MRRC Imaging Policy

1. **Read MRRC Safety Policy Document (http://mrrc.yale.edu).**
2. **To get IRB approval for a new study or re-approval of an existing study that involves the MRRC:**
   a) Approval to utilize the MRRC involves the assessment of two main components: MR safety of the proposal and MR safety of research personnel. The MRRC Protocol Review Committee must determine that the research proposal meets MR safety standards as outlined in the MRRC Safety Policy. All personnel involved in the project must provide documentation of having received MR safety training.
   b) Investigators interested in using MRRC facilities will fill out the form called Proposal for use of MRRC Resources (http://mrrc.yale.edu) and submit the form, along with research protocols and consents, via IRES IRB, the Yale Human Research Protection Program (HRPP) and IRB electronic system. The HRPP will notify the coordinator of the MRRC Protocol Review Committee (eluis.perz@yale.edu) when a study requires MRRC Protocol Review Committee review and approval.
   c) If modifications that impact MR, other than eliminating the use of the MR Center facility in TAC, are made to an existing approved protocol, the MRRC Protocol review committee must review the protocol. When modifications to studies requiring MRRC review and approval are submitted in IRES IRB, the HRPP staff will request review from MRRC Protocol Review Committee.
   d) A committee member who is listed as a participant in a protocol may not participate in the review process beyond providing information that is requested by the committee.
   e) Once the MR safety of the project is approved by the MRRC Protocol Review Committee, all research personnel associated with the project and will come to the MRRC during the study must undergo MR safety training. The training is accessed through Workday Learning and consists of the following: (1) Online course and quiz on MR safety, one-time requirement; (2) GE safety video, a one-time requirement; (3) Read and attest to the MRRC Imaging Policy form, a one-time requirement, and; (4) MR safety training questionnaire, required every 2 years. The 2 links for this training can be found at http://mrrc.yale.edu and will be tracked for each researcher by Workday Learning (WDL). All research personnel who join an ongoing project must also be trained in MR safety.
   f) A project is considered to be approved and ready for IRB submission after the MRRC Protocol Review Committee approves of the MR safety aspects of the project and after all personnel have submitted documentation of MR safety training. A letter will be sent to the primary investigator stating that the research protocol is approved. A letter will be available in IRES IRB.
   g) Once approved by MRRC, the HRPP will send the protocol application and approval letter to the IRB for review.
   h) For annual IRB renewals, it is not necessary to resubmit your protocol to the MRRC Protocol Review Committee if we have already approved it and your protocol meets the following requirements: (1) new or different intravenous infusions of any kind will not be used, (2) new or different medications will not be administered, (3) the subject population will not change and (4) the MR sequences will not change. If your protocol does not meet these requirements, notify the HRPP so that it can request approval from the MRRC Protocol Review Committee.
3. **IRB Training**
   a) Every study requires an approved IRB protocol and the MR techs will not book your imaging time without a valid up to date IRES IRB #. Information is available at the HRPP website: https://your.yale.edu/research-support/human-research-protection-program
   b) Every investigator dealing with subjects/patients must have completed IRB training. For required and available training options, see https://your.yale.edu/research-support/human-research-protection-program/education-and-training/human-research-training

4. MR Safety

a) The magnet is ALWAYS ON – and the magnetic field is extremely powerful.
b) The magnet can pull metal from your hands.
c) If it does pull something from your hands it will pull it to the center of the magnet. This could injure or kill the person in the magnet and could injure or kill any research personnel who might be next to the scanner.
d) It will also possibly ruin the magnet, which could cost several million dollars.
e) NEVER enter the magnet room with any metal whatsoever.
    1. No metal in your pockets, no metal in your hands, no jewelry
    2. No credit cards or ID cards – they will be erased
    3. No computer disks, pens, scissors, syringes, scalpels, knives, oxygen tanks, carts, or other tools – EVER.
    4. No one should enter the magnet room unless they have been screened for metal and are well aware of this issue.
f) Subjects with tattoos containing metal in the ink (subjects should confirm with their tattoo artist that it does not), pace makers, hearing aids, metallic implants, vagal nerve stimulators, aneurism clips, colored contact lenses, etc. cannot be scanned.
g) Each subject must fill out a CHECKLIST (obtained from the MR tech) prior to scanning.
h) You should prescreen subjects before you book them so you don't end up having to cancel when you learn at scan time that they have braces or a pacemaker. You will be charged for the scan even if your subject shows up but is ineligible due to metal or other.
i) The magnet is ALWAYS ON – never enter the magnet room with any metal. Always double check yourself and your subject before walking through the door (e.g., pockets empty, jewelry and watch off, no hair clips/pins, etc.)

