

# Computed Tomography (CT) Scan of the Brain



## What is a CT scan of the brain?

A CT scan is a type of imaging test. It uses X-rays and a computer to make detailed images of the body. A CT scan shows details of the bones, muscles, fat, and organs. CT scans are more detailed than standard X-rays. In an emergency, it can show internal injuries and bleeding quickly.

In standard X-rays, a beam of energy is aimed at the body part being studied. A plate behind the body part captures the variations of the energy beam after it passes through skin, bone, muscle, and other tissue. While much information can come from a standard X-ray, a CT scan captures much more detail about internal organs and other structures.

In a CT scan, an X-ray beam moves in a circle around the body. This provides many different views of the same organ or structure. The X-ray information is sent to a computer that interprets the X-ray data and displays it in a 2-D form on a monitor.

CT scans may be done with or without contrast. Contrast is a substance taken by mouth or injected into an IV (intravenous) line. The contrast makes the particular organ or tissue under study to show up more clearly on the scan.

CT scans of the brain can give more detailed information about its tissue and structures than standard X-rays of the head. CT scans can give healthcare providers more information related to injuries or diseases of the brain.

## Why might I need a CT scan of the brain?

A CT scan of the brain may be used to check for the following:

- Tumors or other lesions
- Injuries or acute trauma
- Bleeding
- Stroke
- Structural problems
- Infections
- Changes in mental or physical function

A CT scan may be done when a physical exam or other test, such as an X-ray or MRI, doesn't give enough information.

A CT scan of the brain may also be used to see if treatment is working for tumors and to look for clots that may cause a stroke. Another use of CT is to guide brain surgery or biopsies of brain tissue. A biopsy is when a small piece of tissue is removed so it can be looked at in the lab.

There may be other reasons for your healthcare provider to recommend a CT scan of the brain.

## What are the risks of a CT scan of the brain?

You may want to ask your healthcare provider about the amount of radiation used during a CT scan and the risks tied to your situation. It's a good idea to keep a record of your radiation exposure, such as previous CT scans and other types of X-rays, so that you can inform your provider. Risks linked with radiation exposure may be related to the total number of X-ray exams and treatments you've had over time.

If you're pregnant or think you may be, tell your provider. Radiation exposure during pregnancy may lead to birth defects. If it's necessary for you to have a CT of the brain, special precautions will be taken to reduce the radiation exposure to the fetus.

Nursing parents should talk with the radiologist about when to resume breastfeeding after contrast material is injected.

If contrast dye is used, there's a risk for allergic reaction to the dye. Tell your healthcare provider if you're allergic or sensitive to medicines, contrast, or iodine. Most people won't have a bad reaction from the contrast. But let your healthcare provider know if you have ever had a reaction to any contrast dye or have kidney problems.

There may be other risks depending on your specific health condition. Tell your healthcare provider about all your health conditions.

Make a list of questions. Talk about any concerns with your healthcare provider before the procedure. Consider bringing a family member or trusted friend to the appointment to help you remember your questions and concerns and to take notes.

## How do I get ready for a CT scan of the brain?

- Your healthcare provider will explain the procedure to you and ask if you have any questions.
- If your CT scan involves the use of contrast dye, you'll be asked to sign a consent form that gives permission to do the procedure. Read the form carefully and ask questions if anything isn't clear.
- Generally, you won't need to fast before a CT scan, unless a contrast dye is to be used. Your healthcare provider will give you special instructions ahead of time if contrast is to be used and you shouldn't eat or drink.
- Tell your healthcare provider about all prescription and over-the-counter medicines, vitamins, herbs, and supplements you're taking.
- Tell the technologist if you've ever had a reaction to any contrast dye, or if you're allergic to iodine. Your healthcare provider may prescribe a medicine to reduce the risk for an allergic reaction.
- Tell the technologist if you're pregnant or think you may be.
- Based on your health condition, your healthcare provider may request other specific preparations.

## What happens during a CT scan of the brain?

CT scans may be done on an outpatient basis or as part of your stay in a hospital. Procedures may vary depending on your condition and your healthcare provider's practices.

Generally, a CT scan of the brain follows this process:

1. You'll be asked to remove any clothing, jewelry, or other objects that may interfere with the procedure, such as eyeglasses, hairpins, dentures, and possibly hearing aids.
2. If you're asked to remove clothing, you'll be given a gown to wear.
3. If you're to have a scan done with contrast, an IV (intravenous) line will be started in your hand or arm for injection of the contrast dye.
4. You will lie on a narrow scan table that slides into a large, circular opening of the ring-shaped scanning machine. Pillows and straps may be used to help keep your head still during the scan.
5. The technologist will be in another room where the scanner controls are located. But you'll be in constant sight of the technologist through a window. Speakers inside the scanner will allow the technologist to talk with you and hear you. You'll have a call button so that you can let the technologist know if you have any problems during the scan. The technologist will be watching you at all times and will be in constant communication.
6. The scanner will rotate around you, and X-rays will pass through your body for short amounts of time. You'll hear clicking and whirring sounds, which are normal.
7. The X-rays absorbed by the body's tissues will be detected by the scanner and transmitted to the computer. The computer will transform the information into an image to be interpreted by the radiologist.

8. It will be very important for you to stay very still during the scan. You may be asked to hold your breath for a short time at various points during the scan.
9. If contrast dye is used, you'll be removed from the scanner after the first set of scans has been completed. A second set of scans will be taken after the contrast dye has been given.
10. If contrast dye is used, you may feel some effects when the dye is injected into the IV line. These effects include a warm flushing sensation, a salty or metallic taste in the mouth, a brief headache, or nausea. These effects usually last for only a few moments. Tell the technologist if you feel pain or tingling at the IV site after contrast has been injected.
11. You should tell the technologist if you have trouble breathing, sweating, numbness, or heart palpitations.
12. When the procedure is done, you'll be removed from the scanner.
13. If an IV line was inserted, it will be removed.
14. You may be asked to wait for a short time while the radiologist examines the scans to make sure they are good images.

While the CT scan itself causes no pain, having to lie still for the length of the procedure might cause some discomfort or pain, particularly if you've recently been injured or had surgery. The technologist will use all possible comfort measures and complete the procedure as quickly as possible to minimize any discomfort or pain.

## What happens after a CT scan of the brain?

If contrast dye was used, you may be watched for a period for any side effects or reactions to the contrast dye, such as itching, swelling, rash, or trouble breathing. Tell the radiologist or your healthcare provider right away if you notice any of these symptoms.

If you notice any pain, redness, or swelling at the IV site after you go home, tell your healthcare provider. This could be a sign of infection or other type of reaction.

Otherwise, there is no special type of care needed after a CT scan of the brain. You may go back to your usual diet and activities unless your healthcare provider tells you differently.

Your healthcare provider may give you other instructions after the procedure, depending on your situation.

## Next steps

Before you agree to the test or the procedure, make sure you know:

- The name of the test or procedure
- The reason you are having the test or procedure
- What results to expect and what they mean
- The risks and benefits of the test or procedure
- What the possible side effects or complications are
- When and where you are to have the test or procedure
- Who will do the test or procedure and what that person's qualifications are
- What would happen if you did not have the test or procedure
- Any alternative tests or procedures to think about
- When and how you will get the results
- Who to call after the test or procedure if you have questions or problems

- How much you will have to pay for the test or procedure

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