Iowa Radiology

Your Guide to MRIs

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Introduction

If 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. In it, we'll explore the following questions:

What is an MRI, and why is it used?

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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 other internal body structures. The images can then be examined on a computer monitor as well as transferred to a CD, which patients can view at home and share with other providers. MRI generates very detailed images that can provide information that other imaging tests do not, especially of soft tissues and organs.[1]

MRI is used to diagnose many different conditions.

- MRI 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.[2]
- 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 breasts or who are at high risk.[3]
- MRI is useful for evaluating abnormalities in bones, organs, or tissues, such as joint disorders (like arthritis), spinal disk issues, bone infections, tendon or ligament tears, and tumors.
- 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.[4] Following the arthrogram, the patient is moved to the MRI table.

What risks or contraindications should you be aware of?

To be safe and effective, MRI requires certain precautions.

FERROMAGNETIC METALS

Because MRI uses extremely strong magnets to produce images, ferromagnetic metals can cause problems. These kinds of 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, certain prosthesis, or pacemakers). Some of these are contraindicated for MRI, and others require cautious evaluation before an MRI scan is performed.[5] You should avoid wearing cosmetics or other applied products to your procedure, and prior to the exam, talk with your doctor about any foreign objects in your body and how they could affect the MRI.

GADOLINIUM-BASED CONTRAST

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.

Patients with impaired kidney function may be at risk for developing nephrogenic systemic fibrosis (NSF), a rare condition that causes the thickening of skin, organs, and other tissues, after receiving gadolinium contrast. Because of this, Iowa Radiology requires a recent creatinine test (a blood test to evaluate kidney function) for patients with certain medical conditions before administration of gadolinium contrast. For more information about MRI contrast, see our ebook, "What You Should Know About MRI Contrast Agents."

Gadolinium-based contrast agent is considered appropriate for pregnant patients only when their use is considered critical and then should be used only at the lowest possible dose. FDA guidelines indicate it is safe to continue breastfeeding after receiving gadolinium contrast. However, because a small percentage of the dye passes into breast milk in the first 24 hours after administration, the FDA advises nursing mothers to make an informed decision about whether to pause breastfeeding for 12 to 24 hours after receiving gadolinium contrast.[6]

ANXIETY AND CLAUSTROPHOBIA

If you experience anxiety or claustrophobia, it's important to let your imaging provider know this in advance so they can take extra steps to make you as comfortable as possible during the procedure. Headphones with relaxing music, extra pillows or blankets, or a support person to hold your hand are some simple things that can make an MRI easier to endure.

If possible, schedule your appointment with a provider that uses wide-bore MRI machines. The opening of a wide-bore machine is 20% larger than standard MRI and allows the vast majority of exams to be performed feet first. If your anxiety is severe enough that it might prevent you from being able to complete an MRI despite comfort measures like these, talk to your doctor. They may decide to prescribe a sedative to help you relax.

