



EACVI

European Association of
Cardiovascular Imaging

What is a cardiac magnetic resonance imaging?

Cardiac magnetic resonance imaging (MRI) uses a powerful magnetic field, radio waves and a computer to produce images of the heart and structures around it. These high-resolution images are acquired non-invasively and without radiation. Detailed and moving images of the heart, its valves and blood vessels are used to evaluate the anatomy and the function of these structures.

Cardiac MRI is used to detect or monitor different cardiac conditions. Some of these conditions you are born with, while others are heart conditions acquired later in life. Depending on the clinical question(s), the images taken are tailored to answer this. Some scans might require the use of dye. The average scan lasts for 45-60 minutes but may take longer.

Uses of Cardiac MRI

- Cardiac MRI allows detailed assessment of the heart anatomy and blood flow without the need of radiation. It is used to measure heart size and function. This is useful for diagnosis and monitoring of children and adults with congenital heart disease.
- It can assess the effect of limited blood flow to the heart muscle (coronary artery disease) by doing a stress scan and detect if there is scarring within the heart muscle after a heart attack.
- Its tissue characterisation capabilities make it possible to diagnose specific disorders of the heart muscle.
- It can diagnose different inflammatory conditions of the heart, the lining around it (pericardium) and/or blood vessels.
- It can evaluate the cause of funny heart beats/rhythm (arrhythmia), unexplained fainting episode (cardiogenic syncope) or near sudden death.
- Evaluating the heart valves for tightness (stenosis) or leakiness (regurgitation).
- Diagnosis and monitoring of children and adults with congenital heart disease
- Planning a patient's treatment for cardiovascular disorders.
- Monitor the progression of certain conditions over time such as heart failure, size of big vessels (aorta).
- Evaluate the effects of medical and/or procedures over time.
- Evaluating masses in or around the heart.

When do we use it?

We use it as a when we need additional information is needed to diagnose, monitor or plan a procedure that is not addressed by an echocardiogram.

How it is performed and what will happen during the scan?

You will be asked to fill out a safety screening form before your scan. The form will ask if you have any medical objects and/or devices, metal or sharpnells in your body, history of medical objects in your eyes, pregnant, claustrophobia, COPD or asthma and any kidney problems. This is important as some of these devices are not safe or need special preparation prior to the exam.

Before entering the scan room, you will be asked to change into a hospital gown and leave your clothes, all jewellery, metal and electronic items in the designated locker or storage area. You will also be asked to remove any removable dental work or hearing aids.



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This is to comply with safety regulations related to the strong magnetic field and prevent artifacts from distorting the images acquired.

You will then be taken to the scanner room. Small sticky patches, electrodes, will be put on your chest. The electrodes are connected to a monitor that shows a tracing of your heart rhythm. This is to take images of your heart. An MRI coil is light piece of equipment place on your chest to take the pictures and a small pad on your tummy to monitor your breathing. If you are having a stress cardiac MRI, a blood pressure cuff will monitor your blood pressure. You will also be given a headphone and a buzzer to communicate with the radiographer.

The MRI machine is a large cylindrical tube surrounded by a circular magnet. You will lie on a table that slides into a tunnel towards the centre of the magnet. You will need to lie still during the exam and comply with the breath holding instructions because movement can cause blurring of the images. It is a painless procedure. Some people feel a slightly warm sensation in their chest. Depending on the type of scan, you may receive a dye to better assess your heart muscle and/or assess blood vessels. You may feel a warm sensation or a metallic taste in your mouth. Allergic reactions from this type of dye are uncommon and includes nausea, vomiting and headache. Very rarely, hives, itchy eyes, or other allergic reactions occur. If you have allergic symptoms, tell the radiographer.

Any preparations needed

Eating and drinking before an MRI varies between the type of cardiac MRI scan performed exams and the centre doing it. You should receive instructions from the facility that will perform your exam. If you haven't, please contact them directly. Take food and medications as usual unless your doctor tells you otherwise.

Please do not put lotions, creams or powders on your chest as this will prevent the electrodes from sticking.

If you weight 120 kg or more, please contact the team that has sent you the appointment for the scan.



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