

# 1. MR guidelines

## 1.1. Responsibilities

For each examination or any other use of the MR scanner there is a chain of responsibility. The most important individual in that chain is you. You must be aware of the normal behavior of an MR scanner and the conduct with both research subjects and patients. Moreover, you should know what to do in case of emergency. Next in line is CMIV itself, that is Anders Persson. Finally it is the hospital that is responsible for the well being of all people inside the premises. But of course, common sense is always most important.

## 1.2. Research projects

Your research project has to be approved by the '*Scientific Research Council at CMIV*'. Contact Maria Kvist ([maria.kvist@liu.se](mailto:maria.kvist@liu.se)) for more information on how to apply. In addition, ethical permit from EPN for projects involving human subjects is required before you can begin your project. See <https://etikprovningsmyndigheten.se/>

## 1.3. MRI driver license

In order to minimize the risk of technical failure, operator mistakes and personal injury, at least one individual with a CMIV MRI driver license or hospital permission, must be present when running the MRI system. A CMIV MRI driver license can be obtained after i) active participation in the MRI safety course, given regularly at CMIV, ii) reading this handbook and iii) a successful practical test, in which understanding MRI safety and MRI handling are assessed. In this test you will go through the normal routines using a phantom: set up the administration on the scanner console, check the safety before entering the MR room, setting up a phantom for scanning, performing a standard survey scan, make some modifications of a standard protocol, send the data and clean up afterwards. Also you will need to be able to show your way around the fire extinguisher, quench button and entrance to the technical room.

To sign up for the MR-safety courses in the hospital, please sign up at the following location:

**Hospital employees:** Look up 'Säkerhetsutbildning Magnetkamera (MRT)' in 'Kompetensportalen' on Region Östergötland's intranet.

**University employees:** Catrin Nejdeby (<mailto:catrin.nejdeby@liu.se>)

For the MRI driver license, contact Marcel Warntjes ([marcel.jan.bertus.warntjes@liu.se](mailto:marcel.jan.bertus.warntjes@liu.se)).

**Even with MRI driver license it is STRONGLY RECOMMENDED NOT TO OPERATE THE MR SCANNER ALONE.**

## 1.4. Booking the MR scanner

All usage of the MRI scanner must be booked in the booking calendar (<http://booking.cmiv.liu.se>) with correct start time and end time:

Brief description: <username><project number>

Full description: <name> <telephone number> <Free text. For example, invoice information>

A booking can be deleted within a week after the booking was made. Thereafter, the time can only be changed to by the MR-nurse who is responsible for the scanner. MR-scanner time with support by MR-nurse is booked in agreement with the staff. If a booking is entered in Conrad as well, this should be written in the full description. The information from Conrad and the calendar is used as basis for the invoice. For all changes in the MR research booking contact [cmivmrbookning@regionostergotland.se](mailto:cmivmrbookning@regionostergotland.se)

- The MR staff is available 07:45 – 15:45 with lunch break 12:00 – 13:00.
- Occasionally there may be less staffing, but this is then noted in the booking.
- For all research on patients, MRI nurses need to be on site and referrals must be written.

The MRI scanner can be booked based on one of the following basis:

### CMIV Research

- Approved CMIV project
- Always specify a contact person and telephone number
- Results can likely be published
- Must be booked
- Costs: per hour (with or without MR-nurse)

### CMIV Research, evening and weekends

- Approved CMIV project
- Results can likely be published
- Can be booked on weekends or after 16:30 on research days
- Costs: per hour (with or without MR-nurse)

### CMIV MR Development

- Approved CMIV project
- Results will not be published
- Must be booked
- Necessary for a large financed study
- Must be booked (with \* after project number), but max 24 hours in advance. Paying examinations are always prioritized.
- Free

### CMIV Pilot project

- The purpose of MR pilot projects is to generate more paying MR research studies.
- Approved CMIV pilot project (contact Tino Ebbers ([tino.ebbers@cmiv.liu.se](mailto:tino.ebbers@cmiv.liu.se)))
- Must be booked
- Free

### External research

- Must be booked
- Always with personnel
- Costs after negotiation with CMIV

## **1.5. Interacting the patient at the scanner**

First check if the patient wears any metallic objects that the magnet might interfere with, ask for:

- Pacemaker
- Metal implants, stents
- Empty the pockets (pens, scissors, keys, wallet...)
- Metal clothing like shoe-soles, belt or bra-parts.
- Some make-up, tatoo's or piercings might make image artifacts
- Pregnancy

Ask the patient to sign the consensus form.

When in doubt, **DO NOT ALLOW THE SUBJECT TO ENTER THE MAGNET ROOM**

Inform the patient about what is going to happen during the examination and how long it approximately will take. Explain, if necessary, how to perform the breath hold commands. If the patient is at ease and cooperative, the image quality will increase because of reduced motion artifacts. A good preparation can save you valuable scan time and research costs.