

## Patient information factsheet

# Functional magnetic resonance imaging (MRI) brain scan

We have given you this factsheet because you have an appointment for a functional magnetic resonance imaging (MRI) brain scan. It explains what a functional MRI brain scan is and what to expect at your appointment.

Your appointment letter will give you details of your appointment date and other useful information. Please check the date and let us know if you will not be able to attend, so that another appointment can be arranged for you.

We hope this factsheet helps to answer some of the questions you may have. If you have any further questions or concerns, please contact us using the details at the end of this factsheet.

### What is an MRI scan?

MRI is a type of scan that uses strong magnetic fields and radio waves to produce detailed images of the inside of the body. It is a painless and safe procedure. The results of an MRI scan can be used to help diagnose conditions, plan treatments, and assess how effective previous treatment has been.

### What is a functional MRI brain scan?

A functional MRI brain scan is a special type of MRI scan. Whereas a standard MRI brain scan produces images of the structure of the brain, a functional MRI brain scan shows which parts of the brain are activated when certain tasks are carried out such as language, memory and movement.

### Preparing for your functional MRI brain scan

We will send you a safety questionnaire with your appointment letter. Please fill this out and bring it with you to your appointment.

The functional MRI brain scan will take approximately 30 minutes. If your doctor has requested that you also have a standard MRI brain scan, we will perform this after your functional MRI brain scan. This scan will take an additional 30 minutes.

### On the day of your appointment

Please arrive 30 minutes before your appointment time and check in at our reception using the self-service monitors. We will be available to help if needed.

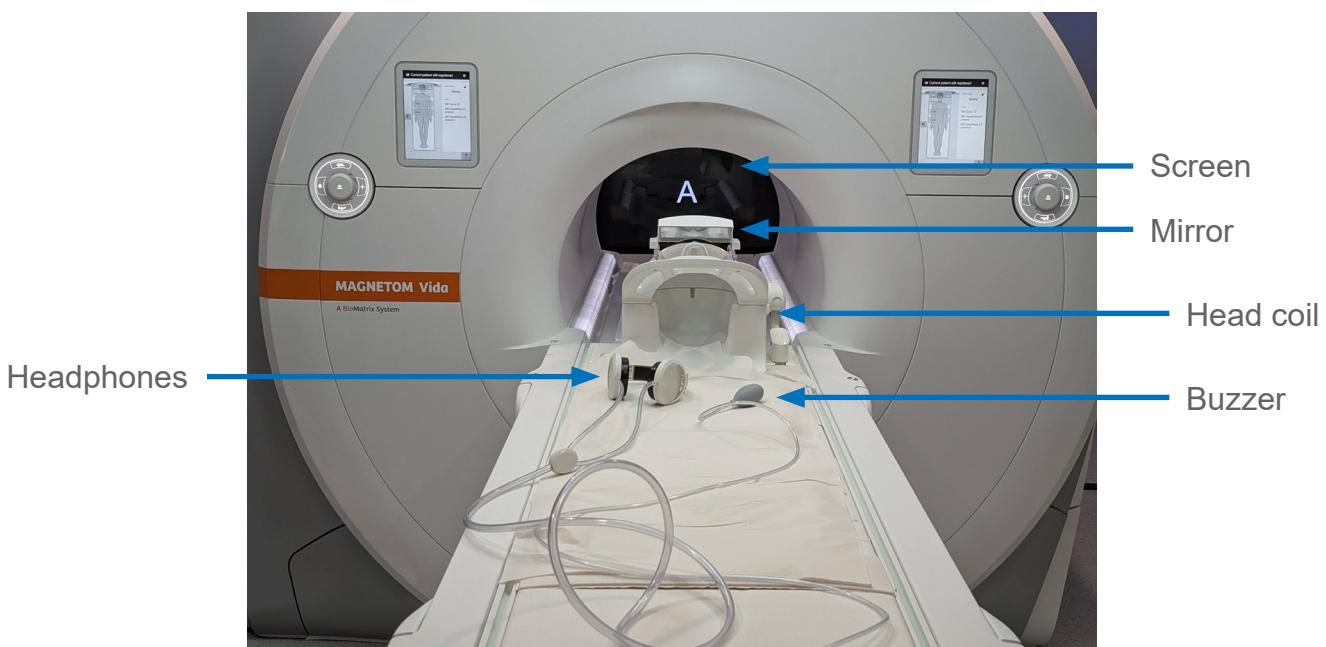
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Before your scan, we will:

- greet you and then privately go through your completed safety questionnaire.
- go through the tasks you will need to perform during the functional MRI brain scan to allow us to look at how your brain generates words (your language function).
- answer any questions you may have.
- ask you if you are happy to go ahead with the scan.
- ask you to change into a hospital gown and put all your belongings into a locker before your scan. You will need to remove all jewellery, piercings, drug patches, metallic denture plates and hearing aids.

## During the scan

An MRI scanner is a short cylinder that is open at both ends. You will enter the scanner head-first, lying on your back on the motorised bed. We will ask you to rest your head in a special head rest, known as a head coil. We will try to make you as comfortable as possible with the use of soft pads and supports. We will connect another piece of head coil across the front of your head, with a mirror on top, which will allow you to see a screen behind you. You will need to see this screen to perform the tasks during the functional MRI brain scan.



