

PET/CT Scan

An integrated PET-CT scan combines the images from a positron emission tomography (PET) scan and a computed tomography (CT) scan, performed at the same time. Together, the two scans create a more complete image than either test can offer alone. This test is used to:

- detect and determine the stage of a cancer. (The stage describes the size of the original tumor and identifies whether the tumor has spread to lymph nodes or other parts of the body.)
- guide some types of biopsies (removal of a small amount of tissue for examination by a pathologist)
- find the best location for radiation treatments
- evaluate the effectiveness of cancer treatments

X-rays, MRIs, and CT scans show the structures of organs and tissues in your body. A PET scan is a *nuclear scan*. It uses radioactive substances (called radionuclides or radiotracers) to show changes in the cells of organs and tissues *before* the structure is changed. PET scans can detect areas of cancer that may not be large enough to show up on a CT or MRI scan.

Since PET scan images are not as sharp as CT or MRI images, it can be difficult to identify the exact structure where the suspicious cells are located. Combining the PET and CT images solves this problem. When cancer cells “light up” on the PET scan, the physician can tell where they are located – in bone, in an organ, or in another structure. (Though both tests are done, some may still call it a PET scan.)

Preparing for Your Test

It's important to tell your doctor:

- about all the medications you take (prescription, over-the-counter, herbs, supplements, vitamins)
- about any allergies you have
- if you are — or might be — pregnant, or if you are breastfeeding
- if you have diabetes

If you become uncomfortable lying still for a long time or if you are uncomfortable with close spaces: Talk to your doctor beforehand. They may make arrangements for you to receive a sedative before your scan. Sedation is not provided by the nuclear medicine department. If you have a sedative, you must tell the receptionist and take the medication 30 minutes (1/2 hour) before the scan.

If you have a sedative, you must have someone to drive you home.

A radiotracer called 18FDG (fluorodeoxyglucose) is commonly used. FDG is a type of glucose (sugar) combined with radioactive material. **You must stop eating and drinking about 4-6 hours before the test because sugar and calories can affect the test results. If you need to take medication, take it with a small sip of plain water. Do not use flavored water.**

Other varieties of radiotracers such as Ga-68 dotate /NETSPOT®, F-18 Sodium Fluoride, and F-18 PSMA do not have the eating and drinking restrictions like FDG.

No strenuous exercise for 24 hours before your scan; it may affect the results. Talk with your doctor for more information.

Follow these eating and activity instructions

The Day of the Scan

- On the day of testing, you will get an injection of a small dose of a radiotracer.
- You will have to wait an hour between getting the tracer and having the scan. This gives the radiotracer time to build up in the body part being scanned.
- You will be placed on a flat table that moves through a donut-shaped opening on the PET scan machine. The scan makes no noise.
- The more “active” the cell, the more radiotracer it will absorb. Cancer cells grow and divide (reproduce) very fast, so they usually absorb more of the radiotracer than most normal cells.
- As the radiotracer breaks down, it gives off positively charged particles called *positrons*. They stay in the area and they interact with local negatively charged particles. This interaction gives off electromagnetic radiation.
- The table will move and guide you through the machine.
- During the scan, **you must lie very still** because any movement could interfere with the test results.
- The cancer cells that have picked up more of the radiotracer will show up on the images looking different from the normal cells surrounding them.

After the Scan

There are no restrictions once the test had been completed. If you were not sedated, you may leave as soon as the scan is complete. The radiotracer will continue to break down and leave your body in your urine. **Drinking a lot of water will help flush the radiotracer out of your body.**