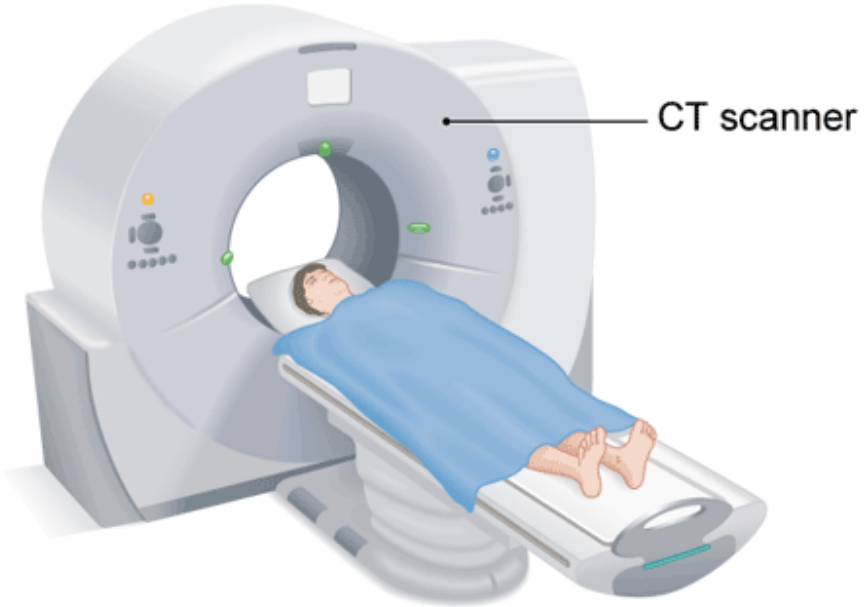
You will be asked not to eat or drink anything for a few hours beforehand, if contrast material will be used in your exam. You should inform your physician of all medications you are taking and if you have any allergies. If you have a known allergy to contrast material, your doctor may prescribe medications (usually a steroid) to reduce the risk of an allergic reaction. To avoid unnecessary delays, contact your doctor before the exact time of your

exam.

Also inform your doctor of any recent illnesses or other medical conditions and whether you have a history of heart disease, asthma, diabetes, kidney disease or thyroid problems. Any of these conditions may increase the risk of an unusual adverse effect. Women should always inform their physician and the CT technician if there is any possibility that they may be pregnant.

What does the CT equipment look like?

The CT scanner is typically a large, box-like machine with a hole, or short tunnel, in the center. You will lie on a narrow examination table that slides into and out of this tunnel. Rotating around you, the X-ray tube and electronic X-ray detectors are located opposite each other in a ring, called a gantry. The computer workstation that processes the imaging information is located in a separate control room, where the technician operates the scanner and monitors your examination in direct visual contact and usually with the ability to hear and talk to you with the use of a speaker and microphone.



How is the procedure performed?

The technician begins by positioning you on the CT examination table, usually lying flat on your back. Straps and pillows may be used to help you maintain the correct position and to help you remain still during the exam. Many scanners are fast enough that children can be scanned without sedation. In special cases, sedation may be needed for children who cannot hold still. Motion will cause blurring of the images and degrade the quality of the examination the same way that it affects photographs.

If contrast material is used, depending on the type of exam, it will be swallowed, injected through an Intravenous line (IV) or, rarely, administered by Enema.

Next, the table will move quickly through the scanner to determine the correct starting position for the scans. Then, the table will move slowly through the machine as the actual CT scanning is performed. The machine may make several passes.

When the examination is completed, you will be asked to wait until the technician verifies that the images are of high enough quality for accurate interpretation. The CT examination is usually completed within 30 minutes. The portion requiring intravenous contrast injection usually lasts only 10 to 30 seconds.

What will I experience during and after the procedure?

CT exams are generally painless, fast and easy. Though the scanning itself causes no pain, there may be some discomfort from having to remain still for several minutes and with placement of an IV. If you have a hard time staying still, are very nervous or anxious or have chronic pain, you may find a CT exam to be stressful. The technician, under the direction of a Radiologist, may offer you some medication to help you tolerate the CT scanning procedure.

For exams (excluding head and neck) your head will remain outside the hole in the center of the scanner. The scanner is approximately 24 inches wide, therefore, your entire body will be "inside" the scanner at one time such as

with Magnetic Resonance Imaging (MRI).

If an intravenous contrast material is used, you will feel a pin prick when the needle is inserted into your vein. You will likely have a warm, flushed sensation during the injection of the contrast materials and a metallic taste in your mouth that lasts for at most a minute or two. You may experience a sensation like you have to urinate; however, this is actually a contrast effect and subsides quickly.

If the contrast material is swallowed, you may find the taste mildly unpleasant; however, most patients can easily tolerate it. You can expect to experience a sense of abdominal fullness and an increasing need to expel the liquid if your contrast material is given by enema. In this case, be patient, as the mild discomfort will not last long.

You will be alone in the exam room during the CT scan, unless there are special circumstances. With pediatric patients, a parent may be allowed in the room but will be required to wear a lead apron to minimize radiation exposure.

Who interprets the results and how do I get them?

A radiologist who is a physician with special skills and expertise in supervising and interpreting radiology examinations, will analyze the images and send an official report to your primary care physician or physician who referred you for the exam, who will discuss the results with you.

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 examinations 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.
- CT can be performed if you have an implanted medical device of any kind, unlike MRI.
- CT imaging provides real-time imaging, making it a good tool for guiding minimally invasive procedures such as needle biopsies and needle aspirations of many areas of the body, particularly the lungs, abdomen, pelvis and bones.
- A diagnosis determined by CT scanning may eliminate the need for exploratory surgery and surgical biopsy.
- No radiation remains in a patient's body after a CT examination.
- X-rays used in CT scans should have no immediate side effects.

Risks

Women should always inform their physician and x-ray or CT technologist if there is any possibility that they are pregnant. See the Safety page for more information about pregnancy and x-rays.

CT scanning is, in general, not recommended for pregnant women unless medically necessary because of potential risk to the fetus in the womb.

The risk of serious allergic reaction to contrast materials 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 and should not have repeated CT exams unless absolutely necessary. CT scans in children should always be done with low-dose technique.

What are the limitations of CT Scanning of the body?

Soft-tissue details in areas such as the brain, internal pelvic organs, and joints (such as knees and shoulders) can often be better evaluated with 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.

Contact information

St. Maarten Medical Center

Radiology
Welgelegen Road 30
Cay Hill
St. Maarten
Tel: +1 (721) 543-1111 ext 1360
Fax: + 1 (721) 543-0116

Email: info@smmc.sx
Web: www.smmc.sx

A publication of SMMC - February 2019