

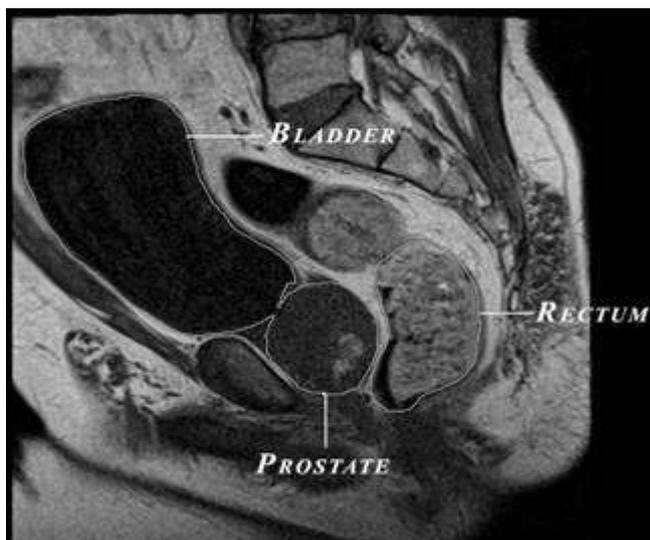
# MRI PROSTATE

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Prostate cancer is the second most frequently diagnosed cancer and the sixth leading cause of cancer death in males worldwide. According to the American Cancer Society, Prostate cancer is the most common malignancy in American men and the second leading cause of deaths from cancer, after lung cancer. The estimated lifetime risk of being diagnosed with the disease in USA is 17.6% for Caucasians and 20.6% for African. Based on 2008-2010 data, 15.33% of men born today worldwide will be diagnosed with prostate cancer some time during their lifetime. Therefore prostate cancer is likely to complicate the lives of a significant proportion of men that are healthy today.

Like other cancers, early detection of new onset tumour leads to early treatment and decrease in mortality rate. Screening men for prostate cancer are done by PSA and digital rectal examination. The purpose of the screening is to detect early, tiny, or even microscopic cancers that are confined to the prostate gland. Early detection and early treatment of prostate cancer can stop the growth, prevent the spread, may reduce chance of dying and possibly cure the cancer.

The level of details and high resolution of images makes MRI an invaluable tool in early diagnosis and evaluation of prostate cancer.



Magnetic resonance imaging (MRI) of the prostate uses a powerful magnetic field, radio waves and a computer to produce detailed pictures of the structures within a man's prostate gland. It is primarily used to evaluate the extent of prostate cancer and determine whether it has spread. It also may be used to help diagnose infection, benign prostatic hyperplasia (BPH) or congenital abnormalities.

Tell your doctor about any health problems, recent surgeries or allergies. The magnetic field is not harmful, but it may cause some medical devices to malfunction. Most orthopedic implants pose no risk, but you should always tell the technologist if you have any devices or metal in your body.

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## What is MRI of the Prostate?

Magnetic resonance imaging (MRI) is a noninvasive medical test that physicians use to diagnose and treat medical conditions.

MRI uses a powerful magnetic field, radio frequency pulses and a computer to produce detailed pictures of organs, soft tissues, bone and virtually all other internal body structures. MRI does not use ionizing radiation (x-rays).

Detailed MR images allow physicians to evaluate various parts of the body and determine the presence of certain diseases. The images can then be examined on a computer monitor, transmitted electronically, printed or copied to a CD.

The prostate gland is part of the male [reproductive](#) system. It is located in front of the rectum and below the [bladder](#), where urine is stored, and surrounds the first part of the [urethra](#), the tube that connects the bladder with the tip of the penis and carries urine and other fluids out of the body. The prostate helps make the milky fluid called semen that carries [sperm](#) out of the body when a man ejaculates. Ultrasound and MRI are the most commonly used techniques to image the prostate gland.

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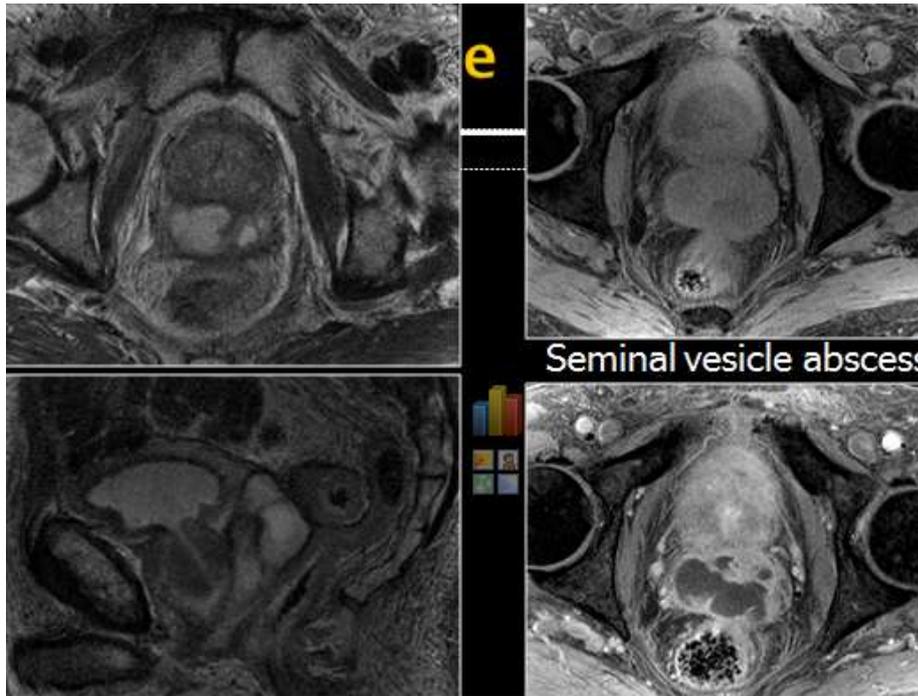
## What are some common uses of the procedure?