5. What you need before going to the magnet

a) Your entire procedure must fit into your scheduled time slot. This includes everything you need to do in the console or scanner rooms---all instructions, practice, equipment set-up, structural scans, functional scans, and breakdown/clean-up. If your slot is scheduled for 1.5 hours, your slot runs from the scheduled start (not the time you show up) until the scheduled end (not the necessarily the time it takes to finish the entire procedure).
b) You need to have programmed your task and put it on the computer at the magnet console and checked the timing on the computer at the console. This can be done off-hours or during magnet down time, or cancellations.
c) You need to know the exact timing of your task.
    1. How long is each run
    2. How many runs
    3. How many acquisitions to discard at start (i.e., disdaqs).
d) You need to have defined your imaging protocol including parameters for
    1. Localizer scan
    2. Anatomic scan
    3. Functional scan(s)
    4. 3D
    5. etc.
e) The imaging parameters that must be defined include number of slices, slice thickness, FOV, matrix size, number of images per slice, TE, alpha, TR, pulse sequence, bandwidth, etc.
f) All parameter and timing details should be included on a detail sheet that you give to the tech for each scan (a template is attached).
g) You **must** supply the billing information (e.g., COA) for each scan prior to scanning. The COA must be congruent with the IRES IRB protocol number.

6. **When to show up**
    a) You and your subject should show up **at least 15 minutes prior** to the start of your scanning slot (sooner if your instructions/practice, etc. require more time). This allows time to fill out the pre-scan CHECKLIST and instruct the subject on the task etc prior to moving into the magnet.
    b) Please make sure your subjects know who they are to meet and where.
    c) All interviewing and training of the subjects is to be done in a behavioral testing room, not the waiting room. (Link to the behavioral testing room)
    d) You should be ready to put the subject in the magnet when your slot is scheduled to start.
    e) Do **not** bring your subject down to the magnet room early. Call up the appropriate scanner to let the MR tech know that you are ready, using the phone in the waiting area. They will inform you when they are ready for you to come to the scanner with your subject.
    f) Do not bring a crowd of people with you – the number of people should always be minimized and all chatter should be focused on the study at hand. It is very difficult for the MR techs and the subjects to focus on the task at hand if there are too many people in the room having multiple conversations.
    g) It is sometimes OK to bring guests to observe a study but you must clear this with the MR tech ahead of time. Due to confidentiality issues, you should also confirm that your subject does not mind.
    h) Families and relatives of the subject must wait in the waiting room.

7. **What to expect from the MR Techs:**
    a) The MR techs will enter your protocol into the system.
    b) They will help with getting the subject in and out of the magnet.
    c) They will perform all scanning on the subjects.
    d) They will not help with the task.
    e) You should help them with the projector and/or sound system and work with the subject to ensure that they can see/hear adequately.
    f) The MR techs can cancel your study if they feel some aspect is inappropriate.
    g) It is your responsibility to ensure that the scan prescription for each subject covers the area of the brain you want covered. Please pay attention to this when the prescription is defined during the exam.

