

# Cardiac Magnetic Resonance Imaging Stress Perfusion (MRI)

Radiology Department



Patient information leaflet

This leaflet tells you about having an MRI Cardiac stress perfusion scan. It explains what is involved and the possible risks. It is not meant to replace informed discussion between you and your doctor, but can act as a starting point for such discussions. If you have any questions about the procedure please ask the doctor who has referred you.

## **What is an MRI scan?**

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MRI scans are used to examine many parts of the body. MRI does not use X Rays to produce images, so no radiation is involved.

The MRI scanner is a strong magnet. It looks like a long tunnel which is open at both ends.

Most of the human body is made up of water molecules. These consist of hydrogen and oxygen atoms. Protons are small particles contained within an atom. When subjected to a powerful magnet, the protons line up in the same direction.

Short bursts of radio frequency waves alter the alignment of the protons. When the radio frequency waves stop, the protons realign. Specialist equipment is placed on the part of the body that is being examined to capture this process.

## **What is a Cardiac MRI Scan with stress perfusion?**

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A Cardiac MRI scan involves using an MRI scanner to produce images of the heart. It provides useful information of the function of the heart, and characterises the heart tissue to look at scarring and other abnormalities.

During the scan you will receive a short infusion of a drug called adenosine. This will produce similar effects on your heart as mild exercise and allow the heart to be assessed more thoroughly.

## Are there any alternative tests?

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Your clinician has decided that an MRI will be the most useful test for you to have, to help them plan any treatment.

If, after reading this information leaflet you decide not to proceed with the MRI scan you may speak to your referring clinician to discuss any alternative tests that may be available to you.

## Are there any risks?

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A Cardiac MRI scan with stress perfusion is regarded as a safe test.

You will receive 2 injections of an MRI contrast dye during the MRI scan, which will demonstrate the blood supply to the heart muscle.

Like with any drug there is a very small risk of an allergic reaction occurring.

The likelihood of this is said to be between 0.07% and 2.4%. However, the vast majority of these reactions are mild and the most common reactions include:

- Nausea
- Headache
- Itching

It is rare for us to see these side effects and your doctor feels the benefit of an accurate diagnosis outweighs any potential risks.

You will receive an injection of adenosine in the middle of your scan and it is possible, in rare instances for this to lower your blood pressure and or your heart rate.

The cardiologist will monitor your blood pressure and heart rate at intervals during this part of the scan and emergency drugs to counteract this effect are ready, in the unlikely event of this occurring.

*Statistics from MRI safety.com*

*[www.mrisafety.com/SafetyInfov.asp?SafetyInfoID=245](http://www.mrisafety.com/SafetyInfov.asp?SafetyInfoID=245)*

## **Do I have to do anything before my Cardiac MRI?**

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Please **confirm** whether you are able to attend your appointment. Instructions for this will be found on your appointment letter.

It is important that you arrive in the department 15 minutes prior to your appointment. This will allow staff the time to explain the procedure to you and for you to lock away valuables. If appropriate you may need to get changed into a gown for your scan.

**Make sure to fill out and read the safety questionnaire prior to the appointment.**

**Try to remove jewellery where possible prior to the scan. Wedding rings may stay on if they are made of gold, silver or platinum. Piercings must be removed.**

If your doctor has not arranged any recent renal function blood tests, you may be sent a request for blood to be tested prior to your appointment. Please make sure to have this done at least 3 working days prior to the scan appointment to allow us to access the results.

Please do not drink or eat anything that contains **caffeine for 24 hours prior to your examination.**

**Caffeine is found in TEA and COFFEE (THERE ARE ALSO TRACES OF CAFFEINE IN DE-CAFFEINATED TEA, GREEN TEAS AND COFFEES, and SO THESE MUST ALSO BE AVOIDED). All fizzy drinks (including Lucozade, Lemonade, Iron Bru, Red Bull etc) contain caffeine as well as all chocolate products.**

It is best to drink only water, milk, fruit juice, squash. You may eat normally as long as the product is caffeine free. If you are not sure whether a product contains caffeine, don't consume it.

Some painkillers and cold remedies also contain caffeine. Please check the ingredients before having any.

## Medication

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Please bring any sprays or inhalers that you are taking to the scan appointment. If you are on any medication from your doctor please continue to take it as normal.

If you are taking medication known as **dipyridamole/Persantin**, **please stop this for 24 hours prior to the scan appointment**. Please bring a list of your medication with you.

## Information for female patients

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It is not advisable to have MRI's during pregnancy except in special circumstances, especially in the first trimester of pregnancy. If you think you may be pregnant or are unsure if you may be, please telephone the department prior to your scan appointment.

## Can I bring a relative or friend?

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Yes. If you feel particularly worried or anxious about the scan, your friend or relative may accompany you into the scan room. Please mention this to the radiographer, prior to your scan.

In these circumstances some patients find it re-assuring to have a friend or relative with them during the scan. They will be asked to fill in a safety questionnaire before going into the room to make sure that it is safe for them to do so.

During the stress perfusion part of the scan your friend or relative may be asked to wait outside the room. This is due to the increased amount of personnel within the room, at this time.

