Level 2 MRI Operator Training Instructions

DO NOT PRINT this section for signature and filing purposes.

Overview

This section provides information and guidelines for the MRI Level 2 training procedure.
The level 2 Operator training is intended to prepare an individual to scan human subjects without a technologist present. It is strongly encouraged to have the MR techs operate the scanner during staffed hours.

Initiation of Training

Training is initiated by the trainee's Supervisor (PI) by these steps:

1. Download the "Application for and Verification of Level 2 Training" form and schedule a meeting with the Scientific Director.
2. Discuss applicant's options with the Scientific Director or designate to confirm need and sign form.
3. The application request is brought forward to the Imaging Centre Operations Committee.
4. Training commences.

Curriculum

The level 2 training curriculum has these steps:

1. 10 hours of observation of others scanning.
2. Classroom time. This is typically 3-4 sessions of 1-2 hr each.
3. 1-3 phantom scans while supervised.
4. 1-2 development scans of a human while supervised. Should not include study data collection.
5. 10 supervised scans with the trainee as primary Operator, with the scan subjects typically from the trainee's research study.
6. Final approval from designated Centre Investigator.

Notes

1. The "observation/assisting hours" are participation in scanning sessions under the supervision of an approved scanner Operator. This previous experience should include a variety of roles, including observation, consenting, screening, and assisting with scanning subjects. All activities must be completed under the supervision and at the discretion of an approved Operator or MR technologist.
2. Individuals with equivalent experience in MR scanning obtained outside of the Imaging Centre may have this requirement reduced from 10 hours to 5 hours of local scanning experience upon satisfactory confirmation of previous MR scanning experience. This verification is typically provided in a letter signed by the Director (or designate) from the previous Centre. Previous experience must be within the last 12 months.
3. The training checklist is meant as the **minimal** amount of knowledge and experience required by a trainee to safely **operate** the 3T Diagnostic MR Scanner at the Imaging Centre. Experience, good judgement, and logging a number of operational hours of supervised scanning are required for the trainee to become an approved autonomous scanner Operator.

4. The phantom scans are organized by the supervising Operator to give the trainee an opportunity to learn the scanner equipment controls without the additional concerns of consenting, screening and subject care. The trainee is supervised by an approved MR Operator.
5. The development scans require the enlistment of a volunteer subject who will be consented and screened according to the Development ethics protocol. The trainee is involved in all phases of the scan procedure at the discretion of the supervising MR Operator.
6. The final phase has supervised research scans with subjects typically drawn from the trainee's research study. The trainee must be directly involved in all phases of the scan procedure under supervision by an approved MR Operator.
7. The 10th scan should be supervised by the Scientific Director or designated approved Operator. The supervisor will examine the trainee and sign for Final Scan Approval.

Grandfather clause

Those students who have already begun their level 2 training will be able to complete it under the previous rules or the new rules. New level 2 trainees will only be permitted to follow the new rules.

Commitment to training

Application to level 2 training requires a commitment to assist with the training of future level 2 trainees in a manner determined by the Scientific Director. This commitment to training is renewed at the annual status check.

Status Check

The level 2 Operators will be reviewed annually. This will typically consist of a supervised scan, and potentially additional steps in the case of a person without recent Operator experience. The level 2 privilege will be renewed at the Scientific Director's discretion.

CAIR ACH Imaging Centre – Application for and Verification of Level 2 Training

Application for Training

Applicant: _____ ☐ **Trainee** ☐ **Staff** ☐ **Faculty**

Department: _____ **Email:** _____

I wish to apply to be trained in the operation of the 3T GE MR Diagnostic Scanner at the CAIR ACH Imaging Centre (**Level 2**). I understand that this training and the resulting scanner access is a privilege that can be revoked by the Centre or by AHS for failure to follow appropriate policy and safety procedures. I understand that I will need to complete an annual status check and assist in training others in order for this approval to remain valid. I understand that only approved research subject groups can be scanned using this approval, and that scanning a subject requires another level 1 or 2 trained person to be present.