The primary indication for MRI of the prostate is the evaluation of prostate cancer. The test is commonly used to evaluate the extent of prostate cancer in order to determine if the cancer is confined to the prostate, or if it has spread outside of the prostate gland.

If you have had biopsies that are normal, however your PSA BLOOD RESULTS ARE STEADILY ON THE INCREASE, it may prove as a useful tool for your physician in evaluating the prostate.

Occasionally, MRI of the prostate is used to evaluate other prostate problems, including:

- infection (prostatitis) or prostate abscess.
- an enlarged prostate, called [benign prostatic hyperplasia \(BPH\)](#).
- congenital abnormalities.
- complications after pelvic surgery.



MRI of the prostate will require you to have an intravenous injection. The contrast material most commonly used for an MRI exam contains a metal called [gadolinium](#). Gadolinium can be used in patients with iodine contrast allergy, and side effects are rare. If you have impaired renal function (kidney disease) please consult with your referring specialist before proceeding with an MRI of the prostate.

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## How is the procedure performed?

MRI examinations may be performed on outpatients or inpatients.

You will be positioned on the moveable examination table. Straps and bolsters may be used to help you stay still and maintain the correct position during imaging.

Devices that contain coils capable of sending and receiving radio waves will be placed around or adjacent to the area of the body being studied.

For the contrast material used in the MRI exam, a nurse or [radiologist](#) will insert an [intravenous \(IV\)](#) catheter, also known as an IV line, into a vein in your hand or arm. The line will then be connected to an injector pump, that will dispense the gadolinium automatically, about 2/3 of the way through the examination. A saline solution may be used to flush the contrast material, and you will get a cold sensation up your arm, which is not painful. Additional series of images will be taken during and following the injection.

You will be placed into the magnet of the MRI unit and the radiologist and technologist will perform the examination while working at a computer outside of the room.

