

High Field Magnetic Resonance Imaging Center

Research MRI Suite, Basement Floor of Building 203
VAMC 4150 Clement Street, San Francisco, CA 94121



User Certification

Operation & Safety

Official MR User certification is **required** for **all** personnel who will be accessing the MRI Center in the course of their research. The objective of the MRI system operation and safety certification is to ensure the safe operation of the facilities, to protect volunteers, research personnel and staff in the daily operation of the MRI scanner. As the High Field MRI Center is located on federal property, these guidelines are also mandated by the VA. These guidelines are designed to prevent accidents due to interactions with and around the MRI system.

***Per VA mandate, all certifications expire after one year. ***

Level I – Basic Safety (Restricted Access)

Level I certification provides the knowledge necessary to ensure one's own safety during research-related activities within and around the MRI suite. Level I personnel may only have **supervised** access to the MRI suite and lack the authority to screen other individuals or bring other individuals into the scanner room. They may **not** enter the scan room without the approval of the scan operator (Level II or above). They are also prohibited from handling any MRI equipment. Certification at Level I requires training on how to screen oneself, what is and is not safe in the MRI environment, and knowledge of safety procedures for entering the MRI suite, and very basic emergency procedures (i.e. knowledge of who to call and how to rapidly access appropriate phone numbers).

When Level I Certification is complete, users will receive a yellow Level I User badge. This badge must be worn and displayed prominently at all times.

Level I users may include new staff trainees, recruiters, and schedulers.

Level I Basic MRI Safety Training requirements:

- VA TMS Training – MRI Safety
 - o MRI Safety annual mandatory training. VA 1327959
 - o Must provide CIND with a copy of a valid completion certificate (within the past year)
- VA TMS Training – Radiation Safety
 - o Radiation Safety annual mandatory training. VA 1328005
 - o Must provide CIND with a copy of a valid completion certificate (within the past year)
- Attend “CIND MR Basic Safety Presentation”, which includes (but not limited to):
 - o Subject Preparation – removal of metal, execution of screening form, explanation of MRI exam
 - o Orientation to MRI Scan room and basic MRI equipment
 - Scan door code, airlock, metal detector, table controls, intercom, emergency squeeze ball, linens, supplies storage, and usage of coils
 - o Emergency Procedure: instruction in procedures related to emergency situations
 - o Orientation to location of Siemens Quench and Emergency Run-Down buttons, and the procedure for the evacuation of a subject during an adverse event

- Review of evacuation plan.
- Review “SFVAMC Radiology Department – MRI Safety Zone Practices, Adapted for the High Field Magnetic Resonance Imaging Center”
- Review “MR System Operator: Recommended Minimum Requirements for Performing MRI in Human Subjects in a Research Setting”
 - Calamante, F., Faulkner, W. H., Ittermann, B., et. al. and on behalf of the ISMRM Safety Committee (2015), MR system operator: Recommended minimum requirements for performing MRI in human subjects in a research setting. J. Magn. Reson. Imaging, 41: 899–902. doi:10.1002/jmri.24717

Level II – Advanced Safety & Basic Scanner Operator (Limited Access)

Level II certification builds upon Level I certification, providing additional knowledge to protect the safety of others, and to safely handle basic MRI equipment. They are certified to operate the basic MR equipment (not including ancillary equipment), and also have knowledge to screen others for entry in the MRI suite. Level II users would also have more in-depth knowledge of MR safety issues, including the safety of different materials for the particular environment, the safety guidelines of the applicable IRBs, and where to get more information if needed. Level II personnel are permitted to escort volunteers into Zone IV (the magnet room). Level II personnel are not allowed to utilize or bring any ancillary equipment into Zone IV.

When Level II Certification is complete, users will receive a green Level II User badge. This badge must be worn and displayed prominently at all times.

Level II users may include scan operators and most personnel routinely involved in research activities at the MRI.

Level II Advanced Safety Training requirements:

- All components of Level I Training, plus
- Attend “CIND Advanced Safety - Mock Drills Exercise”, where users will demonstrate:
 - Procedure for the evacuation of a subject during an adverse event

Level II Basic Operator requirements:

- Minimum of 6 hours shadowing a currently active and certified Level II or III personnel performing magnet operations
 - Must submit to CIND a copy of schedule showing hours and sign-off
- Overview of MRI system start-up and shutdown procedure
- Orientation of the MR equipment room, O2 connection, valves, immobilization pillows
- Execution of routine scanning procedures
- Incident reporting and logging in the CIND Error Log Book, and basic troubleshoot
- Logging scans into the Magnet Billing Database
- Pass “CIND Basic User Competency Scan” with a CIND staff member
 - Must obtain a minimum score of 85%

Level III – Advanced Scanner Operator (Full Access)

Level III certification builds upon Levels I and II certification, and provides additional knowledge necessary for complete independent operation of the MRI system. Level III personnel have access to all areas of the MRI suite, authorized ancillary equipment (such as fMRI screens, Motion Correction, etc.), and when operating the scanner, are responsible for the safety of all research personnel, volunteers, and visitors. These individuals would have knowledge of the requirements needed to run a safe MRI environment and the proper use of authorized ancillary MR equipment. Level III personnel are authorized to operate the MR scanner during off-hours.

