Nuclear medicine

What is nuclear medicine?

Nuclear medicine is an imaging modality which uses radioactive tracers to image physiological processes in the body. This information enables doctors to provide a quick, accurate diagnosis of conditions such as cancer, heart disease, thyroid disorders and bone disease, such as fractures. In some cases, radiation is used to treat the condition.

Why is it used?

Nuclear medicine is used to diagnose and stage various different diseases and can also be used to assess and test the function of almost any organ in the body.

Nuclear medicine enables doctors to diagnose a wide range of diseases. The scans are very sensitive to small changes in normal function. This allows treatment to begin as early as possible, which means it has a far greater chance of being fully effective.

The scans are painless and expose patients to only minimal amounts of radiation. Nuclear medicine provides information about the functioning of organs, and whether or not they may be diseased.

Therapy using nuclear medicine is an effective way of controlling, and in some cases eliminating, conditions such as overactive thyroid, thyroid cancer and arthritis.

Is nuclear medicine dangerous?

No. Nuclear Medicine is extremely safe because the radioactive tracers (or radiopharmaceuticals) used are quickly eliminated from the body through its natural functions. In addition, the tracers used, rapidly lose their radioactivity. Technetium is used for 90% of all scans. It has a six hour half life which means every six hours the amount of radioactivity is reduced by half and eliminated from the body to low levels within 24-hours.

Is it new?

Nuclear Medicine was first used in the late 1800s after radioactivity was discovered. Radioactive iodine was first used in 1905 to treat thyroid disease. Due to the limits of computer processing power, major advances in Nuclear Medicine imaging did not occur until the mid 1950's.

The first Nuclear Medicine department opened in Melbourne in 1965. Cabrini Health started scanning patients in 1974.

Should I prepare for a scan in any way?

Some scans may require special preparation. As with all scans involving radioactivity, if you are pregnant, or think you may be, or if you are breastfeeding, you must tell us before the scan begins.

It is important that you read the 'Patient Information' material on Cabrini's website that pertains to your test.

Will it hurt?

Most scans involve an injection into a vein; similar to the one you would have for a blood test.

Will there be any side effects?

Side effects are extremely rare with nuclear medicine scans. You will be able to drive yourself home.

How radioactive will I be?

For most tests a small amount of radiation is given for the purpose of the scan. This will make yourself the radiation source and you will be asked to restrict your contact with pregnant women and babies, as they are more sensitive to the radiation that is being emitted from your body.

What can the scans detect?

Nuclear medicine scans are used to diagnose a wide range of conditions. Scans of the heart, bones, thyroid, lungs and kidney are most common tests. The test can be performed in conjunction with other imaging modalities.

What happens during the scan?

When you undergo a scan, a radioactive injection (known as a radiopharmaceutical) will be given, either by injection into a vein, orally, or through a breathing device. The radiopharmaceutical will concentrate in the particular part of your body under investigation.

For some scans it can take a while for the radiopharmaceutical to concentrate in the part of the body being examined, meaning you might have to return for images at a later time. Sometimes you may have to wait for a few hours, or even a day or two, after the pharmaceutical has been administered for the scan to be done.

After administration, the radioactivity continuously gives off invisible radiation, known as gamma rays, which are detected by the scanner.

Cabrini Medical Imaging
183 Wattletree Road, Malvern VIC 3144
03 9508 1429 | e: **nuclearmedicine@cabrini.com.au**

Cabrini

Reviewed October 2020

A technologist uses a gamma camera (above) to detect the location of the radiopharmaceutical in your body. During your scan, the camera will be positioned very close to the part of your body being scanned.

Computers enhance the camera images on a screen. Doctors will be able to tell if the part of your body being tested is functioning normally. Your doctor will be able to view the images digitally through a system called PACS.

Will I have to stay in hospital?

Most scans only require you to stay for a few hours in the Nuclear Medicine department, although in some cases patients are asked to return for a number of visits, or to stay in hospital for a short period.

What is nuclear medicine therapy?

Nuclear medicine therapy is when radioactive materials are used to treat certain diseases. It can be used to treat thyroid conditions and also to relieve pain from tumours that have spread to the bones.

Who performs nuclear medicine procedures?

Nuclear medicine scans are performed by a team of allied health staff, who are specifically trained in nuclear medicine. Doctors, technologists, nurses and reception staff will ensure that you receive a high level of care and that your doctor is provided with accurate reports on your condition.

What happens after the scan?

The specially trained radiologists/physicians will report on the scans' appearance and send the results to your doctor.

Digital images are immediately available to your doctor and your records will be kept permanently. This occurs through a system called PACS.

Questions

For more information or to make an appointment, please contact Cabrini Medical Imaging using the number below.

Cabrini Medical Imaging
183 Wattletree Road, Malvern VIC 3144
03 9508 7436 | e: **nuclearmedicine@cabrini.com.au**

Cabrini

Reviewed September 2020