



**Wrightington, Wigan and  
Leigh Teaching Hospitals**  
NHS Foundation Trust

# Having an MRI Scan with a MR compatible pacemaker

Version number: **1.0**

Last modified date: **03rd July 2026**

# Having an MRI Scan with a MR Compatible Pacemaker

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## Patient Information

### Radiology Department

The Patient Information Leaflets page on the Trust website is available on the link: <https://www.wwl.nhs.uk/patient-information-leaflets> or scan the QR code.

**Author ID:** CMC/SW/BJB

**Leaflet ref:** Rad 033

**Version:** 2

**Leaflet title:** Having an MRI with a MR compatible pacemaker

**Date Produced:** July 2024

**Expiry Date:** July 2026

## Introduction

Your clinician has referred you for a Magnetic Resonance (MR) Imaging scan to obtain important clinical information which cannot be achieved using any other diagnostic imaging modality. In the past, we have been unable to scan patients who have a pacemaker and/or an implantable cardioverter-defibrillator (ICD) device due to the risk of the device malfunctioning. You may have been told that you can never have an MR Imaging scan due to your pacemaker/ICD device. We now know that certain pacemakers/ICD devices are safe for us to scan; however, we must follow a strict procedure to ensure that you are kept safe. This procedure involves turning your pacemaker off or into a safe mode by a cardiology technician whilst you have an MR Imaging scan.

## What is an MR Imaging Scanner?

An MR Imaging scanner is a complex imaging machine containing a large open-ended tube. It is used to help diagnose disease and injury. An MR Imaging Radiographer will perform your scan; these Radiographers are highly skilled healthcare professionals who perform all types of diagnostic imaging.

## How does it work?

MR Imaging uses powerful magnets and radio waves to align protons in the body. Each proton produces a signal which is read by a receiver. This information is converted by a complex computer technology to create detailed pictures of the inside of your body.

## Is it safe?

MR Imaging scanners use a powerful magnet and therefore do not use x-rays. They are safe for most people; however, some people with certain magnetic or electronic objects in or on them cannot be scanned.

## Duration of the Procedure

A scan can take anywhere between 15-60 minutes depending on the area being scanned. On average, scans normally take 30 minutes. The Radiographer will tell you how long the scan will take when you are in the department. A Cardiology Technician will need to check your device before we scan you and your device will need to be turned into a "safe mode". Once your scan is completed, the Cardiology Technician will need to check your device once again and return the pacemaker to its "normal" mode. Due to all these checks, please plan to be in the department for up to 2 hours. This allows us to complete any extra scans if needed. We may have to accommodate emergency cases that will need to be scanned out of turn. This may mean you have to wait a little longer than anticipated. Please allow for extra time on your parking ticket.

## Ensuring Pacemaker Safety

When the MR Imaging department received the request from your referrer, we were informed of your pacemaker or ICD. The Radiographers have investigated your pacemaker to find out lots of information which includes the make and model number of the pacemaker, and the leads implanted. This information is used to find out if the device and leads you have are considered MR safe. Sometimes this requires discussion with the Cardiology

Department and the Christies Medical Physics Department. The Radiographers may contact you to go through an MR Imaging Safety Screening questionnaire to make sure you have no other devices in your body that might not be safe for us to scan. You may be asked to go for a Chest X-Ray prior to the MR Imaging scan if you have not had a recent X-ray. This is to confirm the leads from your pacemaker are in the correct position and are not broken. Once all the checks have been completed, you will be given an appointment for an MR Imaging scan.

## On the Day of Your Scan

### Before Your Scan

When you arrive in the department, we will go through an MR Imaging safety questionnaire. You will be asked to lock away valuables, jewellery, electronic devices, or metal objects in a secure locker. You will be asked to change into a hospital gown. A Cardiology Technician will check your pacemaker using a special device. They will check that the device is working properly before being turned into safe mode/off. If the Cardiology Technician thinks that it will not be safe for us to switch your pacemaker into safe mode/off, then we will not be able to complete the scan. This is extremely rare, and we do not expect this to happen. If you need an injection of contrast dye during the scan, we will normally place a cannula in your arm before you enter the scan room.