## What happens during the test?

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- The radiographer will explain the procedure to you, and discuss your safety questionnaire with you.
- You can expect to be in the department for approximately 60-90 minutes.
- You will be asked to change into a hospital gown.
- You will have 2 small plastic cannulae (fine tubes) put into veins in your arms before the MRI scan. It is necessary to have a line in each arm as 2 sets of injections are given simultaneously.
- The scan is performed with you lying on your back going feet-first in the MRI scanner. Your chest will need to be positioned in the middle of the machine. When you have been made comfortable on the MRI scanning couch, you will have a belt-like band applied to your abdomen which will show the radiographers your breathing pattern.
- You will have some small plastic electrocardiogram (ECG) stickers applied to your chest, which measure your heart rate.
- Before the scan starts you will be given headphones, to protect your hearing as the MRI scanner produces a lot of noise. You will also be given a button to hold in your hand, which can be used if you need to stop the MRI for any reason.
- The scan will start and you will be asked to follow some breathing instructions, which require you to hold your breath for approximately 10 seconds at a time. The radiographer will speak to you at intervals during the scan, to ensure everything is ok.
- In the middle of the scan, you will receive the injection of the contrast dye and the adenosine to show the blood vessels supplying the heart. This will be done by injection pump. One of the cardiology doctors will be with you while the adenosine drug is administered initially.

- You may receive symptoms similar to those experienced during exercise; such as shortness of breath, flushing and chest tightness. The adenosine is only administered for 3-4 minutes of the scan, and the symptoms wear off within seconds- as soon as the drug is stopped. You will be asked to hold your breath whilst an injection of the contrast dye and some images are taken during this period.
- Later on during the scan you will receive a second injection of the contrast dye.
- When the scan is complete the radiographer will then check that the images taken are satisfactory.
- They will then come and take you out from the machine, and remove the cannula.

## How long will it take?

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Generally the scanning process will take up to an hour, however it can be longer. You should expect to be in the department for approximately 90 minutes.

Occasionally appointments are delayed, this may be caused by hospital patient's needing an emergency scan. Wherever possible the department tries to run to time.

## Are there any side effects and what happens after the examination?

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There are no known side effects for the MRI scan itself.

As previously mentioned it is rare to suffer any reaction to the contrast dye that is administered for this scan. The radiographer will check that you are feeling well after the injections.

Occasionally patients will feel dizzy after the examination, due to lying flat for a long period of time.

After the scan you can go home.

You should try and keep well hydrated for 24 hours following the injection to encourage your urinary system to flush out the dye that is injected.

The cardiology doctor will analyse your scan, and send the results onto the cardiologist that referred you for the scan.

## **Claustrophobia**

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Going feet first for this scan can lessen feelings of claustrophobia for patients. The chest is in the middle of the scanner for this examination, however many patients find they can see out if they tip their head back. You may keep your eyes closed if you find this easier, or we can offer you an eye mask to wear.

If you feel you may still struggle with claustrophobia you may contact your GP to ask them to prescribe you a mild sedative. Unfortunately the MRI department is unable to prescribe anything for you on the day of the scan.

## **When will I get the results?**

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The findings of the scan will normally be sent to your referring doctor, within 14 days. If your clinic appointment is within this time please inform the radiographer so they can make sure the results get through in time for you.

If you do not have an appointment arranged with your consultant, they will be in touch with you.

## **Privacy and dignity**

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We will do everything we can to make your visit to the department as comfortable and dignified as possible.

We hope that the information in this leaflet will answer any questions you may have but please feel free to contact us if you have any particular worries, questions or concerns.

## Patient surveys

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We value your opinion on our service and in order to deliver, maintain and improve this service we ask you to complete a short patient questionnaire survey found with the appointment letter. Completion of these surveys is entirely voluntary.

## Questions and contacts

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If you have any questions or would like to know more about this procedure, please telephone the MRI Department on:

**Telephone:** 01483 402799 (Direct line)

**Telephone:** 01483 571122 **ext** 4935 or 6408

If you are unable to keep your appointment notify the MRI administrative staff as soon as possible.

**For further information about Diagnostic Imaging Services at Royal Surrey County Hospital NHS Foundation Trust, please contact:**

Royal Surrey County Hospital NHS Foundation Trust  
Egerton Road Guildford Surrey  
GU2 7XX

**[www.royalsurrey.nhs.uk/service-list/radiology](http://www.royalsurrey.nhs.uk/service-list/radiology)**

## Useful websites

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### **British Heart Foundation**

- [www.bhf.org.uk/heart-health/tests/mri-scans](http://www.bhf.org.uk/heart-health/tests/mri-scans)

### **NHS Choices**

- [www.nhs.uk/Conditions/MRI-scan/Pages/Introduction.aspx](http://www.nhs.uk/Conditions/MRI-scan/Pages/Introduction.aspx)



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## PALS and Advocacy contact details

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Contact details of independent advocacy services can be provided by our Patient Advice and Liaison Service (PALS) who are located on the right hand side as you enter the main reception area. PALS are also your first point of contact for health related issues, questions or concerns surrounding RSCH patient services.

**Telephone:** 01483 402757

**Email:** rsc-tr.pals@nhs.net

**Opening hours:** 9.00am–3.00pm, Monday to Friday

If you would like information documents in large print, on tape or in another language or form please contact PALS.

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