



Functional MRI

How to prepare for your procedure

A functional MRI (fMRI) of the brain is an exam used to measure the quick, tiny changes that take place in active parts of the brain.

Read this handout to learn about how the exam works, how the exam is performed, how to prepare for the exam, what to expect during the exam, and how to get your results.

What is functional MRI (fMRI) of the brain?

Magnetic resonance imaging (MRI) uses radio waves and a strong magnetic field instead of X-rays to provide clear and detailed pictures of the body's organs and tissues. Functional MRI (fMRI) is an exam that uses MRI to measure the quick, tiny changes that take place in an active part of the brain.

Doctors know the general areas of the brain where speech, sensation, memory, and other functions occur, but the exact sites vary from person to person. Injuries and disease, such as stroke or brain tumor, can even cause tasks to shift to other parts of the brain. fMRI helps radiologists look closely at the structure of the brain, and can help them pinpoint precisely which part of the brain is handling critical tasks such as thought, speech, movement, and sensation. This data can be key to planning surgery, radiation therapy, treatment for stroke, or other ways to treat brain disorders.

How does the exam work?

MRI uses radio waves and a strong magnetic field to provide clear and detailed pictures of the body's organs and tissues. An fMRI is used to show regions of the brain where blood vessels are expanding, chemical changes are taking place, or extra oxygen is being delivered – all signs that each part of the brain is working normally.

In fMRI, the patient performs a task while the exam is taking place. The activity will increase in the area of the brain in charge of this task, and the signal in the MRI picture will change. By performing tasks that correspond to different functions, it is possible to locate the area of the brain that governs each function. This data can then be put into a surgical planner to help a surgeon avoid these areas.

How is the procedure performed?

1. You will lie on a sliding table, with your head in a brace designed to help hold it still. The brace may include a mask created just for you.
2. You will be moved so that your head is inside the MRI machine. The technologist then leaves the room and the MRI sequences are performed.
3. You will be asked to perform 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.
4. You will be able to talk with the MRI technologist throughout the exam.
5. Based on how many pictures are needed, the exam will take from 30 to 60 minutes, although a very detailed study may take longer.
6. You will be asked to not move during the actual exam, to avoid blurring the images.
7. Some patients will require an injection of a contrast material to make certain tissues or blood vessels easier to see. A small needle connected to an intravenous (IV) line is placed in an arm or hand vein. The contrast material is injected about two-thirds of the way through the exam.
8. When the exam is over, you will be asked to wait until the pictures are reviewed for quality. More pictures will be taken as needed.

How should I prepare for the exam?

Because the strong magnetic field used for MRI will pull on any ferromagnetic metal object implanted in the body, causing possible image distortion, tell the MRI staff if you:

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

Questions?

Call 206-598-6200

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC Clinic staff are also available to help at any time.

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- Have tattoos or permanent eyeliner.
- Have a bullet or shrapnel in your body.
- Have ever worked with metal.
- Have tooth fillings or braces.
- Have drug allergies.
- Have had any surgeries.
- May be pregnant.

In most cases, surgical staples, clips, plates, pins, and screws pose no risk during MRI if they have been in place for more than 4 to 6 weeks. If there is any question of metal fragments, an X-ray may be done to detect any metal objects.

Remove any items that might affect MRI pictures, including hairpins, jewelry, glasses, hearing aids, and any removable dental work.

What will I feel during the MRI exam?

MRI causes no pain, but you may feel uneasy from being closed-in or from the need to remain still. You may notice a warm feeling in the target area; this is normal, but if it bothers you, tell the MRI technologist. If a contrast injection is needed, you may feel discomfort at the injection site, and you may have a cool sensation at the site during the injection. For many patients, the loud tapping or knocking noises heard at certain phases of the exam are annoying. Earplugs will be provided.

Who interprets the results and how do I get them?

A radiologist skilled in MRI will review and interpret the MRI findings. The radiologist will not discuss the results with you, but will send a report to your primary care or referring doctor, who will give you the results.

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