

MRI: Functional Brain Scan

How to prepare and what to expect

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

What is MRI?

Magnetic resonance imaging (MRI) is a way to take pictures of your internal organs and tissues. It uses radio waves and a strong magnet to create clear and detailed pictures. Even different types of tissue within the same organ are easily seen in an MRI image.

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 tasks. But, the exact sites for these tasks vary from person to person. Other parts of the brain may also take over some tasks after injury or disease, such as a stroke or a brain tumor.

An fMRI scan lets us look closely at your brain. It helps us see exactly which part of your brain handles thought, speech, movement, sensation, and more. This tells us what areas to avoid when planning surgery, radiation therapy, or other treatments.

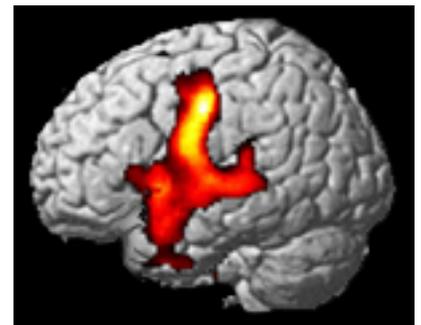
How does the scan work?

For your scan, we will ask you to do certain tasks while we take MRI pictures. We will be able to see extra activity in the area of your brain that is in charge of the task you are doing.

This brain activity includes:

- Blood vessels getting larger
- Chemical changes
- Extra oxygen going to that part of your brain

These physical signs show us that your brain is working normally.



An fMRI scan image showing brain activity.

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

For Your Safety

Health Review

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

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

Screening for Metal

If you have any metal on or in your body, an MRI can harm you. The strong MRI magnet will pull on any *ferromagnetic* object, such as iron and some other metals.

This is why we need to know if you have any metal in or on your body before we give you an MRI scan. Even small amounts of metal that will not harm your body can ruin 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 (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 needed, we may do an X-ray to check for metal.
- 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.

How to Prepare

- Please talk with your provider if you have any concerns about managing pain or anxiety during your MRI scan.
- *Women:* Tell your provider if you are pregnant or breastfeeding, or if there is any chance you could be pregnant.

On the Day of Your Scan

- **Remove anything that might contain metal.** This includes:
 - Makeup and nail polish
 - Hairpins
 - Jewelry
 - Glasses, hearing aids, and any removable dental work
- You must change into a hospital gown before your scan. We will give you a gown when you arrive in the MRI department.
- If you have an insulin pump or a patch that delivers any type of drug, we will ask you to remove it.
- *Women:* Before the scan starts, tell the technologist if there is any chance you could be pregnant.

How happens during the scan?

- You will lie on a sliding table. The 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 pictures.
- We will ask you 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
 - Answering simple questions
 - Reading short statements or viewing pictures on a screen
- During the scan, you will be able to talk with the technologist 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.
- We will ask you to hold very still while we take the MRI pictures, 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 technologist.
- If a contrast injection is needed, you may feel discomfort or coolness at the injection site.
- You will hear loud tapping or knocking noises during the scan. 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 MyChart 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