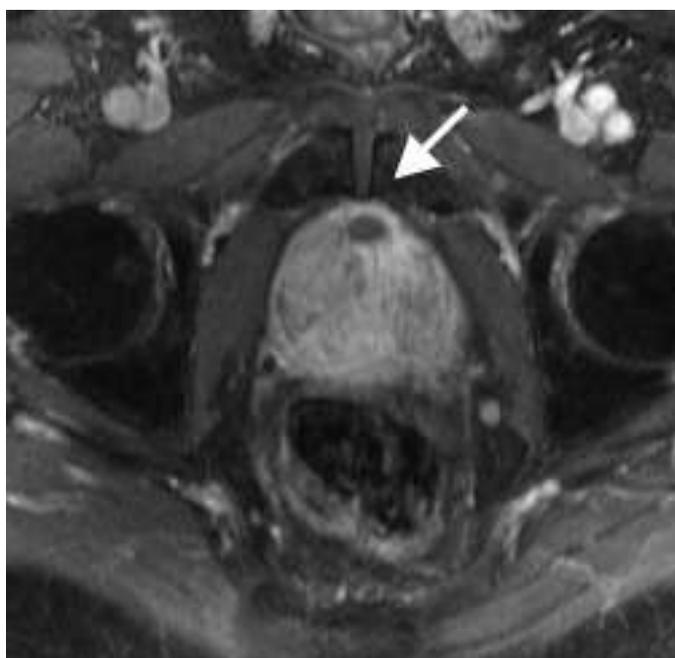
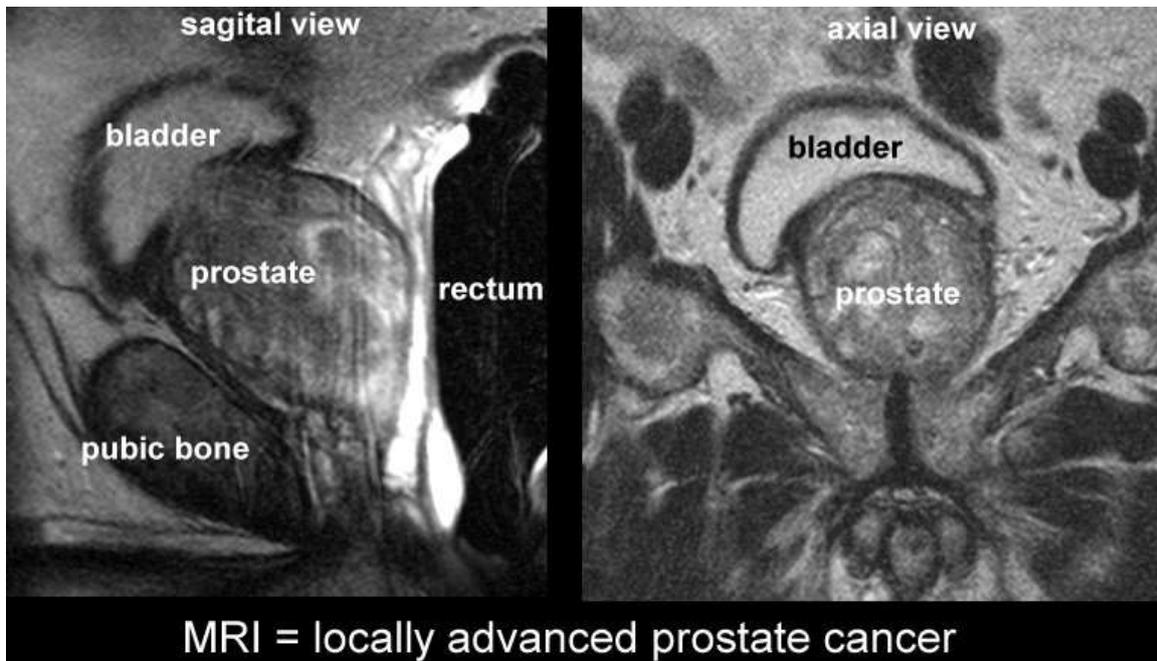
As an MRI examination is extremely noisy, you will be given protective headphones, through which relaxation music CDs will be played, you are welcome to bring your own CD that we will play for you whilst you lie in the machine

When the examination is complete, you may be asked to wait until the technologist or radiologist checks the images in case additional images are needed.

Your intravenous line will be removed.

MRI exams generally include multiple runs (sequences), some of which may last several minutes.

The entire examination is usually completed within 45 minutes or less.



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## What are the benefits vs. risks?

### Benefits

- MRI is a noninvasive imaging technique that does not involve exposure to ionizing radiation.
- MR images of the soft-tissue structures of the body including the prostate and other pelvic structures are clearer and more detailed than with other imaging methods. This detail makes MRI a valuable tool in early diagnosis and evaluation of the extent of tumors, such as prostate cancer.
- MRI has proven valuable in diagnosing a broad range of conditions, including cancer, and **benign** conditions such as benign prostatic hyperplasia and infection.
- MRI enables the discovery of abnormalities that might be obscured by bone with other imaging methods.
- The contrast material used in MRI exams is less likely to produce an allergic reaction than the iodine-based contrast materials used for conventional x-rays and CT scanning.

## Risks

- The MRI examination poses almost no risk to the average patient when appropriate safety guidelines are followed.
- If sedation is used, there are risks of excessive sedation. However, the technologist or nurse monitors your vital signs to minimize this risk.
- Although the strong magnetic field is not harmful in itself, implanted medical devices that contain metal may malfunction or cause problems during an MRI exam.
- Nephrogenic systemic fibrosis is currently a recognized, but rare, complication of MRI believed to be caused by the injection of high doses of gadolinium-based contrast material in patients with very poor kidney function. Careful assessment of kidney function before considering a contrast injection minimizes the risk of this very rare complication.
- There is a very slight risk of an allergic reaction if contrast material is injected. Such reactions usually are mild and easily controlled by medication. If you experience allergic symptoms, a radiologist or other physician will be available for immediate assistance.

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### • **What are the limitations of MRI of the Prostate?**

- High-quality images are assured only if you are able to remain perfectly still and follow breath-holding instructions while the images are being recorded. If you are anxious, confused or in severe pain, you may find it difficult to lie still during imaging.
- A person who is very large may not fit into the opening of certain types of MRI machines.
- The presence of an implant or other metallic object sometimes makes it difficult to obtain clear images. Patient movement can have the same effect.
- A very irregular heartbeat may affect the quality of images obtained using techniques that time the imaging based on the electrical activity of the heart, such as electrocardiography (EKG).

- MRI cannot always distinguish between cancer tissue and inflammation or presence of blood products within the prostate, which sometimes occurs related to a prostate biopsy. To avoid confusing the latter with the former on imaging, prostate MRI may be performed six to eight weeks after prostate biopsy, if possible, to allow remnants of bleeding to resolve.