

## Magnetic Resonance Imaging (MRI) Scan

### What is an MRI Scan?

An MRI Scan can produce two or three dimensional images of what is going on inside a patient's body. MRI images are so precise that doctors can often get as much information from the MRI as they would from looking directly at the tissue.

MRI uses no x-rays: The magnetic fields that MRI employs are not known to be harmful.

### Preparation for an MRI Scan

#### At home

Just relax and go about your normal routine. Follow any instructions about eating or taking your usual prescribed medicine.

#### At the scanning site

You will be asked about your medical history, especially whether you have a pacemaker or any metallic objects. (Leave magnetized bank or credit cards at home, they may be affected.)

You will be told about the procedure and will be asked to sign a consent form. **Although you will sign a consent form for this treatment, you may at any time after that withdraw such consent. Please discuss this with your medical team.**

You will have to remove any metallic objects such as jewellery, hair pins, glasses, hair pieces (if it has metal clips) and non-permanent dentures. Do not wear mascara and keep make-up to a minimum.

You may be asked to change into a hospital gown.

You may be given a small injection of a 'contrast agent'. This helps to improve the quality of certain MR images.

### The scanning procedure

The radiographer will help you onto the scanning table. He or she can address any questions or concerns.

You will be positioned comfortably, generally with your arms by your side and your head in a cradle. You will be asked to remain still during your scan.

As the scanning begins the whole table will move into the giant magnet. Your whole body may slide through but you will not be totally enclosed and you will be able to communicate with the radiographer through an intercom and a hand held call device.

During the scan you will not feel a thing. But you will hear some peculiar noises:

- The hum of the machine.
- The thump when the radio waves are turned on and off.
- Whirring, grating or other machine-like noises.

After the scan is finished the images will be reviewed later by a radiologist specialising in MRI. A report will be sent to your requesting doctor.

## Some questions answered

**Q: Can pregnant women have MRI scans?**

A: There is no evidence that any risk or hazards exist, although we do not usually scan in the first three months of pregnancy unless it is essential. As with any diagnostic procedure let us know if you may be pregnant.

**Q: What about fillings in my teeth?**

A: They may cause some distortion to the images in certain cases. Non permanent bridges should be removed.

**Q: How long does the scan take?**

A: Total scanning time usually ranges from 20 to 40 minutes per area.

**Q: How long has MRI been used?**

A: Approved MR systems became available to patients in the early 1980's although chemists and physicists have been using the basic principles of MR since the 1940's.

**Q: Can I bring a CD to help me relax?**

A: Yes, the scanner has a music system available although it may not be possible to use this during certain types of scan. Ask the radiographer if it will be possible to listen to music.

**Q: Are there any potential problems associated with having an MRI scan?**

A: A heating effect has been reported with MR imaging. On very rare occasions this may result in patients receiving a burn. Protocols and procedures are in place to minimise this risk.

**Q: Is there a weight limit?**

A: Unfortunately there is a table limit of 19.5 stone or 125Kg. Please contact us if you believe you are unable to comply with this.

## Can anyone have an MRI Scan?

No, you must let us know if there is any possibility that you may be pregnant (or are in the first three months of pregnancy) or that you have had:

- A cardiac pacemaker or heart surgery, e.g. valve replacements.
- Metal fragments in your eye **EVER**, e.g. from grinding, welding or shrapnel - no matter how long ago it occurred.
- Shrapnel anywhere in your body.
- Operations on your head or spine.
- Any operations including metal plates, pins, clips or implants, especially aneurysm clips or neurostimulators.
- Fits, blackouts or epilepsy.
- If you have had **ANY** surgery within the last six weeks.

**NB: If you arrive without informing us of the above, we may not be able to carry out your scan.**

## What if I need transport?

Please contact your hospital doctor or GP who will be able to organise it for you.

## How long will I be in the department?

You should allow up to one and a half hours for everything to be completed. Although we endeavour to keep to appointment times, sometimes emergencies can delay us.

## How does an MRI Scanner work?

Your body is composed of tiny particles called atoms. Under normal conditions the nuclei (centres) inside these atoms spin randomly.

### 1. Magnet

A large magnet creates a strong, steady magnetic field. This causes the nuclei to line up together and spin in the same direction.

### 2. Radiofrequency (RF) Signal

A RF signal is beamed into the magnetic field. The RF signal makes the nuclei move out of alignment - similar to what happens to a spinning top when someone pushes it.

When the signal stops the nuclei move back to their aligned position and release energy.

### 3. Receiver Coil

A receiver coil measures the energy released by the disturbed nuclei. The time it takes the nuclei to return to their aligned position is also measured. These measurements provide information about the type of tissue in which the nuclei lie, as well as its condition.

### 4. Computer

A computer uses this information to construct an image on a TV screen, showing the distribution of the atoms. The screen images can be recorded onto film or disc for a permanent record.

## Important information

The information in this leaflet is for guidance purposes only and is not provided to replace professional clinical advice from a qualified practitioner.

## Your comments

We are always interested to hear your views about our leaflets. If you have any comments, please contact the Patient Experience Team – Tel: 0300 131 4731 or by email at: [esh-tr.patientexperience@nhs.net](mailto:esh-tr.patientexperience@nhs.net)

## Hand hygiene

The Trust is committed to maintaining a clean, safe environment. Hand hygiene is very important in controlling infection. Alcohol gel is widely available at the patient bedside for staff use and at the entrance of each clinical area for visitors to clean their hands before and after entering.

## Other formats

**If you require any of the Trust leaflets in alternative formats, such as large print or alternative languages, please contact the Equality and Human Rights Department.**

**Tel: 0300 131 4500 Email: [esh-tr.AccessibleInformation@nhs.net](mailto:esh-tr.AccessibleInformation@nhs.net)**

After reading this information are there any questions you would like to ask? Please list below and ask your nurse or doctor.

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## Reference

The following clinicians have been consulted and agreed this patient information:

Chris Brandt, Cross Sectional (CT/MRI) Superintendent

Anne Cowley Lead Radiographer Conquest

Next review Date: December 2023

Responsible Clinician: Chris Brandt

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