When Level III Certification is complete, users will receive a blue Level III User badge. This badge must be worn and displayed prominently at all times.

Advanced Scanner Operation Certification requirements:

- All components of Level I and Level II Certification, plus
- Minimum of 3 hours shadowing a currently active and certified Level III personnel performing magnet operations with authorized ancillary equipment
 - o Must submit to CIND a copy of schedule showing hours and sign-off
- Training on proper usage and storage of authorized ancillary equipment
- Attend “CIND Advanced User Scan”, where users will demonstrate:
 - o Procedure for setup, operation, and storage of ancillary equipment

FAQ

1. *I'm reading the following scenarios as permissible for a Level I scheduler:*

- *Scheduler turns over the subject in the lobby area, but can then proceed with the subject and Level II into the lockers area since the Level II has taken charge of the subject and scheduler is just responsible for self.*
- *Scheduler coming to pick up can be let into locker area to wait if scan not yet done, but must not be left alone with subject in locker area as Level II is required to be present and in charge.*

Yes, that's correct! Level I personnel are only trained to vouch for their own safety, not others.

2a. *I understand that someone would need to be Level II certified, since they are going into the console room and the scanner room.*

- Yes that's correct! Level II personnel will be responsible for bringing subjects into the magnet room and then utilizing the console to operate the MRI. Level II's and higher are also responsible for picking up the subjects in the lobby area with phone (zone II) and bringing them into the lockers area (zone III). Level IIs are ultimately responsible for EVERYONE's safety. They are responsible not just for patients and subjects, but the safety of Level I's as well.

2b. *Would another person need to be Level II certified if they are going into the scanner room, even if they would always be accompanied by a Level II personnel?*

- Level I personnel may enter the magnet/scanner room, with the permission and supervision of Level II/III personnel. However, a Level II user may not instruct a Level I user to escort a subject into the magnet room. Even if a Level II user gives permission to bring a subject into Zone III/IV, the Level I user is still not authorized to escort a subject into Zone III or Zone IV. The Level II users still needs to be ACTUAL PERSONNEL escorting these subjects in, as they are the ones who have received the appropriate training. Level I users do not have the required training to ensure the safety of others. **Level I users are only trained enough to vouch for their own safety.**

3. *Are there any study materials available for the basic user competency scan? Or would the tech go through the scan steps with us prior to taking the test? Just want to make sure we're prepared on the day we go in.*

- For the Level II Basic User Competency scan, the scoring sheet is attached at the end of the packet. Many PIs and lab groups prefer to train their own staff members, so we don't require any in-person training or shadowing with CIND staff. However, users will need to be able to demonstrate basic operational skills and knowledge, which is accomplished with the Competency scan.

- If your staff is completely brand new to scanning and need to learn how to operate a 3T or 7T magnet, CIND staff is available to conduct on-hands magnet training with your staff members for \$35 per hour (billed by the hour).
4. *I help move our patient and set up IV lines in the magnet room during our scans. The MRI scanner staff have always been either in the room with me or in the console room. Am I a Level I or Level II?*
- Under the supervision of the Level II-certified MRI scanner staff (in room, or observing from console room), Level I's may assist only with equipment setup that has **already** been brought into Zone IV by Level II personnel. Level I users are **NOT** allowed to move or escort a patient into Zone III (locker area) or Zone IV (magnet room). Level I users may *assist* a Level II user while moving or escorting a subject into Zone III or IV, but they are not allowed to assume authority. Remember: Level I users are only trained enough to vouch for their **own** safety.
 - Lastly, Level I users are **not** allowed to handle or operate **ANY** MRI equipment. This may include, but isn't limited to: moving the bed, switching coils, adjusting the fan, putting phantoms into the magnet, etc.
5. *What's the point of having a Level III? Don't they just do the same stuff as a Level II user?*
- Level III was specifically created with ancillary equipment users in mind. In the process of setting up their own equipment, we have had users unknowingly damage another group's equipment. We've also had broken equipment due to mishandling of equipment. There have also been instances where equipment has been improperly stored, eventually leading to damage or less than optimal use of the equipment. While repairing damaged equipment is costly, the cost of downtime for a study may be even more expensive.
 - As such, Level III was created to ensure that all users who use or bring ancillary equipment into the Zone IV (magnet room), know how to do so properly without damaging another group's setup or the MRI machine itself. Pending availability, Level III users may be granted special storage space to house their equipment when not in use. This is also for safety reasons, as by decreasing the amount of equipment constantly being brought in and out of Zone IV, we also decrease the likelihood of an accident.