

MRI: Functional Brain Scan

How to prepare and what to expect

This handout explains how a functional brain scan works, how it is done, how to prepare, what to expect during the scan, and how to get your results.

What is MRI?

Magnetic resonance imaging (MRI) uses radio waves and a strong magnetic field to take clear and detailed pictures of the body's organs and tissues.

What is a functional brain MRI?

A *functional MRI (fMRI)* scan of the brain uses MRI to measure the quick, tiny changes that take place in active parts of the brain.

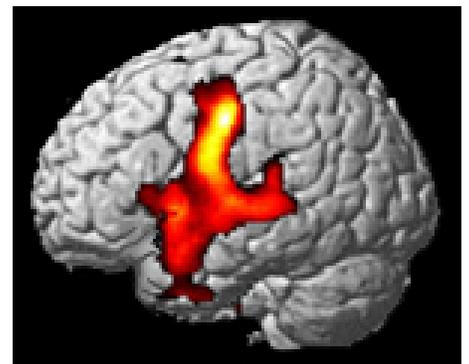
We know the basic areas of the brain that handle speech, sensation, memory, and other functions. But, the exact sites for these functions vary from person to person. Other parts of the brain may also take over some tasks after injury or disease, such as stroke or a brain tumor.

An fMRI scan lets radiologists look closely at a person's brain. It helps them see exactly which part of their brain handles thought, speech, movement, sensation, and other tasks. This tells us what areas to avoid when planning surgery, radiation therapy, or other treatments.

How does the scan work?

For your fMRI scan, you will do tasks while MRI pictures are taken. Activity will increase in the area of your brain that is in charge of the task you are doing. This extra brain activity includes:

- Blood vessels getting larger
- Chemical changes occurring
- Extra oxygen being delivered to that part of the brain



An fMRI scan image showing brain activity.

These activities are all signs that the brain is working normally. They will show up as a change in the MRI image.

A *neuroscientist* (a doctor who specializes in studying the nervous system) may work with you before your MRI scan to explain the tasks you will be doing.

For Your Safety

Health Review

We need to know about certain **health conditions** before giving you an MRI scan. Please tell us if you:

- Have any problems with your liver or kidneys
- Need a liver or kidney transplant
- Are on dialysis
- Have allergies to any drugs or *contrast* (X-ray dye)
- Have had any surgeries
- Are pregnant or may be pregnant

Screening for Metal

We also need to know if you have any **metal in or on your body** before we give you an MRI scan. The strong MRI magnet will pull on any *ferromagnetic* object, such as iron and some other metals.

If you have any metal on or in your body, an MRI can harm you. Even small amounts that do not harm your body can distort the MRI image.

Please tell MRI staff if you have:

- Aneurysm clips, a heart pacemaker (or artificial heart valve), an implanted port, an infusion catheter (with brand names such as Port-o-cath, Infusaport, or Lifeport), an intrauterine device (IUD), any metal plates, clips, pins, screws, or surgical staples, a prosthetic hip, or any implanted metal object in your body

Most times, surgical staples, clips, plates, pins, and screws are not a risk during MRI if they have been in place for more than 4 to 6 weeks. If there is any question, we may do an X-ray to check for metal fragments.

- Tattoos or permanent eyeliner
- Medicine patches

- A bullet or shrapnel in your body
- Ever worked with metal
- Tooth fillings or braces

Dental work is not usually affected by the MRI, but fillings and braces may distort pictures of the face or brain.

Please also **remove any other items that might contain metal**. These include:

- Hairpins
- Jewelry
- Glasses, hearing aids, and any removable dental work

How do I prepare?

Please talk with your referring provider if you have any concerns about managing pain or anxiety during your MRI scan.

How is the scan done?

- You must change into a hospital gown before your scan. We will give you a gown when you arrive in the MRI department.
- You will lie on a sliding table. The MRI technologist will place your head in a brace to help hold it still. The brace may include a mask created just for you.
- The technologist will slide the table so that your head is inside the MRI unit. The technologist will then leave the room to take the MRI pictures.
- You will be asked to do a number of small tasks, such as tapping the thumb of one hand against each of the fingers of that hand, rubbing a block of sandpaper, or answering simple questions. You will also read short statements or view pictures on a screen.
- You will be able to talk with the MRI **technologist** during the scan through an intercom.
- Based on how many pictures are needed, the scan will take from 45 to 60 minutes. A very detailed study may take longer.
- You will be asked to hold very still while the MRI pictures are being taken, to avoid blurring the images.
- After the scan, we will ask you to wait until we check the images for quality. If needed, we will take more pictures.

What will I feel during the MRI scan?

- MRI does not cause pain.
- Some patients may feel confined or uneasy (*claustrophobic*) when they are inside the MRI unit. Please tell the doctor who referred you for the MRI if you are claustrophobic. You may receive medicine to help you relax.
- You may feel warmth in the area where the scan is being done. This is normal. If it bothers you, tell the MRI technologist.
- If a contrast injection is needed, you may feel discomfort or coolness at the injection site.
- For many people, the loud tapping or knocking noises at certain times of the scan are annoying. We will provide you with earplugs to mask the noise. We cannot provide music, since sounds activate different parts of the brain and will affect the scan results.

Who interprets the results and how do I get them?

A neuroscientist and a *neuroradiologist* (a radiologist who specializes in diagnosing and treating diseases of the nervous system) will review and interpret your MRI images. The neuroradiologist will not talk with you about the results, but will send a report to your primary care or referring provider. This provider will give you the results.

You and your provider will then decide the next step, such as treatment for a problem, as needed.

You may also read your results on your eCare Results page. If you need copies of your images on disc, call 206.598.6206.

Questions?

Your questions are important. Call your doctor or healthcare provider if you have questions or concerns.

- UWMC Imaging Services:
206.598.6200
- Harborview Imaging
Services: 206.744.3105