

Cerebral Perfusion Study

Consumer Information

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What is a Cerebral Perfusion Study?

A Cerebral Perfusion Study is a nuclear medicine scan that looks at brain function by demonstrating the amount of blood taken up by the brain cells. Other tests such as computed tomography (CT) and magnetic resonance imaging (MRI) show what the skull, brain and blood vessels look like but a nuclear medicine Cerebral Perfusion Study can show if some parts of the brain are working more than normal, such as during an epileptic seizure, or less than normal as in dementia or between epileptic seizures.

An injection of a radiopharmaceutical is given by injection through a vein in your arm. The radiopharmaceuticals used for this test are usually Ceretec (^{99m}Tc -exametazine) or Neurolite (^{99m}Tc -bicisate). Conditions such as dementia, epilepsy and stroke can be diagnosed according to the distribution of the tracer within the brain.

See [Nuclear Medicine](#) for more details.

How do I prepare for a Cerebral Perfusion Study?

There is no preparation before arriving for your appointment and you may eat and drink normally before a Cerebral Perfusion Study.

However, it is important that you let staff at the hospital or radiology practice where you are having the scan 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.

Preparation time is needed when you arrive at the hospital or radiology practice for your appointment

and you will be required to arrive up to an hour before your actual scan time. You will be advised about the time when you arrange your appointment.

You will need to lie very still while the images or pictures are being taken so they are not blurred.

If you feel you will be unable to stay still for a prolonged period of time, please advise your doctor or the hospital or radiology practice where you are having the scan.

What happens during a Cerebral Perfusion Study?

Cerebral Perfusion Studies are always performed in a nuclear medicine department of a hospital or at a private radiology practice. Upon arrival you will be taken into a room where an IV cannula or drip (a thin plastic tube) will be inserted into a vein in your arm. The scan requires you to rest for 20-30 minutes in a quiet, darkened room before the radiopharmaceutical can be given. You will most likely be alone during this time so that your brain is not stimulated by any interaction you may have with another person. To ensure you stay rested, the technologist may advise you that when they enter the room to inject the radiopharmaceutical you do not acknowledge them but just pretend they are not there. Once the radiopharmaceutical is injected, you will need to rest for a further 10-30 minutes before the scanning begins.

The piece of equipment used to scan your brain is a gamma camera (see [Nuclear Medicine](#)). This camera will be able to identify where the radiopharmaceutical has gone to in the brain. The gamma camera may also have a CT machine attached to the back of it and a low dose CT scan may also be done as part of the Cerebral Perfusion Study to increase the quality of the image and diagnostic accuracy (see [SPECT-CT Scan](#)).

You will be required to lie still for up to 30 minutes and your head will be resting in a head holder. The machine will move around your head. It will come quite close to your head but will not touch it. You may close your eyes.

Are there any after effects of a Cerebral Perfusion Study?

Once the scan is completed, the technologist will remove the cannula from your arm and you will be allowed to go home. There are no after effects of a Cerebral Perfusion Study and you may drive yourself home.

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 Cerebral Perfusion Study take?

Allow 1½ - 2 hours for the whole procedure. This includes time to put the cannula in, resting time before and after the radiopharmaceutical has been injected and the actual scan time. Depending on where you are having the scan done, you may need to remain after the test to collect your results or images. The total amount of time will depend on the individual hospital or radiology practice.

What are the risks of a Cerebral Perfusion Study?

Cerebral Perfusion Studying does not normally carry risk. In a very small number of patients (1%) a rash or allergic reaction has occurred. These reactions are short lived and respond to treatment.

It should be noted that, like many diagnostic imaging tests, a Cerebral Perfusion Study involves exposure to ionising radiation. However, this radiation dose is comparable to and in many cases less than the radiation doses received from other tests such as CT scans (see [Radiation risk of medical imaging for adults and children](#)).

What are the benefits of a Cerebral Perfusion Study?

Cerebral Perfusion Studies are excellent for locating areas of the brain that have reduced blood flow and are therefore not functioning normally.

Who does the Cerebral Perfusion Study?

A nuclear medicine technologist will perform the Cerebral Perfusion Study. The nuclear medicine technologist will also process your images for the nuclear medicine specialist who will interpret the images and write a report with the results for your doctor. You should not expect the nuclear medicine specialist to give you a report directly; the report will be sent to your doctor. See [Nuclear Medicine](#) for more details.

Where is a Cerebral Perfusion Study done?

Cerebral Perfusion Studies are performed in a nuclear medicine department of a hospital or a private radiology practice equipped and staffed to provide this service. Most major public hospitals and many private hospitals have nuclear medicine departments. Not all facilities that perform nuclear medicine scans will perform Cerebral Perfusion Studies.

When can I expect the results of my Cerebral Perfusion Study?

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 radiologist
- 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.

Further information about Cerebral Perfusion Study

In some cases of epilepsy your doctor may have you admitted to hospital for the scan. You will be monitored closely and in the event of an epileptic seizure you will be injected with the radiopharmaceutical to see blood flow to your brain during the seizure. A repeat scan without a seizure may also be required.

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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