

Guide to *MRI*



Diagnostic & Preventative Imaging Center



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Introduction

When your doctor has recommended you get an MRI, you probably have many questions. This guide will answer several common questions and help prepare you for your MRI examination. You will learn:

- 1. What is an MRI, and why is it used?**
- 2. Are there any contraindications or risks?**
- 3. How should you prepare for your procedure?**
- 4. What is the procedure like?**
- 5. How can you be more comfortable during the procedure?**

What is an MRI and why is it used?

Magnetic resonance imaging (MRI) uses a magnetic field, radio waves, and a computer to generate cross-sectional images of organs, soft tissues, bone, and virtually all other internal body structures. The MRI can then be examined on a computer monitor, or a CD of images can be made. MRI generates very detailed images that can provide information that other imaging tests do not, especially of soft tissues and organs.

MRI is used to diagnose many different conditions.

- It is the most frequently used imaging test of the **brain and spinal cord** because it is very effective in diagnosing aneurysms, disorders of the eye and inner ear, multiple sclerosis, spinal cord injuries, stroke, and tumors.
- **Breast** MRI is used in addition to mammography and ultrasound to examine potentially cancerous tissue; the increased resolution is especially helpful for women with dense breast tissue or who are at high risk.
- MRI is also useful to evaluate abnormalities in **bones, organs, or tissues**, such as joint disorders (like arthritis), spinal disk issues, bone infections, tendon or ligament tears, and tumors.¹
- MRI **arthrograms** are performed under fluoroscopy with a contrast injected directly into a joint, such as an elbow, knee, shoulder, or hip, to evaluate it for tears. Following the arthrogram, the patient is moved to the MRI table.

1

Mayo Clinic Staff. "MRI: Why It's Done." *Mayo Clinic*. Mayo Foundation for Medical Education and Research, n.d. Web. 5 Sept 2015.

Are there any contraindications or risks?

■ **One of the advantages of MRI is that it does not use radiation, which has some risks.**

However, there are a few things that can cause issues with the MRI machine. Because it uses extremely strong magnets to produce the images, **ferromagnetic metals** can be problematic. These kinds of magnetic metals can be found in some tattoos, body piercings, and cosmetics, as well as shrapnel, some implants like pins or rods, drug infusion devices, and some other medical implants (like aneurysm clips, ear or eye prosthesis, or pacemakers). While some implants counterindicate MRI, others simply need to be in place for at least 6 weeks before an MRI scan is considered safe. It is essential to avoid wearing cosmetics or other applied products to your procedure and to talk with the doctor who orders your MRI about any foreign objects in your body before you undergo an MRI.

Some MRI procedures utilize an intravenous (IV) injected gadolinium-based **contrast agent** to enhance the accuracy of images. In some cases, this contrast agent is essential to gathering the information necessary to diagnose a problem. At Iowa Radiology, we encourage best practices in the appropriate use of contrast agents by providing materials to our referring physicians outlining what types of examinations require contrast agent and which do not. Gadolinium-based contrast agent is not appropriate for pregnant patients, and those who are breastfeeding should pump and dispose of their breast milk for at least 24 hours after receiving contrast dye. A recent creatinine test (a blood test to evaluate kidney function) is required before administration of the contrast agent for patients who have kidney conditions, high blood pressure, diabetes, or vascular disease. If any of these conditions apply to you, please inform your doctor.



If you experience severe claustrophobia, your doctor may order conscious sedation during an MRI. In general, this is safe for most patients, and all patients are closely monitored while under conscious sedation. Common side effects include nausea, headache, and dizziness, and these usually do not persist long after the procedure. More serious complications from anesthesia are rare and are more likely to occur in patients with complex, serious medical conditions.



How should you prepare for your procedure?

Generally, there is no preparation required before the exam; most people don't need to fast or avoid any particular foods or activities. Some tests require an injection of IV contrast. For those exams, a current creatinine test may be required for high-risk patients. The creatinine test is a blood draw that evaluates your kidney function and will normally be performed at your physician's office or lab within 45 days prior to the exam. If fasting is necessary, your doctor will provide these instructions.



The exam will require you to lie still for 30-60 minutes. If you are anxious or claustrophobic, oral medications may be prescribed by your referring physician and should be taken 30-40 minutes prior to your exam. Your radiologist must approve the use of any IV conscious sedation medications prior to scheduling your exam. If you use any benzodiazepines or conscious sedation during your MRI procedure, you will need to arrange for a competent driver to get you home safely.

Immediately before the exam, you will need to remove all jewelry, hairclips, piercings, and bobby pins. You'll also need to wash off any cosmetics, antiperspirants, or lotions. Because clothing can contain metal (like bras with metal closures or wires or jeans with metal zippers and buttons) or ferromagnetic fibers or material, you will be provided a gown and scrub pants to wear during the exam. We will provide you with a secure locker in which to store your valuables and clothing.

What is the procedure like?

- After you have prepared for the procedure, our technologist will take a brief medical history. You'll have the opportunity to ask any last-minute questions or talk about any concerns you may have.

During the test, the MRI will make a rapid tapping noise. Nothing will touch you. If you will be receiving contrast material, it will be injected during the course of the exam. Just relax and remain still; it's important to lie still in order to get quality images. You'll be in the scanning area for 30-60 minutes, depending on the exam required, and then that's it! You can resume your normal activities immediately.

If you are receiving IV sedation, you will have to check in earlier to be examined by the nurse and radiologist prior to administration. After these procedures are complete, you will be asked to lie down on the scanning table, and the medications will be injected into a vein in your arm. The technologist will provide pillows and make you as comfortable as possible and then slide you, on the table, into the scanning area. If you were sedated, you must have someone drive you home from the clinic.

*You should plan 60-90 minutes of total clinic time.
If sedation will be used, plan on a two-hour clinic visit.*



How can you be more comfortable during the procedure?

At Iowa Radiology, we recognize that having an MRI can be an anxiety-provoking situation. We offer both traditional and wide-bore MRI for your convenience. The clarity of MRI images on traditional systems is usually much better, but lying still in the small tube can be uncomfortable. Our wide-bore MRI machines have a larger opening to alleviate some of this discomfort while retaining the clarity of traditional closed MRI machines.

You should discuss with your doctor which type of MRI is best for you. If you are claustrophobic or anxious about a traditional MRI, but it is medically recommended, your referring physician may be able to prescribe benzodiazepines to help you relax. Your doctor will give you dosing and administration instructions, but generally you take a pill (such as Valium or Xanax) a short time before the procedure. If you are prescribed this medication, you should plan to have a driver take you to and from the procedure while under its influence.

We provide music headsets for your use during the procedure as well as pillows and blankets to make your experience more comfortable. Our insulated machines also cut down on the noise of the procedure.

Our knowledgeable, professional team will put you at ease and answer all of your questions before the exam. Once it's over, a radiologist will review the images and send a report to your referring physician within one business day. Your doctor will review the report and contact you with the results.





At Iowa Radiology, we strive to provide the highest quality medical care for all our patients. We will help you through each step of your diagnostic and preventive care with a compassionate, personal approach.



Contact Iowa Radiology

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