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Heart Disease Health Center

Magnetic Resonance Angiogram (MRA)

A magnetic resonance angiogram (MRA) is a type of [magnetic resonance imaging \(MRI\)](#) scan that uses a magnetic field and pulses of radio wave energy to provide pictures of [blood](#) vessels inside the body. In many cases MRA can provide information that can't be obtained from an [X-ray](#), [ultrasound](#), or [computed tomography \(CT\) scan](#).

MRA can find problems with the blood vessels that may be causing reduced blood flow. With MRA, both the blood flow and the condition of the blood vessel walls can be seen. The test is often used to look at the blood vessels that go to the [brain](#), [kidneys](#), and legs. Information from an MRA can be saved and stored on a computer for further study. Photographs of selected views can also be made. See a picture of an [MRA](#) .

During MRA, the area of the body being studied is placed inside an MRI machine. [Contrast material](#) is often used during MRA to make blood vessels show up more clearly.

Why It Is Done

A magnetic resonance angiogram (MRA) is done to look for:

- A bulge ([aneurysm](#)), clot, or the buildup of fat and [calcium](#) deposits (stenosis caused by plaque) in the blood vessels leading to the brain.

- An aneurysm or tear ([dissection](#)) in the [aorta](#), which carries blood from the [heart](#) to the rest of the body.

- Narrowing (stenosis) of the blood vessels leading to the [lungs](#), kidneys, or legs.

How To Prepare

Before a magnetic resonance angiogram (MRA), tell your doctor and the MRI technologist if you:

- Are allergic to any medicines. The contrast material used for MRA does not contain iodine. If you know that you are allergic to the contrast material used for MRA, tell your doctor before having another test.

- Are or might be pregnant.

- Have any metal implanted in your body. This information helps your doctor know if the test is safe for you. Tell your doctor if you have:

 - Heart and blood vessel devices such as a coronary artery stent, pacemaker, ICD (implantable cardioverter-defibrillator), or metal heart valve.

 - Metal pins, clips, or metal parts in your body, including artificial limbs and dental work or braces.

 - Any other implanted medical device, such as a medicine infusion pump.

 - Cosmetic metal implants, such as in your ears.

- Have an [intrauterine device \(IUD\)](#) in place. An IUD may prevent you from having the MRA test done.

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Become very nervous in small spaces. You need to lie very still inside the MRI machine, so you may need to have the test done with open MRI equipment. It is not as confining as standard MRI machines. You may need medicine to help you relax. Some blood vessels may not be seen clearly with an open MRI scanner.

Have any other health conditions, such as kidney problems or [sickle cell anemia](#), that may prevent you from having an MRA using contrast material.

Wear any medicine patches. The MRI may cause a burn at the patch site.

How To Prepare continued...

For some abdominal MRI tests, you may be asked to not eat or drink before the test.

You may need to arrange for someone to drive you home after the test, if you are given a medicine ([sedative](#)) to help you relax.

If you are having blood flow studies, do not use tobacco products and do not eat or drink (including alcohol or caffeinated beverages) for 2 hours before the test. Do not take iron [supplements](#) on the day of the test.

If you are [breast](#)-feeding and contrast material is used during the test, give your [baby formula](#) for 1 to 2 days after the procedure until the contrast material has passed from your body.

You may need to sign a consent form that says you understand the risks of an abdominal MRI and agree to have the test done. Talk to your doctor about any concerns you have regarding the need for the test, its risks, how it will be done, or what the results will mean. To help you understand the importance of this test, fill out the [medical test information form](#).

How It Is Done

A magnetic resonance angiogram (MRA) test is usually done by a magnetic resonance image (MRI) technologist. The test is done in an [MRI machine](#) . The resulting pictures are usually interpreted by a [radiologist](#). But some other types of doctors can also interpret an MRA scan.

Before the test

Remove all metal objects, such as hearing [aids](#), dentures, jewelry, watches, hairpins, wigs, and eyeglasses, from your body because these objects may be attracted to the powerful magnet used for the test. If you have had an car crash or an accident while working with metal, there is a possibility that you have metal fragments in your head, [eyes](#), [skin](#), or spine. An X-ray may be taken before the MRA to see if you can have the test.

Take off all or most of your clothes, depending on which area is examined. You may be allowed to keep on your underwear if it does not get in the way. You will be given a cloth or paper covering to use during the test.

You may be given a sedative if you are nervous or you do not think you can lie still for the test.

