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MRI for Cancer

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What is MRI?

MRI is short for **magnetic resonance imaging**. You may also hear it referred to as **magnetic resonance**, **MR**, and **nuclear magnetic resonance [NMR] imaging**. MRI creates cross-section pictures of your insides. But unlike x-rays, MRI uses strong magnets to make the images – not radiation. An MRI scan takes cross-sectional slices (views) from many angles, as if someone were looking at a slice of your body from the front, from the side, or from above your head. MRI creates pictures of soft tissue parts of the body that are sometimes hard to see using other imaging tests.

Can MRI detect and diagnose cancer?

MRI helps doctors find problems, including cancer. It can find tumors that may or may not be cancer and is very good at finding and pinpointing certain types of cancer. Doctors can sometimes tell from the MRI images if a tumor is or isn't cancer. But, other tests (such as a biopsy) might be needed to confirm if a tumor is cancer or not.

MRI can also look for signs that a cancer has spread from its original area in the body. Looking at MRI results also helps doctors know how to plan cancer treatment, like surgery or radiation.

How does MRI work?

An MRI scanner is a long cylinder or tube that holds a large, very strong magnet. As you are lying on a table that slides into the tube, and the machine surrounds you with a powerful magnetic field. The machine uses a powerful magnetic force and a burst of radiofrequency waves to pick up signals from the nuclei (centers) of hydrogen atoms in your body. A computer converts these signals into a black and white picture. Many pictures are created during the test.

Are there different kinds of MRI?

Let your doctor and the technologist know if you have any kind of allergies or have had problems with any contrast used in imaging tests in the past.

It's very important to tell your doctor and the technologist (the person who does the test) if you have any metal in your body. If you have any of these implants, you should not even enter the MRI scanning area unless told to do so by a radiologist or technologist who knows you have:

- An implanted defibrillator or pacemaker
- Clips used on a brain aneurysm
- A cochlear (ear) implant
- Metal coils put inside blood vessels

Also be sure the technologist knows if you have other permanent metal objects, such as surgical clips, staples, screws, plates, or stents; artificial joints; metal fragments (shrapnel); tattoos or permanent makeup; artificial heart valves; implanted infusion ports; implanted nerve stimulators; and so on.

You may need to have an x-ray to check for metal objects if there's any doubt.

What can I expect during an MRI?

You may be asked to undress and put on a gown or other clothes without zippers or metal. Be sure to remove any metal objects you can, like hair clips, jewelry, dental work, and body piercings. Before the scan, the technologist will ask you if you have any metal in your body.

You will lie down on a narrow, flat table. The technologist may use straps or pillows to make you comfortable and help keep you from moving. The table slides into a long, narrow cylinder. The part of your body that's being scanned will be in the center of the cylinder. The scanned part of your body may feel a little warm during the test, this is normal and nothing to worry about.

You'll be in the exam room alone, but you can talk to the technologist, who can see and hear you at all times.

The test is painless, but you have to lie inside the cylinder with its surface a few inches from your face. It's important to stay very still while the images are being made, which

The machine makes loud, thumping, clicking, and whirring noises, much like the sound of a washing machine, as the magnet switches on and off. You may be given earplugs or headphones with music to block noise out during the scan.

Special, open MRI machines that are less restrictive may be easier for some people. These machines replace the narrow cylinder with a larger ring. This design lessens the banging sound and the feeling of lying in an enclosed space. But the machine doesn't create as strong a magnetic field, and the pictures may not be as clear or detailed as they are with standard MRI. Sometimes, this can lead to getting rescanned on a standard MRI machine.

How long does an MRI take?

MRI scans usually take between 45 and 60 minutes, but can sometimes take up to 2 hours. After the test, you may be asked to wait while the pictures are checked to make sure that they are clear and show all of the body part. If not, more pictures may be needed.

What are the possible complications of an MRI?

People can be hurt in MRI machines if they take metal items into the room or if other people leave metal items in the room.

Some people become very uneasy and even panic when lying inside the MRI scanner.

Some people react to the contrast material. Such reactions can include:

- Nausea
- Pain at the needle site
- A headache that develops a few hours after the test is over
- Low blood pressure leading to a feeling of lightheadedness or faintness (this is rare)

Be sure to let your health care team know if you have any of these symptoms or notice any other changes after you get the contrast material.

Gadolinium, the contrast material used for MRI, can cause a special complication when

Small amounts of gadolinium can stay in the brain, bones, skin and other parts of your body for a long time (several months to years) after the test. It's not known if this might have any health effects, but so far, studies haven't found any harmful effects in patients with normal kidneys.

Can MRI cause cancer?

Studies have not shown that MRI causes cancer. This is because MRI does not expose you to radiation. Whether you have a closed or an open MRI, you are not at risk for radiation exposure from the test. You can learn more in [Understanding Radiation Risk from Imaging Tests²](#).

What else should I know about an MRI?

MRI can cost a lot. You may want to be sure your health insurance covers it.

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Last Revised: February 16, 2024

Written By

The American Cancer Society medical and editorial content team
(<https://www.cancer.org/cancer/acs-medical-content-and-news-staff.html>)

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