The scan will be very noisy. We will give you ear plugs and headphones to protect your hearing from the noise. The headphones will also help us to talk to you from outside the scan room. We will operate the MRI scanner using a computer in a separate room. You will be able to communicate with the radiographer between scans via a built-in microphone system.

You will need to lie very still during the scan to achieve the best quality imaging. During the scan, you may feel your body temperature increase slightly and you may experience tingling in your hands and feet. These are normal sensations. Please tell us if you feel uncomfortable at any point. We will give you an emergency buzzer to hold during the scan.

You will have multiple scans. The first two scans will be standard MRI brain scans, and you won't need to do anything, just lie very still. We will then speak to you through your headphones and tell you when we are about to start the functional MRI brain scan. During the functional MRI brain scan, you will need to perform a series of tasks.

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## Functional MRI brain scan tasks

During your functional MRI brain scan, we will ask you to carry out some simple language (word generation) tasks that involve thinking of different words. It is not a test of how many different words you can think of. The scan simply allows us to see which areas of your brain you use to generate words.

Before each task, we will remind you what the task involves. Each rest or active period will last about 20 seconds. Each of the tasks will take about five minutes in total. Try to stay as still as possible during the scans.

### Task one

For the first task, a random letter will appear on the screen behind you. We will ask you to rest without thinking about anything (the rest period) while this is on the screen (for about 20 seconds). For the next 20 seconds, we will ask you to think of as many words as you can that begin with the letter shown on the screen (the active period). For example, if 'h' appears, you could think of the words 'hamster', 'house', 'hamburger', 'hurry', 'history' and 'hope'. You won't need to say these words out loud, you will just need to think of them in your head.

### Task two

For the second task, a random category will appear on the screen. For example, flowers, countries or books. We will ask you to rest without thinking about anything while this is on the screen. We will then ask you to think of as many words as you can that belong to that category.

### Task three

For the third task, a random object will appear on the screen. For example, a brush, ball or cake. We will ask you to rest without thinking about anything while this is on the screen. We will then ask you to think of as many actions, doing words or verbs associated with the object (either what you do with that object or what that object does). For example, paint, kick or eat.

### Task four

The fourth task is a repeat of the first task.

### Do I say the words out loud?

No, it is important that you don't say the words out loud but just think of them. We need you to keep your head very still during the scan.

### Does it matter how many words I can think of?

It doesn't matter how many words you think of. The scan is not a test of your ability to think, and we will not be able to tell how many words you thought of. It simply shows us which areas of the brain you used while you were thinking of words (word generation).

### What do you mean by 'stop thinking'?

We would like you to try to relax and let your mind go blank. It is important not to think of letters and words during this 20-second period so that we can compare your brain activity during the 'thinking' and 'not thinking' periods. Concentrating on the symbols in the middle of the screen will help you to do this.

### Risks

Although there are no risks associated with a functional MRI brain scan, it may be unsafe for certain people to have. Please see the MRI safety information section on the next page.

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## After the scan

After the scan, you will be able to get changed back into your own clothes and resume your normal daily activities.

## Your results

The radiographer will review your images to check their quality. Your doctor will then discuss your results with you at your next follow-up appointment.

## MRI safety information

Please read the information below carefully.

### Implants and devices

Due to the powerful magnetic field created by the scanner (even when not in use), it may not be safe for some people with implants and devices to have an MRI scan. We will need to investigate the safety of these before your appointment.

You must contact us if you have:

- a cardiac pacemaker or defibrillator
- had a heart valve replacement
- ever had surgery on your head
- ever had metal in your eyes from welding or metal-work accidents (an eye x-ray may be needed before your scan)
- any metallic or electronic implants
- had any surgery within the past six weeks
- any auditory implants (such as cochlear implants)
- ever swallowed a capsule camera

If you do not let us know in advance, we may have to postpone your scan.

### Pregnancy

If you know or think you might be pregnant, you should telephone us for advice as soon as you receive your appointment letter. MRI scans are not known to affect babies during pregnancy, but your scan may need to be discussed between the doctor who referred you for the functional MRI brain scan and the radiologist.

### Bringing someone with you for support

If you wish to have someone in the scanner room with you for support, they will need to complete a safety questionnaire and comply with safety regulations.

We do not have crèche facilities at the hospital. We would advise that you do not bring young children with you for this scan. If you do bring young children with you, you will need to arrange for someone you know to look after them while you are having the scan.

### Further information

If you are arriving by car, please remember that our car parks can get very busy, so it is a good idea to allow plenty of time to park. You may wish to consider getting a lift or coming by public transport.

If you have a medical condition that means you need help getting to hospital, please contact your GP surgery so they can arrange transportation for you.

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## Contact us

If you have any further questions or concerns, please contact us.

MRI admin team

Telephone: **023 8120 6588** (Monday to Friday, 8am to 5pm)

If you are unsure why you need to have this scan, please speak to the doctor who referred you.

## Useful links

[www.nhs.uk/conditions/mri-scan](http://www.nhs.uk/conditions/mri-scan)

[www.uhs.nhs.uk/for-visitors/southampton-general-hospital/getting-here](http://www.uhs.nhs.uk/for-visitors/southampton-general-hospital/getting-here)

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For help preparing for your visit, arranging an interpreter or accessing the hospital, please visit [www.uhs.nhs.uk/additionalsupport](http://www.uhs.nhs.uk/additionalsupport)

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