8. **What not to expect from the MR Techs:**
    a) The techs will not define your acquisition strategy for you.
    b) You must have worked out the number of slices, imaging parameters etc. before arriving at the magnet: talk to someone who has done such a study or an MR physicist to help define parameters.
    c) The tech's will not describe the task to the subjects or answer questions about the paradigm.
    d) They will make every effort to help claustrophobic subjects but it will be their decision as to whether to scan such subjects or not.
    e) You need to know how to run the stimulus presentation programs and inform the tech as to what equipment will be needed in terms of visual or auditory stimulus presentation (prior to putting the subject in the magnet) and whether or not the subject requires a response box and which one.
    f) Do not expect the techs to copy their logbooks for you (see #12 below).
    g) It is the PI's responsibility to train their RA's in use of paradigm presentation equipment [MAC/PC/Audio/Video etc.]

9. **Subject Selection:**
    a) Please review the pre-MRI CHECKLIST with the subjects when recruiting.
    b) Very obese, claustrophobic, or metal filled subjects are not suitable.

c) Colored Tattoo's and piercing can be a problem. All body piercings must be removed BEFORE the subject arrives at the scanner (they often have difficulty removing the jewelry, so they should do this ahead of time). Colored contact lenses must be removed.
d) Subjects with cardiac pacemakers cannot be scanned.
e) It is your responsibility, if performing fMRI, to ensure that the T2*-weighted acquisitions are not blown out by subject dental work or other metallic artifacts. Scans that are corrupted due to improper subject screening are not reimbursed.

10. What you need to record:

a) You need to record all the subject info, age, weight, race, gender, and all of the imaging info including series number, and imaging parameters for each scan obtained.
b) Please record all of this in a lab book and bring the lab book each time you scan.
c) You need to get the lab book yourself – we do not provide them.

11. When the scan is finished:

a) Please escort the subject back to the waiting room and ensure that they know how to get out of the building.
b) Make sure to clean up any mess you made in the console area, and help the MR tech put things in order for the next study.
c) BE SURE to return all equipment to its normal state, this includes monitor/projector resolution, luminance, computer extensions, etc.

12. Data Transfer:

a) **No data is backed up by the MR techs.**
You should transfer all of the data from the MRRC server to your workstation immediately after scanning. https://medicine.yale.edu/mrrc/users/Data%20Transfer_8419_284_1310_v1.doc
b) Failure to transfer and backup your files can result in loss of data if there is a computer glitch.
c) You will not be reimbursed for studies lost due to lack of timely transfer.
d) If we need to recover data for you there is a surcharge per study.

13. Scan time Charges:

a) You will be charged for scan time whether or not you show up. The MRRC policy regarding scanning is that we charge for booking the scanner.
b) The scan time includes the time it takes to get the subject into the magnet at the start and out of the magnet at the end. If you constantly go over your booked time you need to either shorten your protocol or extend your slot by 30min. (slots are allocated in minimum 30min increments).
c) There is a minimum 2-week notification required to relinquish a slot and avoid paying for it.
d) There is a listserv fmri_slots@mailman.yale.edu where slots can be posted to the community for sale. If someone picks up your slot and the Chief Tech is notified, the new user will be responsible for paying for it and you will not. If no one picks up the slot you will be responsible for paying for it.
e) Our scan fees are posted on our website: http://medicine.yale.edu/mrrc/resources/charges.aspx and these typically increment 2-4% every July 1 to keep pace with inflation.
f) Industry rates are double.
g) Outside users pay a premium to cover overhead (the Dean's tax) not captured by Yale with external grants.
h) If you bring the MR techs in for a special study off hours and they are paid overtime there will be an incremental fee added to cover the overtime.
i) Excessive cancellations or selling of a permanently allocated slot (defined as selling or not using a slot >50% of the time) will result in the slot being assigned to another investigator.

14. What to do after a scan.

a) **Transfer your data to your lab immediately (within 2-3 days) after each scan.**
b) **Check the data to ensure that all of the data was successfully transferred.**
c) **Check the data quality. If we can verify that there was a scanner malfunction and the data is not usable you will be credited for the scan.**
d) **You will not be credited for the scan if the subject moved too much or had excessive susceptibility losses due to dental work or similar factors, or was unable to complete the study.**
e) **If the magnet had problems, then reporting of corrupted scans must occur within 2 weeks of scanning in order to be credited.**