During the test

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You will lie on your back on a table that is part of the MRI scanner.

If you are cold or uncomfortable, you may want to ask for a pillow or blanket.

Your head, chest, and arms may be held with straps to help you remain still.

The table will slide into a space that contains the magnet. Depending on the part of your body to be examined, your head, limbs (such as your legs), or your entire body will be moved into the center of the magnet. Some MRI machines (open MRI) are now made so that the magnet does not surround the person being tested. Open MRI is less confining than a standard MRI but may not provide the same quality of image.

Inside the scanner, you may hear a fan and feel air moving. You may also hear tapping or thumping noises as the MRA scans are taken. You may want to ask for ear plugs to reduce the noise.

It is important to hold completely still while the scan is being done. Otherwise, repeat scans may be needed.

You may be asked to hold your breath for short periods of time.

You may be alone in the scanner room. But the technologist will watch you through an observation window, and you will be able to talk to him or her through an intercom.

If contrast material is needed, the technologist will put it in an **IV** in your arm. The material may be given over 1 to 2 minutes. Then more MRI scans are done.

An MRA test usually takes 30 to 90 minutes but can take as long as 2 hours.

How It Feels

You won't have pain from the magnetic field or radio waves used for the MRI test. The table you lie on may feel hard and the room may be cool. You may be tired or sore from lying in one position for a long time.

Some people feel discomfort or **anxiety** (claustrophobia) inside the MRI magnet. If this keeps you from lying still, you can be given a sedative to help you relax. Open MRI machines are less confining than standard MRI and may be helpful if you are claustrophobic.

If a contrast material is used, you may feel some coolness and flushing as it is put into your IV. In rare cases, you may feel:

A tingling feeling in the mouth if you have metal dental fillings.

Warmth in the area being examined. This is normal. Tell the technologist if you have **nausea**, vomiting, **headache**, **dizziness**, pain, burning, or **breathing problems**.

Risks

There is a slight risk of having an **allergic reaction** if contrast material is used during the MRA scan. Most reactions can be controlled using medicine.

An MRI can cause a burn with some medicine patches. Be sure to tell your doctor if you are wearing a patch.

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If you have kidney disease, such as [kidney failure](#), talk to your doctor before having an MRA scan with contrast material. The contrast material used for an MRA contains a chemical called gadolinium. If you have kidney disease, this chemical may cause a serious problem, called nephrogenic systemic fibrosis.

Results

A magnetic resonance angiogram (MRA) is a type of [magnetic resonance imaging \(MRI\)](#) scan that uses a magnetic field and pulses of radio wave energy to provide pictures of blood vessels inside the body. The [radiologist](#) may talk to you about the results of your MRA right after the test. Complete results are usually available for your doctor in 1 to 2 days.

Magnetic resonance angiogram (MRA)

Normal:	The blood vessels look normal and the blood flow through them is not reduced or stopped. No blood clots or large plaque buildup is seen.
	Blood vessel walls are normal. No bleeding, abnormal collections of fluid, blockage in the flow of blood, or bulges in the blood vessels (aneurysms) are present.
Abnormal:	Partial or complete blockage of a blood vessel may be seen. Blockage may be caused by a blood clot, the buildup of fat and calcium deposits (plaque), or narrowing (stenosis) of the blood vessel.
	A bulge (aneurysm) in the blood vessel wall may be seen. Damage to the wall of a blood vessel may be seen.

Conventional angiogram or a [CT angiogram](#) (computed tomography angiogram) may be needed after MRA if a problem, such as an aneurysm, is found or if surgery may be needed.

What Affects the Test

Reasons you may not be able to have the test or why the results may not be helpful include:

Pregnancy. Although the strong magnetic field used for an MRA does not appear to be harmful, MRA usually is not done when you are pregnant. If a view of your belly is needed and you are pregnant, an [ultrasound](#) test may be done instead.

You are using a medical device that contains metal, such as an [IUD](#), a pacemaker, some types of artificial limbs, or medicine infusion pumps. These devices can malfunction or cause problems during an MRA scan.

Not being able to lie still during the test. The results of MRA may not be accurate if you cannot remain still during the test.

Being [overweight](#) and not fitting into the opening of some MRI scanners.

What To Think About

While MRA is a safe and valuable test for looking at blood vessels inside the body, it is more expensive

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than other imaging techniques, and it may not be available in all medical centers.

An advantage of MRA is that no radiation is involved.

