

## MRI in patients with Cardiac Implantable Electronic Devices

### Can patients with cardiac implantable electronic devices undergo an MRI?

An MRI scanner is a strong magnetic field. These magnetic fields do not cause pain or tissue/organ damage. But these strong magnetic fields would interact with cardiac implantable electronic devices (pacemaker and implantable cardioverter defibrillators). For this reason, cardiac implantable electronic devices were contraindicated for MRI for many years.

However, as time passed, it was increasingly recognised that more than half of us will need MRI scan in our lifetimes. This led to major developments and new designs “MRI conditional” devices to allow MRI provision to patients who have cardiac implantable electronic devices (CIED).

The term “MRI conditional” means that MRI scanning can take place if you have a cardiac implantable electronic device if certain “conditions” are fulfilled:

- Using models that have been designed to function safely in MRI
- Appropriate checks and programming of device pre and post MRI by a physician
- Safety protocol is followed

### Any preparations needed?

When you get a MRI conditional CIED, you will receive a card identifying your device, including manufacturer, model name and model number.

It is important and helpful to have this card available because that gives your imaging facility all the information needed on whether and to determine whether an MRI scan can be performed safely.

Just before the MRI scan, the implanted device will be programmed to safe mode by a specialised cardiologist/physiologist and it will be reprogrammed again after the MRI scan is completed. By undergoing the MRI scan, we can reassure you that it will not damage your MRI conditional CIED if undertaken in the “conditions” listed above.



**EACVI**

European Association of  
Cardiovascular Imaging

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

You may have your MRI as an outpatient appointment or as part of your stay in a hospital.

During the MRI scan, an advanced cardiovascular life support certified person with expertise in device programming is present.

All scan sequences of the MRI exam will be set up to be within the limits and conditions specified by the implant vendor. Apart from these modifications , you will receive a MRI scan to answer a clinical question as someone without cardiac implantable electronic device.