### During Your Scan

Once your device has been placed into a safe mode, you will then be taken into the scan room. Depending on the area being scanned, you may enter the scanner feet first or head first. You will have a pulse oxygen monitor on your finger to monitor your oxygen levels and your heart rate throughout the scan. We may also need to place electrocardiogram (ECG) leads on your chest to monitor your heart throughout the scan. You will need to lie very still throughout the scan. If you move, it may be necessary to repeat a section of the scan, which means you will be in the scanner longer. Some scans may require you to hold your breath for a few seconds. MR Imaging scans can be noisy (repetitive knocking sounds); you will be given headphones or earplugs to reduce the noise of the scanner to an acceptable level. It is possible to play music to you if you wish. Most patients listen to the local radio station. If you would like to bring in your own compact disc (CD) to listen to your own music, then you can. You will be given a buzzer in case you feel you need to speak to the Radiographer

during your scan or to stop the scan for any reason. The Radiographer will talk to you throughout the scan to ensure you are okay.

## After Your Scan

Once the scan has been completed, you will be taken out of the scan room and the Cardiology Technician will then check your pacemaker and return it back to its normal mode. Once the Cardiology Technician is happy with you and your pacemaker, you will then be able to get changed, collect your belongings, and leave.

## Results

You will not receive any results on the day of your appointment. A Radiologist will need to study your scans carefully and they will produce a written report of their findings. The report will be sent to the person who referred you for the scan.

## Will I Need an Injection?

Depending on your scan, an injection may be required to provide clearer pictures. This will give the Radiologist extra information to provide a full and comprehensive report on your scan. It may be an MR Imaging contrast dye (Gadolinium) to highlight the blood supply to the organs, and/or a muscle relaxant to settle bowel movement which can obscure an area of interest. If an injection is required, it will usually be given by a Radiographer into a vein in the arm. As with all injections and medications, you may have a mild allergic reaction. We would monitor you after the injection and depending on the reaction, we could give you some medication to help you. This is extremely rare. You may be required to stay in the department for up to 30 mins after the injection.

## Are There Any Side Effects from an MRI Scan?

There are no known adverse side effects from a clinical MR Imaging. You can continue to take any medication as normal.

## Will It Hurt?

No, MR Imaging scans are painless. If your condition makes it difficult to lie flat and still during your scan, the Radiographers will do their best to make you as comfortable as possible.

## What Does the Scanner Look Like? Is It Claustrophobic?

You will be required to lie in the centre of the scanner (magnet). It is open-ended and brightly lit. About 1% of patients may feel claustrophobic during their scan. However, the Radiographers are skilled at putting you at ease and making you as comfortable as possible. Many patients find the experience very relaxing.

## Relatives and Escorts

You can bring a relative or friend with you to the Radiology Department; however, they will not normally be allowed in the MR Imaging department.

## Children/Vulnerable Adults

Please be aware that...

The department does not have the facilities to supervise children or vulnerable adults. If you need to bring a child or vulnerable adult with you, you must bring an appropriate adult to supervise them whilst you are having the examination.

## Interpreters

If you require an interpreter, please contact the department before your appointment so that this can be arranged. **(Please Note: Hospital policy states that relatives cannot act as interpreters).**

## Having an MRI Scan with a MR Compatible Pacemaker

## What if I am Unable to Attend?

Due to the multi-disciplinary team required for the appointment, on average it costs the NHS £800. If you cannot attend your appointment, please contact the MR Imaging Suite so that we can offer your appointment to somebody else. We will be glad to offer you an alternative appointment; however, currently these are only performed once a week.

Please allow plenty of time to park your car. If you are running late, please let us know.

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## Comments, Compliments or Complaints

The Patient Relations/Patient Advice and Liaison Service (PALS) Department provides confidential on-the-spot advice, information, and support to patients, relatives, friends, and carers.

### Contact Us

- Tel: 01942 822376 (Monday to Friday 9am until 4pm)
- The Patient Relations/PALS Manager
- Wrightington, Wigan and Leigh Teaching Hospitals NHS Foundation Trust
- Royal Albert Edward Infirmary
- Wigan Lane
- Wigan WN1 2NN

## Ask 3 Questions

Become more involved in decisions about your healthcare. You may be asked to make choices about your treatment. To begin with, try to make sure you get the answers to three key questions:

1. What are my options?
2. What are the positives and negatives of each option for me?
3. How do I get support to help me make a decision that is right for me?

## How We Use Your Information

For details on how we collect, use, and store the information we hold about you, please see the patient information leaflet, Ref. Corp 006 **How we use your information**, this can be

found on the Patient Information Leaflets page on the Trust website, see details on the front cover. This leaflet is also available in audio, large print, Braille, and other languages upon request. For more information, please ask in the department/ward.

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Call 111 first when it's less urgent than 999.

Phone: 0808 802 1212

Text: 81212

[www.veteransgateway.org.uk](http://www.veteransgateway.org.uk)

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