

PET scan

Consumer Information

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What is a PET scan?

PET stands for “positron emission tomography”. It is a nuclear medicine imaging test in which a small amount of liquid radioactive material is injected into your body and is used to diagnose a variety of diseases, including many types of cancers, heart disease and other diseases. The radioactive substance most commonly used in PET scanning is a simple sugar (like glucose) called FDG, which stands for “fluorodeoxyglucose”. It is injected into your bloodstream and accumulates in your body where it gives off energy in the form of gamma rays. These are detected by the PET scanner and a computer converts the signals into detailed pictures or images showing how tissue and organs are working. If you are having an FDG PET, your sugar metabolism (how sugar is used by your body) is imaged. This is commonly used for cancer imaging as tumours need sugar to grow.

PET scanners are now commonly combined with [computed tomography \(CT\)](#) scanners, called PET-CT scanners. CT imaging uses X-ray equipment to create detailed images of slices of the inside of your body. The PET-CT combination allows any abnormality on the PET scan to be precisely located within the body, allowing for more accurate diagnosis of any problems. The PET or PET-CT scanner looks like a large box with a circular hole in the middle.

How do I prepare for a PET scan?

You will receive specific instructions based on the type of PET scan you are undergoing. If you are unsure about any aspect of preparation you should contact the centre where your PET scan is going to be performed.

It is important that you let staff at the hospital or radiology practice where you are having the scan done know if you are (or think you could be) **pregnant** or are **breast feeding**.

This study may not be suitable for pregnant women because of the radiation dose to the growing foetus. Please discuss this with your doctor.

Women who are breastfeeding and people who are the primary or sole carer for small children may need to make special preparations for after the test, to stop breastfeeding for a short time, and to avoid close contact with young children. This is due to the small amount of radioactivity your body may release

for a while after the test. Talk to your referring doctor or the nuclear medicine practice where you will have the test for details. The Australian Radiation Protection and Nuclear Safety Agency has [recommendations](#) about breastfeeding and close contact with children after nuclear medicine tests.

Bring with you to your appointment any previous X-ray or radiology images you have, as comparison with these by the nuclear medicine physician (a specialist doctor), who looks at and interprets your PET scan, can be very helpful.

Generally, you will be asked not to eat or drink anything for several hours before the PET scan because this may alter your sugar metabolism and may affect the quality of the images or pictures. Drinking water is usually acceptable. If you are diabetic, you will be provided with specific instructions and may need to stop taking some diabetic medications before having the scan.

You need to wear comfortable, loose clothing and will generally be changed into a hospital gown. It is important that you are not wearing metal, including jewellery, watches, zips and bra hooks as these can affect the quality of the images produced.

What happens during a PET scan?

After you arrive at the hospital or radiology practice, a nurse or nuclear medicine technologist will explain the procedure and prepare you for the PET scan. You will be asked to change into a gown. A small needle will be inserted into a vein, usually in your arm or the back of your hand, to fit an intravenous line (a thin plastic tube) through which the liquid radioactive material is injected. A brief medical history will be taken to ensure the optimal (or best) scanning method is used and to also help with subsequent image interpretation. Your blood sugar level will be checked, as high or low blood sugar levels can alter the appearance of the scan. The radioactive substance is then injected into your vein through the intravenous line.

If you are having an FDG PET scan, you will be asked to rest quietly in a bed or arm chair, avoiding movement or talking for 90 minutes. During this time you will be alone as there is limited room for visitors, and it will prevent your friends or relatives from receiving unnecessary radiation exposure. You may be asked to drink some contrast material that moves through your stomach and bowel and helps to improve the interpretation of the scan. Occasionally, depending on the medical indication (symptom or condition), a catheter (a thin flexible tube) may be placed into your bladder to help improve image quality.

You will then be moved to the scanning room and positioned on the PET scanning bed. It is important to remain as still as possible during the scan as movement can result in reduced image quality and the images may be blurry. Therefore, if you are uncomfortable after being positioned on the bed please tell the nurse or technologist.

If you are having a PET-CT, the CT scan is performed first and takes less than 2 minutes. The PET scan takes approximately 30 minutes but the time will vary depending on the regions of your body being scanned.

The intravenous line will be removed before you leave.

Are there any after effects of a PET scan?

The substances used in PET scanning are not associated with any side effects so you should feel no different after the scan. Unless your doctor tells you otherwise, you can resume normal activities after a PET scan.

However, if you are breastfeeding or caring for young children, see the "how do I prepare" section for more information about special precautions you may need to take.

How long does a PET scan take?

This will depend on the type of scan being performed but you can expect to be in the PET imaging department for between two to three hours. The time on the PET scanner is typically 30 minutes but time is also needed for preparation.

When the scan is completed you will be asked to wait while the images are checked to make sure they are clear. Occasionally, there is a need to obtain more images following this check.

What are the risks of a PET scan?

Nuclear medicine procedures, including PET scanning, are very safe. The scan involves an injection of a very small amount of a radioactive material or tracer, which will only remain in your body for a few hours. It gives you a small amount of additional radiation but does not cause any side effects. The radiation dose you receive is equivalent to several years of natural background radiation from the normal environment.

Some people experience claustrophobia (fear of being confined in a small space) when inside the scanner machine. If you have experienced claustrophobia in the past, please inform the technologist, nurse or doctor when you arrive, as they can take steps to minimise your feeling of claustrophobia.

Occasionally, other drugs will be given as part of a PET scan and any possible side effects will be discussed with you.

If there is any possibility that you are pregnant or if you are breastfeeding you should inform the nurse, technologist or doctor.

What are the benefits of a PET scan?

PET scanning is a powerful diagnostic test that is having a major impact on the diagnosis and treatment of disease. It provides unique information which may assist in making a diagnosis, in determining treatment or providing a prognosis, that is, the likely outcome of any disease.

Nuclear medicine tests, including PET scanning, can provide information on how tissue or organs are working, which cannot be obtained from other imaging techniques. PET scans may detect disease earlier than other types of scanning by identifying early changes to tissue and organs.

Who does the PET scan?

A nuclear medicine technologist operates the equipment during the procedure. The technologist, or a nurse, will also be involved in preparing you for the scan. A doctor who has received highly specialised training in nuclear medicine will oversee the procedure, interpret the images and provide your doctor with a report of the scan.

Where is a PET scan done?

PET scanners are usually located within public or private hospitals or private radiology practices with nuclear medicine facilities.

When can I expect the results of my PET scan?

A doctor who has received specialised training in nuclear medicine will interpret the images and forward a report to your referring doctor, who will provide you with the results.

The time that it takes your doctor to receive a written report on the test or procedure you have had will vary, depending on:

- the urgency with which the result is needed
- the complexity of the examination
- whether more information is needed from your doctor before the examination can be interpreted by the nuclear medicine specialist
- whether you have had previous X-rays or other medical imaging that needs to be compared with this new test or procedure (this is commonly the case if you have a disease or condition that is being followed to assess your progress)
- how the report is conveyed from the practice or hospital to your doctor (in other words, email, fax or mail)

Please feel free to ask the private practice, clinic, or hospital where you are having your test or procedure when your doctor is likely to have the written report.

It is important that you discuss the results with the doctor who referred you, either in person or on the telephone, so that they can explain what the results mean for you.

Please note:

This information is of a general nature only and is not intended as a substitute for medical advice. It is designed to support, not replace, the relationship that exists between a patient and his/her doctor. It is recommended that any specific questions regarding your procedure be discussed with your family doctor or medical specialist

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