

PATIENT INFORMATION

MRI Scans

Why have an MRI scan?

There may be many reasons why your doctor refers you for an MRI scan including:

- To help surgeons prepare for surgery
- To diagnose a slipped or bulging vertebral disc
- To assess lesions and cysts
- To assess injuries
- ...and many more

Who performs the examination?

MRI images are taken by specialist staff called Radiographers. These images are then interpreted and reported upon by specialist doctors called Radiologists.

What happens during the examination?

For the examination, your Radiographer may ask you to remove any clothing that might obstruct the accuracy of your images and wear a provided gown when necessary. You will then be asked to lie on the MRI table which slides through the circular MRI machine. Whilst this happens, you will be asked to keep very still. Depending upon the type of MRI you are having, the study may take 30-40 minutes to perform. During this time, the MRI machine will make a series of different noises, some of which may seem loud. To help with this, we will give you some headphones to listen to music. If you would like to bring a CD or MP3 player along, you can give this to the Radiographer to play during your scan.

Once the Radiographer is satisfied that the images are accurate, the procedure is finished. Whilst some people feel slight tingling sensations, there is no pain or discomfort caused by the MRI scan and you will have your films within an hour of walking into the building in most cases.

(Remember to take your films to your next doctor's appointment.)

What are the risks of having an MRI?

As MRI machines are a large powerful magnet, it is important that patients who have metal implants such as pacemakers inform the imaging staff before their examination. In most cases implants such as prosthetic joints and fillings are MRI safe. Patients who have pacemakers should not have an MRI. You will be asked to complete a safety questionnaire before your scan so the radiographer can assess your MRI safety.

MRIs are perfectly safe for patients who do not have unsuitable implants such as pacemakers. They involve no radiation and so do not create the cumulative affect that X-rays have which allows patients to have as many MRIs as they require.

Do I need to do any preparation before I have an MRI scan?

Some MRI scans require preparation such as fasting. When you book in for your MRI, the imaging staff will inform you if any preparation is required.

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What is contrast and why is it required?

The contrast agent used in MRI is called Gadolinium (it is a rare earth metal -lanthanide). On its own it is toxic, but when combined with certain binding chemicals (chelates) it is safe for use in the body. It is generally filtered out by the kidneys within 24 hours. For this reason we will sometimes ask you to get a blood test before your scan to check your renal (kidney) function.

Contrast is given for the following reasons:

- To assess the blood supply of a specific lesion – some display specific enhancement characteristics that aid with diagnosis
- To assess the arterial blood supply
- To help differentiate between scar tissue post surgery and other tissues

Are there risks associated with contrast?

MRI contrast agents are very well tolerated. The most common side effects are a cold feeling up the arm as the contrast is injected, or a slight feeling of nausea or headache. The likelihood of these effects happening is less than 0.4%. However, as the contrast is filtered by the kidneys it is important for us to know that your kidneys are functioning correctly.

If you are known to have poor renal function or a redblood cell disorder (e.g sickle cell anemia) MRI contrast agents should be avoided if possible.

How does MRI technology work?

MRI uses a magnetic field 30,000 times stronger than that of the Earth's magnetic field. In clinical use, it varies in strength from 0.5 to 3T (Tesla). This strong magnetic field is used in combination with time varying smaller magnetic fields (gradients) and electromagnetic radio frequency waves to create an image by giving an X, Y and Z position within the body. It is the gradients changing very quickly that make the MRI scan noisy.

During the scan information is collected by exciting hydrogen protons in the body. Different tissues contain different amounts of hydrogen depending on how much water is in them. They spin around at different speeds, but when subject to the strong magnetic field they are pulled into alignment along the long axis of the magnet. They are then subjected to a range of radiowaves which "knock" them out of alignment. When the radiowaves are taken away the magnetic field pulls them back into alignment.

When they do this, they emit a tiny bit of energy. It is this energy that is collected to make the MRI image. The signal is collected by a piece of equipment called a coil, which is a very fancy type of radio antennae. The best images are obtained by placing the body part we are looking at in the centre of a coil within the centre of the magnet.

Where can I get an MRI examination and how much does it cost?

MRI examinations are available on the Sunshine Coast from our MRI Sports & Spinal practice which is located next to X-Ray & Imaging Caloundra. Bulk Billing is available for various G.P referred studies, for other regions the cost of an MRI scan is \$200 for short appointments & \$250 for long appointments.