CT Scan for Cancer

A CT scan (also known as a **computed tomography scan, CAT scan,** and **spiral or helical CT**) can help doctors find cancer and show things like a tumor's shape and size. CT scans are most often an outpatient procedure. The scan is painless and takes about 10 to 30 minutes.

What does a CT scan show?

CT scans show a slice, or cross-section, of the body. The image shows your bones, organs, and soft tissues more clearly than standard x-rays.

CT scans can show a tumor's shape, size, and location. They can even show the blood vessels that feed the tumor – all without having to cut into the patient.

Doctors often use CT scans to help them guide a needle to remove a small piece of tissue. This is called a **CT-guided biopsy**. CT scans can also be used to guide needles into tumors for some types of cancer treatments, such as radiofrequency ablation (RFA), which uses heat to destroy a tumor.

By comparing CT scans done over time, doctors can see how a tumor is responding to treatment or find out if the cancer has come back after treatment.

How does a CT scan work?

In a way, CT scans are like standard x-ray tests. But an x-ray test aims a broad beam of radiation from only one angle. A CT scan uses a pencil-thin beam to create a series of pictures taken from different angles. The information from each angle is fed into a computer, which then creates a black and white picture that shows a slice of a certain area of the body – much like looking at a single slice from a loaf of bread.

Special contrast materials can be used to get a clearer picture. These can be swallowed as a liquid, put into a vein, or put into the intestines through the rectum as an enema.

By layering CT image slices on top of each other, the machine can create a 3-dimensional (3-D) view. The 3-D image can be rotated on a computer screen to look at different angles.

Doctors are now taking CT technology one step further in a technique called *virtual endoscopy*. They can look at the inside surfaces of organs such as the lungs (virtual bronchoscopy) or colon (virtual colonoscopy or CT colonography) without actually having to put scopes into the body. The 3-D CT images are arranged to create a black and white view on the computer screen. This looks a lot like it would if they were doing an actual endoscopy.

How do I get ready for a CT scan?

CT scans are most often done on an outpatient basis, so you don't have to be in a hospital to get one.

Ask your doctor if you will get contrast dye as part of the CT scan. Before getting the dye, be sure to let your health care team know if you've ever had a reaction to contrast dye, seafood, or iodine in the past. This is important because reactions to these things may put you at risk for reacting to the contrast dye used in CT scans. If there's a risk that you might have an allergic reaction, you may be given a test dose of the contrast dye first. People who have had a severe reaction in the past may need to take drugs (usually a steroid, like prednisone) to help prevent another reaction. Sometimes these drugs need to be started the day before the scan.

In some cases, your doctor may tell you not to eat or drink overnight or for several hours before the test. Or you might need to use a laxative or an enema to clean out your bowel and remove material that could get in the way of seeing inside the belly and intestines.

What is it like having a CT scan?

You may be asked to undress, put on a robe, and remove underwire bras, jewelry, piercings, or any other metal objects that may get in the way of the image. You may be asked remove dentures, hearing aids, hair clips, and so on, as they can affect the CT pictures.

A radiology technologist does the CT scan. Let the technologist know if you have a pacemaker, infusion port, or other implanted medical device. This will not keep you from getting a CT scan, but extra care can be taken if that area will be scanned.

The scanner is a large, doughnut-shaped machine. You lie on a thin, flat table that slides back and forth inside the hole in the middle of the scanner. As the table moves into the opening, an x-ray tube rotates within the scanner, sending out many tiny x-ray beams at precise angles. These beams quickly pass through your body and are detected on the other side of the scanner. You may hear buzzing and clicking as the scanner switches on and off.

You will be alone in the exam room during the CT scan, but the technologist will be able to see, hear, and talk to you at all times.

A CT is painless but you may find it uncomfortable to hold still in certain positions for minutes at a time. You may also be asked to hold your breath for a short time, since chest movement can affect the image.

During a CT head scan, your head may be held still in a special device. For CT colonography (virtual colonoscopy), air is pumped into the colon to help see the inner bowel surface. This can be uncomfortable.

Depending on the part of the body being studied, you may need to drink contrast liquid or get a contrast enema right before the test.

If you're going to get contrast dye in a vein, an intravenous (IV) catheter might be put into a vein in your arm or hand. You'll probably have a scan done, then get the contrast dye and have another scan done. When the contrast is given, you may get a feeling of warmth that spreads through your body. Some people say that this can feel like they "wet their pants." This is only a feeling, and it goes away quickly. You might also get a bitter or metallic taste in your mouth.

How long does a CT scan take?

A CT scan can take anywhere from 10 to 30 minutes, depending on what part of the body is being scanned. It also depends on how much of your body the doctors want to look at and whether contrast dye is used. It often takes more time to get you into position and give the contrast dye than to take the pictures. After the test, you may be asked to wait while the pictures are checked to make sure they are clear and show all of the body part. If not, more pictures may be needed.

What are the possible complications and side effects of a CT scan?

Some people react to the contrast dye. Possible reactions include:

- Rash
- Nausea
- Wheezing
- Shortness of breath
- Itching or facial swelling that can last up to an hour

These symptoms usually are mild and most often go away on their own. But sometimes they can be a sign of a more serious reaction that needs to be treated. Be sure to let your radiology technologist and your health care team know if you notice any changes after getting the contrast dye.

In rare cases, people can have a severe allergic reaction that causes low blood pressure or trouble breathing. This must be treated right away.

The IV contrast dye can also cause kidney problems. This is rare, and it's more common in someone whose kidneys already don't work well. If you need a scan with contrast dye, your doctor may first do a blood test to check your kidney function. You may also get extra fluids in an IV or medicines to help your kidneys get rid of the dye safely.

What else should I know about a CT scan?

- Although a CT scan is sometimes described as a "slice" or a "cross-section," no cutting is involved.
- The amount of radiation you get during a CT scan is a good deal more than that with a standard x-ray.
- People who are very overweight may have trouble fitting into the CT scanner.
- Be sure to tell your doctor if you have any allergies or are sensitive to iodine, seafood, or contrast dyes.
- Tell your doctor if you could be pregnant or are breastfeeding.
- CT scans can cost up to 10 times as much as a standard x-ray. You may want to be sure your health insurance will cover this test before you have it.

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