

metal fillings in their teeth may feel a tingling during the scan, and some people who have a dye injection may experience a temporary flushing of the skin.

### Complications

Complications are unexpected problems that can occur during or after a procedure. The only complication that may arise during an MRI scan is an allergic reaction to the dye injection, which happens only occasionally. It can be treated immediately with appropriate medicines.

### Other issues to be aware of

Depending on the part of the body being examined, having an MRI scan may involve being enclosed in a fairly narrow space, and for some people this feels quite claustrophobic. Anyone who is worried about this aspect of the scan should speak to their doctor in advance about the possibility of having a sedative. The staff can always see and hear the person

in the scanner. Some new MRI machines have "open magnets" designed to avoid claustrophobia.

MRI machines usually make a loud banging or knocking noise while the scan is being done and this can be a bit unpleasant. In some units, music can be played to help people cope with this, and earplugs are also usually offered.

An MRI scan can take anything up to an hour to perform, so it can be uncomfortable lying still on a fairly hard surface for this length of time. Small children often cannot manage this, and may need to be given a general anaesthetic or sedation.

### Further information

**Patient Education Institute**  
[www.nlm.nih.gov/medlineplus/tutorial.html](http://www.nlm.nih.gov/medlineplus/tutorial.html)

A US interactive tutorial about MRI. Viewing this tutorial requires Flash plug-in.

## MRI scan

An MRI (magnetic resonance imaging) scan is an investigation that produces pictures of the inside of the body. Unlike an x-ray, however, an MRI scan does not use radiation to do this. Instead, a magnetic field is used to make the body's cells vibrate. They then give off electrical signals which are interpreted by a computer and turned into very detailed images of "slices" of the body. Having an MRI scan does not hurt.

### About MRI

MRI may be used to make images of every part of the body, including the bones, joints, blood vessels, nerves, muscles and organs. Different types of tissue show up in different colours on a computer-generated image, making it easy to identify any abnormalities.

Depending on the part of the body that is being examined, it may be necessary to inject a contrast medium (dye) into the area, to make some of the tissues show up more clearly.

### Who can have an MRI scan?

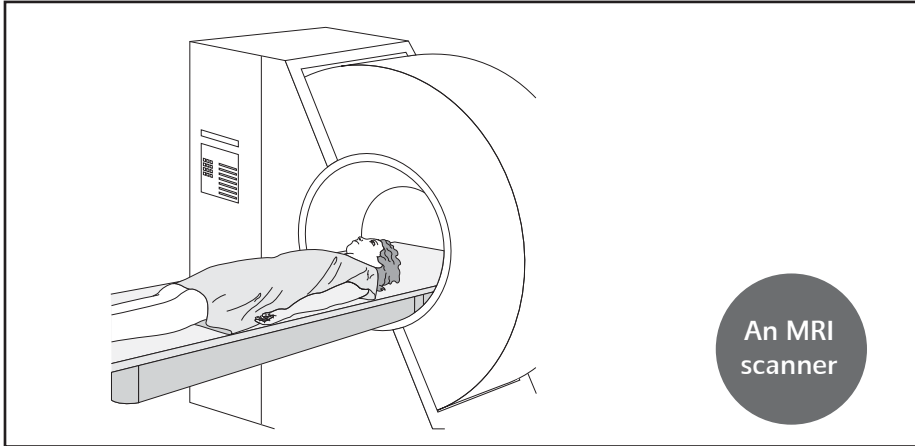
Not everyone can have an MRI scan. The magnetic field attracts metal objects, so MRI is not suitable for

people who have any kind of metal implant in their body. This includes anyone who has:

- a heart pacemaker
- metal prosthetic valves in their heart
- metal surgical clips or staples of any kind
- metal pins or rods in their bones
- an IUCD (intrauterine contraceptive device) fitted.

People who have had surgery to stop bleeding in the brain or to remove pieces of metal from their eyes are also considered to be unsuitable for MRI. In addition, there is a small risk that MRI could be harmful to a developing fetus in very early pregnancy, so scans are

This factsheet is based on reputable sources of medical evidence and has been reviewed by BUPA doctors. For more details of references and sources, please see our website. The content is intended for general information only and does not replace the need for personal advice from a qualified health professional.



not performed on women who are 12 weeks pregnant or less.

that takes three-dimensional pictures

- ultrasound, which uses sound waves to create images.

### What are the alternatives?

Generally speaking, MRI provides a more detailed image than other scans, particularly of the brain and circulatory system, and is better at showing up the differences between various types of tissue. Unlike other scans, MRI images can be taken from almost any angle without moving the person around.

In some cases, however, depending on individual factors such as the symptoms present and the condition being investigated, there may be alternatives to having an MRI scan. These tend to provide less information than MRI (which may have to be done anyway) but they include:

- an x-ray, which involves exposure to radiation
- a CT (computerised tomography) scan, which is a special type of x-ray

### Having the scan

An MRI scan is routinely performed as an outpatient procedure, with no overnight stay in hospital. The procedure does not require an anaesthetic (except in the case of small children) although some people are given medication to help ensure that they are relaxed and comfortable during the procedure. The scan itself can take up to an hour to perform, but at least two hours should be allowed for the whole appointment.

### Preparing for the scan

People having pelvic or abdominal scans may be given special instructions about eating and drinking beforehand. But in most cases, no special diet is needed.

Everyone who has a scan will be asked to remove metal objects such as coins,

piercings, watches, jewellery, hair clips, hearing aids and dentures. It is best to wear clothing that does not have metal zips, buttons or buckles, and to avoid heavy use of eye make-up or hair products. Parents who wish to stay with their child in a scanner room also need to follow these guidelines.

### The scan

How the scan is performed will depend on the part of the body that is being examined. To scan the head and limbs, for example, only those parts of the body need to be inside the scanner. To scan other areas of the body, it is necessary to lie on a table which is then moved inside a large "tube", which generates the magnetic field (see diagram, left).

If a dye injection is needed, it is usually given into a vein in the back of the hand at the beginning of the scan.

A radiographer operates the scanner from behind a window, and is able to see and hear the person being scanned throughout the procedure.

It can take several minutes for each picture to be taken, and it's important to lie very still and breathe quietly during the process. The machine will make quite a loud noise, which will probably vary in pitch and volume during the scan, but the magnetic field cannot be felt.

When the scan is complete, the table is moved back out from the scanner.

### What to expect afterwards

Once the examination is over, most people can resume their normal activities immediately. However, if a sedative has been given, the person will need to be accompanied home by a friend or relative, and someone should stay with them for the first 24 hours. It is not safe to drive, operate machinery or drink alcohol for 24 hours after having a sedative.

If a dye injection has been given, it's a good idea to drink a lot of water for the next 24 hours to help flush the dye out of the body.

The pictures taken by the MRI scanner will need to be interpreted by a radiologist, who will send the results to the doctor who arranged the scan.

### Deciding to have an MRI scan

An MRI scan is a commonly performed and safe procedure. Provided that the person is a suitable candidate, which the doctor will know, there is very little that can go wrong. However, in order to give informed consent, anyone deciding whether or not to have this procedure needs to be aware of the possible side-effects and the risk of complications.

### Side-effects

Side-effects are the unwanted but usually mild and temporary effects of a successful procedure. An MRI scan does not usually have any physical side-effects. However, people who have