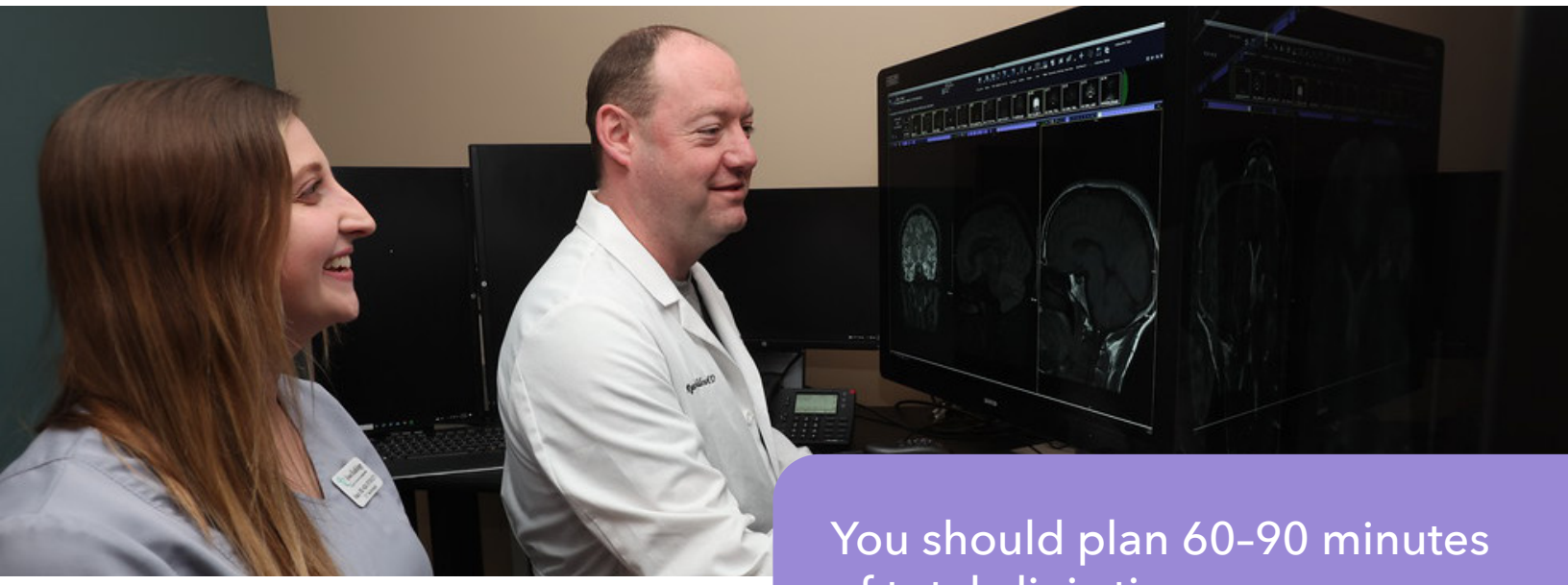
How should you prepare for your procedure?

Most often, no preparation is required before the exam.

Most people don't need to fast or avoid any particular foods or activities prior to an MRI. 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 typically performed at a 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 your referring physician has prescribed oral medications for anxiety, take them 30–40 minutes prior to the exam, and arrange for a competent driver to get you home safely. Plan to dress simply and avoid using unnecessary products on your body the day of the exam. You will need to remove all jewelry, hairclips, piercings, and bobby pins and wash off any cosmetics, antiperspirants, or lotions before the procedure. Because clothing can contain metal in things like closures, wires, zippers, and buttons as well as ferromagnetic fibers or material, you will be provided a gown and scrub pants to wear and a secure locker in which to store your clothing.

What is the procedure like?



You should plan 60–90 minutes of total clinic time.

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. The machine will not 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. As long as you haven't taken anti-anxiety medications to prepare for the exam, you can resume all your normal activities immediately afterward. Our radiologist will review your 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.

How can you be more comfortable during the procedure?

One way to be as comfortable as possible during any medical procedure is to ask all the questions you have before starting the exam. Iowa Radiology's knowledgeable, professional team will make every effort to put you at ease and answer all of your questions.

At Iowa Radiology, we recognize that having an MRI can provoke anxiety for many. To provide a more comfortable experience and obtain high quality images, we use Siemens and Toshiba wide-bore MRI machines. In addition to being roomier, our wide-bore machines are significantly quieter than standard models. This can help patients feel more relaxed and at ease during imaging. We also have music headsets, pillows, and blankets available for you to use during the procedure.

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Our focus is your good health!

We strive to provide both the best patient care and the best customer service possible. If you ever have any questions or concerns about an exam at one of our clinics, feel free to give us a call.

Contact Iowa Radiology Today!

Endnotes

[1] U.S. Food and Drug Administration. MRI: Benefits and Risks. FDA.gov. Published December 9, 2017. Accessed January 30, 2024. https://www.fda.gov/radiation-emitting-products/mri-magnetic-resonance-imaging/benefits-and-risks.

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