Open MRI machines are now made so that the magnet does not completely surround you. Open MRI is useful for people who are claustrophobic or obese. But these machines are not available everywhere. Also, these machines may not be able to do all the studies needed to check for problems.

Conventional angiogram or a CT angiogram (computed tomography angiogram) may be done to double-check abnormal results from the MRA in some types of blood vessels such as the aorta. These tests might be an option especially if surgery is being considered to treat the problem.

MRA results may show an aneurysm is present when it is not ([false-positive](#)). It also may show no aneurysm when one is present ([false-negative](#)). MRA is most accurate for larger blood vessels.

You may need to wait about 6 weeks before having an MRA if you have had a stent put in your [coronary arteries](#). This helps decrease the chances of movement of the stent by the magnet used in the MRA.

Other Places To Get Help

Organizations

American Heart Association (AHA)

7272 Greenville Avenue

Dallas, TX 75231

Phone: 1-800-AHA-USA1 (1-800-242-8721)

Web Address: www.heart.org



Visit the American Heart Association (AHA) website for information on [physical activity](#), [diet](#), and various heart-related conditions. You can search for information on [heart disease](#) and [stroke](#), share information with friends and family, and use tools to help you make heart-healthy goals and plans. Contact the AHA to find your nearest local or state AHA group. The AHA provides brochures and information about support groups and community programs, including Mended Hearts, a nationwide organization whose members visit people with heart problems and provide information and support.

National Heart, Lung, and Blood Institute (NHLBI)

P.O. Box 30105

Bethesda, MD 20824-0105

Phone: (301) 592-8573

Fax: (240) 629-3246

TDD: (240) 629-3255

Email: nhlbiinfo@nhlbi.nih.gov

Web Address: www.nhlbi.nih.gov



The U.S. National Heart, Lung, and Blood Institute (NHLBI) information center offers information and publications about preventing and treating:

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Diseases affecting the heart and circulation, such as heart attacks, [high cholesterol](#), [high blood pressure](#), peripheral artery disease, and heart problems present at birth (congenital heart diseases).

Diseases that affect the lungs, such as [asthma](#), chronic obstructive pulmonary disease (COPD), [emphysema](#), [sleep apnea](#), and [pneumonia](#).

Diseases that affect the blood, such as anemia, hemochromatosis, [hemophilia](#), thalassemia, and Von Willebrand disease.

VascularWeb

Society for Vascular Surgery

633 North Saint Clair Street, 24th Floor

Chicago, IL 60611

Phone: 1-800-258-7188

Email: vascular@vascularsociety.org

Web Address: www.vascularweb.org



VascularWeb is a Web site provided by the Society for Vascular Surgery. This Web site provides information about vascular conditions for patients and families. VascularWeb can help you learn about how to prevent and treat vascular diseases, learn about vascular screening, and find a vascular surgeon.

Related Information

[Angiogram](#)

[Aortic Aneurysm](#)

[Magnetic Resonance Imaging \(MRI\)](#)

[Peripheral Arterial Disease of the Legs](#)

Other Works Consulted

Bleumke DA, et al. (2008). Noninvasive coronary artery imaging: Magnetic resonance angiography and multidetector computed tomography angiography. A scientific statement From the American Heart Association Committee on Cardiovascular Imaging and Intervention of the Council on Cardiovascular Radiology and Intervention, and the Councils on Clinical Cardiology and Cardiovascular Disease in the Young. *Circulation*, 118(5): 586-606. Originally published online June 27, 2008 (doi: 10.1161/circulationaha.108.189695).

Chernecky CC, Berger BJ (2008). *Laboratory Tests and Diagnostic Procedures*, 5th ed. St. Louis: Saunders.

Fischbach FT, Dunning MB III, eds. (2009). *Manual of Laboratory and Diagnostic Tests*, 8th ed. Philadelphia: Lippincott Williams and Wilkins.

Levine GN, et al. (2007). Safety of magnetic resonance imaging in patients with cardiovascular devices: An American Heart Association scientific statement from the Committee on Diagnostic and Interventional [Cardiac Catheterization](#), Council on Clinical Cardiology, and the Council on Cardiovascular Radiology and Intervention: Endorsed by the American College of Cardiology Foundation, the North American Society for Cardiac Imaging, and the Society for Cardiovascular Magnetic Resonance. *Circulation*, 116(24): 2878-2891.

Pagana KD, Pagana TJ (2010). *Mosby's Manual of Diagnostic and Laboratory Tests*, 4th ed. St. Louis: Mosby Elsevier.

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