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Computed Tomography (CT) Scan [1]

Listen to theCancer.Net Podcast: CT Scan - What to Expect[2], adapted from this feature

A computed tomography (CT) scan, also called a CAT scan, is a diagnostic tool used to detect cancer and find out the cancer?s stage (a way of describing where the cancer is located, if or where it has spread, and whether it is affecting the functions of other organs in the body). Knowing the cancer?s stage helps you and your doctor decide what kind of treatment is best and helps predict prognosis (a patient?s chance of recovery). CT scans can also be used to guide some types of biopsies (the removal of a small amount of tissue for examination under a microscope to determine whether cancer is present) or to evaluate the effectiveness of cancer treatments, such as chemotherapy or radiation therapy. In addition, CT scans are often used for radiation therapy treatment planning. Areas that are commonly scanned include the head, neck, chest, abdomen, pelvis, or limbs.

A CT scan creates a three-dimensional picture of the inside of the body with an x-ray machine. A computer then combines these images into a detailed, cross-sectional view that shows any abnormalities or tumors. Sometimes, a contrast medium (a special dye) is injected into a patient?s vein to create more detail in the images. One risk of this test is radiation exposure, especially for children. However, the potential benefits of having a CT scan usually outweigh these risks. If you are receiving multiple CT scans and x-rays, though, talk with your doctor about whether another type of test that involves less exposure to radiation can be done.

In some cases, your doctor may recommend an integrated PET-CT scan. This combines images from a positron emission tomography (PET) scan [3] and a CT scan that have been performed at the same time using the same machine. Together, these two scans create a more complete picture of what is going on in the body than either test can offer alone. Learn more about what to expect with an integrated PET-CT scan [4].

The medical team

A CT scan is performed at the radiology or radiation oncology department of a hospital or at an outpatient imaging center. It is performed by a radiologic technologist (a health care professional who is specially trained and certified to operate a CT scanner) and interpreted by a radiologist (a doctor who performs and interprets imaging tests to identify problems in the body).

Preparing for the procedure

When you schedule your CT scan, you will get detailed instructions about how to prepare. You may be told to drink nothing but clear liquids starting at midnight the night before your appointment and instructed to not eat or drink anything for at least four hours before your scan begins. However, talk with your health care team about restrictions on eating and drinking because they may not be necessary for scans of some parts of the body.

You also should tell your doctor or nurse about all of the medications you are taking and ask whether you should take them on the day of the test. In addition, discuss any drug allergies you have, especially any allergic reactions to iodine you may have experienced in the past.

Women should tell their doctors if they are breastfeeding or if there is any chance they are pregnant because a CT scan could put the baby at risk. Also be sure to mention any other medical conditions you may have.

You will be asked to sign a consent form that states you understand the benefits and risks of the CT scan and agree to undergo the test. Talk with your doctor or nurse about any concerns you have about the CT scan. You may also want to ask whether you can bring your own music at this time because some facilities allow patients to listen to music during their scans.

Finally, check with your insurance provider to find out whether the CT scan will be covered and whether you will have to pay any out-of-pocket costs.

During the procedure

When you arrive for your CT scan, you may need to change into a hospital gown or remove clothing or jewelry that could interfere with the scan. This includes belts, earrings, shirts with snaps or zippers, bras, and glasses.

Depending on which part of your body is being scanned, you may be given a contrast medium. This dye may be given orally (as a drink), through an intravenous (IV) line, or through an injection (shot). Then it will travel through your bloodstream and help create a clearer picture of specific parts of your body.

If you are given an injection, you may feel heat or itching at the injection site or have a metallic taste in your mouth; however, both sensations should disappear after a few minutes. If you experience a more serious reaction, like trouble breathing, tell the technologist immediately.

The technologist will help position you on an exam table. The table may have straps, pillows, or a special cradle for your head to hold you in place. You will probably lie on your back, although you may be asked to lie on your side or your stomach, depending on which part of your body is being scanned, especially if you are undergoing a biopsy [5]. If the scan is done as part of radiation therapy treatment planning, there may be special devices such as masks or body casts to keep your body in the same position that will be used for the radiation treatment.

During the scan, the technologist who monitors the procedure will be in an adjoining control room. However, he or she will be able to observe you through a window or by means of a video

camera, and you will be able to communicate through an intercom system.

The CT scanner resembles a large donut. The exam table will slide back and forth through the large hole in the center of the machine as the scanner rotates around you. At first, the table will move through the scanner quickly, which helps the technologist confirm that your body is in the right position. After that, the table will move more slowly.

CT scans are not painful. However, you will need to lie still for the entire scan, which may become uncomfortable. Since the scanner is shaped like a donut, you will not be enclosed in the scanner at any time. You can also expect to hear whirring or clicking sounds from the machine; some machines are noisier than others.

You may be asked to hold your breath during part of the scan because the motion created by breathing can blur the images. The exam table may be raised, lowered, or tilted to create the correct angle for the x-rays; ask the technologist performing the scan to tell you when the table will move.

The examination will generally last up to an hour, although the scanning itself takes only 10 to 15 minutes or less. Newer scanners, including spiral or helical CT scanners, are even faster. If a larger part of your body is being scanned, the test may last longer. The technologist should be able to give you a time estimate before you begin.

When the scan is finished, you may be asked to remain on the exam table while a radiologist reviews the images to determine whether additional images are needed.

After the procedure

You can expect to return to your normal activities immediately after your CT scan, including driving. If you received a contrast medium for the scan, you may be told to drink a lot of water to flush it out of your body.

Questions to ask your doctor

Before having a CT scan, consider asking your doctor the following questions:

- What will happen during the CT scan?
- Who will perform the CT scan?
- How long will the procedure take?
- Will there be any discomfort?
- What are the risks and benefits of having a CT scan?
- Do I need to bring any of my other radiologic images?such as an earlier magnetic resonance imaging (MRI) test?to my appointment?
- Is the imaging facility accredited to perform CT scans?
- Will I be given a contrast medium before the scan? If so, how will this be given to me?
- May I eat or drink anything prior to the exam?
- Does the facility have an emergency response plan in case I have an allergic reaction to the contrast material used for the scan?
- Will I need to avoid any activities after the CT scan?

- When will I learn the results?
- How will the results be communicated to me?
- Will I need any additional tests?

More Information

Tests and Procedures [6]

Additional Resources

RadiologyInfo.org: CT - Body [7]

National Cancer Institute: Computed Tomography [8]

Links:
[1] http://www.cancer.net/navigating-cancer-care/diagnosing-cancer/tests-and-procedures/computed-tomography-ct-scan
[2] http://www.cancer.net/sites/cancer.net/files/CT_Scan_What_to_Expect.mp3
[3] http://www.cancer.net/node/24648
[4] http://www.cancer.net/node/24565
[5] http://www.cancer.net/node/24406
[6] http://www.cancer.net/node/24959
[7] http://www.radiologyinfo.org/en/info.cfm?pg=bodyct
[8] http://www.cancer.gov/cancertopics/factsheet/Detection/CT