

What is an MRI scan?

Magnetic resonance imaging (MRI) is an exam that uses a strong magnet to take pictures of internal organs and tissues. Doctors specialized in MRI are called radiologists and they will provide an expert analysis of your images.

How is MRI different that CT or X-ray?

MRI does not use ionizing radiation (X-rays). MRI machines use magnets and radio waves to make images of the body.

What are the benefits of MRI?

The level of detail with MRI is extraordinary compared to any other imaging technique. MRI is the method of choice for the diagnosis of many types of injuries and conditions because of the incredible ability to tailor the exam to the particular medical question being asked.

What are the risks of MRI?

There are no known biological risks to humans from being exposed to magnetic fields of the strength used in medical imaging today. Therefore, the MRI exam poses almost no risk to the average patient when appropriate safety guidelines are followed. The strong magnetic field used in MRI is not harmful in itself, but medical devices that contain metal may malfunction or be a hazard during an MRI. You will be screened to ensure your safety.

What is MRI contrast?

The most common MRI contrast agents are ones that contain gadolinium. These types of contrast have been used in the U.S. since 1988. Hundreds of millions of patients throughout the world have received gadolinium during an MRI exam. For information on specific types of contrast used at UCSF, please refer to these links: [Gadavist](#), [Eovist](#), [Dotarem](#).

When is contrast needed?

MRI contrast is used to improve visualization of certain diseases. If necessary, it is administered through a small catheter that is placed in a vein in your arm prior to the procedure. The contrast may provide important details about the blood vessels and organs inside the body.

What are the risks of contrast?

- Allergic reactions from the MRI contrast occur in less than 1 percent of all patients. By far the most common reactions are nausea, headache, hives, and vomiting. These reactions are usually mild and can easily be controlled with medication. Please tell the technologist if you have allergies.
- Nephrogenic systemic fibrosis (NSF) is a disorder that is believed to be caused by the injection of high doses of some types of MRI contrast that have gadolinium in patients with kidney failure. These types of contrast are not used at UCSF. To date, there is no evidence that other patient groups are at risk.
- In recent years we learned that a tiny amount of gadolinium may stay in several parts of the body for months or years. Some contrast agents may leave more gadolinium in the body than others. No long-term harmful effects of this have been found with the types of contrast agents we currently use. At UCSF, we only use the safest types to address the clinical question.

How can the risks of MRI contrast be reduced?

Prior to your MRI examination, you will be asked to complete an MRI screening form. We do this to determine if you have any risk factors that may increase the chance of complications from this study. For your own safety, it is important that you complete this form as accurately as possible.

Are there alternatives to MRI?

Although MRI defines detail differently than other imaging modalities, on occasion alternative tests can be performed. Among others, these include CT scan, bone scan, arthrography, and ultrasound.

What can I expect before my MRI exam?

- There is little preparation for an MRI exam. Take your daily medications as you normally would, unless instructed otherwise. There are a few dietary restrictions for an MRI. For those exams, you will be notified of the requirements.
- Please arrive at least 30 minutes prior to your exam and check in with the receptionist. You will need to complete the MRI screening form.
- You may be asked to change into a hospital gown. If so, a locker will be supplied to secure your belongings.
- A technologist will verify your identification and the requested exam. Your screening form will be reviewed by the technologist in consultation with the radiologist, if indicated. If MRI contrast is indicated for the exam, a catheter will be inserted in a vein in your arm by a nurse or technologist.

What can I expect during my MRI scan?

- The duration of the procedure will vary, but most last from 45 minutes to one hour per body part.
- You will be required to lie still during the exam. Depending on the body part that is being examined, you may be asked to hold your breath for up to 30 seconds.
- The magnet is permanently open on both ends. It is well lit and there is a fan for patient comfort. There is also a two-way system for communication between patient and technologist. The part of the body being scanned will be placed in the middle of the magnet.
- During the actual imaging, you will hear a loud intermittent banging noise. You will be provided with earplugs and/or headphones to minimize the noise during the procedure.
- The technologist will hand you an alarm button to alert the technologist of any discomfort you may experience at any point during the MRI exam.
- Some MRI exams require an injection of intravenous MRI contrast. Inform the technologist if you experience any discomfort during the injection.

What can I expect after my MRI scan?

- If contrast injection is used, the catheter in your vein will be removed before you go home.
- An allergic reaction from MRI contrast is extremely rare. However, if you experience symptoms such as a rash, hives, or shortness of breath, you should notify the technologist. If these symptoms appear after you have left the facility, you should call your doctor or go to the nearest hospital.

What if I might be pregnant?

Most studies suggest there are no harmful effects from MRI during pregnancy. That said, our cautious approach is that MRI should only be performed during the first trimester when there is a clear and urgent indication. Less urgent studies can be deferred until later in pregnancy or until after delivery. The decision of whether or not to scan a pregnant patient is made on a case-by-case basis with consultation between the MRI radiologist and the patient's physician. The benefit of performing the scan must outweigh the risk, however small, to the fetus and mother.

What if I still have questions or concerns?

Should you have any questions about your MRI scan, please contact us at MRI-feedback@ucsf.edu or ask one of our staff prior to your scan.