

---

## CT scan

---

### Summary

- The computed tomography (CT) scan is a medical imaging procedure that uses x-rays and digital computer technology to create detailed pictures of the body.
  - It can image every type of body structure at once, including bone, blood vessels and soft tissue.
  - The CT scan is a non-invasive, painless and relatively safe procedure that doesn't require any recovery time.
- 

The computed tomography (CT) scan is a medical imaging procedure that uses x-rays and digital computer technology to create detailed two- or three-dimensional images of the body. Unlike other forms of medical imaging, the CT scan can make an image of every type of body structure at once, including bone, blood vessels and soft tissue.

CT scanning equipment consists of a large gantry (a supporting structure) with a circular hole. Inside the gantry is a rotating ring that carries the x-ray source and electronic x-ray detectors. An attached table slides the fully reclined (lying down) person into the hole.

Multiple x-ray projections are taken in thin cross-sections along the person's body (imagine a loaf of sliced bread). The detectors collect the x-ray information from each cross-section and send them to a special computer that combines them into an image.

The CT scan may also be referred to by its older name of computed axial tomography or 'CAT' scan.

### When a CT scan is used

Some of the common uses of the CT scan include:

- assessment of a body part's structure or shape
- diagnosis of disease, particularly cancer
- diagnosis of trauma or injury
- diagnosis of vascular disease
- aid to planning particular surgeries
- aid to planning radiotherapy
- visual aid to radiotherapy administration
- visual aid to certain interventional procedures (going inside the body) such as biopsy or needle aspiration
- measurement of bone strength
- alternative to some types of exploratory or diagnostic surgery.

### Medical issues to consider before a CT scan

Before you have a CT scan:

- Tell the doctor if you are pregnant or think you may be pregnant. Another type of test may be recommended.
  - Tell the doctor if you have allergies, diabetes, thyroid condition or renal (kidney) impairment.
  - Tell the doctor if you experience claustrophobia (fear of small spaces). The doctor may give you a mild sedative to help you relax during the procedure.
  - Tell the doctor about any implanted device you may have such as a pacemaker or medication pump, as metal objects may distort the images.
  - Follow all the instructions you are given. Some CT scans require the use of contrast material to improve the image quality. The contrast material may be taken orally or by an intravenous injection (or both).
-

- You may have to go without food and drink for a certain length of time before the procedure. Your doctor will give you detailed instructions on how to prepare for the test and what to expect.
- A very obese person may be too big for the circular hole of the CT machine. The doctor may advise another type of medical imaging or diagnostic test.

### **CT scan procedure**

Generally, the procedure includes the following:

- You may be given a large drink to consume before the procedure. This drink is an oral contrast agent that helps to enhance pictures of the stomach, small intestines and bowel. In some cases, the contrast agent is administered as an enema.
- You will be asked to undress and wear a hospital gown. You must remove all metal objects including jewellery.
- You lie down on the scanner table. The radiographer may use straps and foam pillows to position your body and help keep you still.
- You may be given an intravenous injection of an iodinated contrast medium (a type of dye) to help produce better images. This substance may cause a strange warm feeling that lasts for a few seconds, a funny metallic taste in the mouth or the sensation that you have 'wet' yourself.
- The table slides into the circular hole in the machine.
- Depending on the body part and the condition being investigated, a number of images may be taken as the table moves in and out of the circular hole.
- The ring inside the gantry moves in a circle around you as it takes the x-ray images. Each revolution (turning) of the ring takes less than a second and there may be a number of revolutions depending on the examination.
- Lie very still. This is very important, as movement will blur the images. You may be asked to hold your breath for a few seconds while the CT machine takes the images.
- The equipment makes clicks and buzzes while taking the images. Don't be alarmed – this is normal.
- Depending on the type of medical investigation, the CT scan may take anywhere from a few minutes to half an hour or more.

### **Immediately after the CT scan**

You may be asked to wait while the radiographer reviews the images. In some cases, more images must be taken. Once the radiographer has enough good images, you can dress and leave when the radiographer says you can.

You may need to remain in the department for a short period after the procedure if you have received the iodinated contrast material. The medically qualified radiologist assesses the scans. The results are usually sent to your referring doctor, so you will need to make a follow-up appointment.

### **Complications of a CT scan**

The CT scan is a very safe procedure. Some people who have an injection of iodinated contrast material may feel nauseous for a short time afterwards. On rare occasions, a person may have an allergic reaction to this substance.

### **Taking care of yourself at home after a CT scan**

The CT scan is a non-invasive, painless and relatively safe procedure. Most people do not need any recovery time. Be guided by your doctor but, generally speaking, you can resume normal activities as soon as you leave.

### **Breastfeeding after a CT scan**

Nursing mothers do not need to avoid breastfeeding after a CT scan, even if the iodinated intravenous dye was used.

### **Long-term outlook after a CT scan**

There are no known long-term side effects from having a CT scan. However, the procedure is thought to very

slightly increase a person's chance of developing cancer. To keep this small risk in perspective, a typical CT scan will expose you to the same amount of radiation that you would receive from the general environment over about three years.

### **Alternatives to a CT scan**

Alternatives to a CT scan depend on the medical condition under investigation but could include:

- **MRI scan**
- **ultrasound**
- **blood test**
- **biopsy**
- exploratory surgery.

### **Where to get help**

- Your **GP (doctor)**
- **Radiographer or radiologist**

**This page has been produced in consultation with and approved by:**

Monash University - Department of Medical Imaging and Radiation Sciences

Content on this website is provided for information purposes only. Information about a therapy, service, product or treatment does not in any way endorse or support such therapy, service, product or treatment and is not intended to replace advice from your doctor or other registered health professional. The information and materials contained on this website are not intended to constitute a comprehensive guide concerning all aspects of the therapy, product or treatment described on the website. All users are urged to always seek advice from a registered health care professional for diagnosis and answers to their medical questions and to ascertain whether the particular therapy, service, product or treatment described on the website is suitable in their circumstances. The State of Victoria and the Department of Health & Human Services shall not bear any liability for reliance by any user on the materials contained on this website.

For the latest updates and more information, visit [www.betterhealth.vic.gov.au](http://www.betterhealth.vic.gov.au)

**Copyright © 1999/2020** State of Victoria. Reproduced from the Better Health Channel ([www.betterhealth.vic.gov.au](http://www.betterhealth.vic.gov.au)) at no cost with permission of the Victorian Minister for Health. Unauthorised reproduction and other uses comprised in the copyright are prohibited without permission.