Applicant Signature/Date:_____

As Supervisor, I support this application for Level 2 training. I understand and agree to the resources invested in this individual's training, and the risks associated with this individual upon successful completion of training.

Supervisor: _____ **Signature/Date:**_____

Upon successful completion of Level 2 training and final research scan approval by Scientific Director or designate, the form is to be approved and signed below by the Department Head.

As Radiology Department Head, I support the final approval of this applicant as a Level 2 trained MR Operator. I understand and agree to the risks associated with this individual operating the ACH 3T MRI.

Radiology Dept. Head:_____ **Signature/Date:**_____

Upon final approval by the Radiology Department Head, the original forms are to be provided to the ACH Diagnostic Imaging department administrator (Cathy Wall, cathy.wall@ahs.ca) and a digital copy to the CAIR Research Associate (Perry Radau, perry.radau1@ucalgary.ca).

Experience

Applicant: _____ **Supervisor:**_____

Observation / Assisting Experience

The "role" may include observation, consenting, screening, or assisting with scanning at the discretion of the supervising Operator.

Date	Duration (hr)	Role (Observation, consenting, screening, etc.)	Supervising Operator (Name / Signature)

The total duration must be at least 10 hours. Total Duration:_____

Phantom Scans (1-3 required)

Date	Supervising Operator (Name / Signature)

Development Scans with human volunteer subject (1-2 required)

Date	Supervising Operator (Name / Signature)

3T MR Training Checklist

Applicant: _____ **Supervisor:**_____

*The items listed below will be covered formally by various instructors and not necessarily in the order listed. The checklist provides a guide to the **minimal** amount of knowledge that the trainee is expected to learn in classroom and hands-on sessions.*

1. **Power, Reboot, Emergency Off** (Instructor/Date: _____)
   - ❑ Understand the power distribution unit (PDU) and breakers.
   - ❑ Know when the compressor is not running and how to reactivate it accordingly.
   - ❑ Be able to reset the transceiver-processing system (TPS).
   - ❑ Be able to reboot the console only (i.e. System Restart).
   - ❑ Be able to perform a complete system shutdown and full reboot.
   - ❑ Be familiar with all of the Big Red buttons for an Emergency Stop/Off.

2. **Consenting, Screening** (Instructor/Date: _____)
   - ❑ Fully understand the meaning and nuances of the consent form.
   - ❑ Be able to complete and verify the consent form.
   - ❑ Fully understand the meaning and nuances of the screening form.
   - ❑ Be able to complete and verify the screening form.
   - ❑ Be familiar with best clinical practices (professionalism, due diligence, etc.).

3. **Contacting the Right Personnel** (Instructor/Date: _____)
   - ❑ Know whom to contact internally (why and when).
   - ❑ Know about the Imaging Centre code calling procedure and process.
   - ❑ Be familiar with the process to evacuate a subject in case of emergency.
   - ❑ Be familiar with the 'patient event' and 'equipment event' flow charts.

4. **Radiofrequency Coils** (Instructor/Date: _____)
   - ❑ Be familiar with all radiofrequency (RF) coils.
   - ❑ Know where the RF coils reside, and how they should be stored.
   - ❑ Be able to position and use RF coils.

5. **Detachable Bed and Table** (Instructor/Date: _____)
   - ❑ Be able to dock and undock the bed.
   - ❑ Be able to manually or electronically raise and lower the bed.
   - ❑ Be able to rapidly release the table manually and pull the table out.

6. **Phantoms and Accessories** (Instructor/Date: _____)
   - ❑ Know where the phantoms reside, and how they should be used and stored.
   - ❑ Be familiar with all of the accessories in the room (e.g. monitors, goggles, projectors, etc.).
   - ❑ Know about the safety 'squeeze ball' and how to turn off the alarm.

7. **Starting an Exam** (Instructor/Date: _____)
   - ❑ Know how to position a phantom/volunteer, set the landmark and move the table.
   - ❑ Know how to start an exam.
   - ❑ Understand the differences between Normal and First Level scan modes.
   - ❑ Understand the differences between Clinical and Research modes.
   - ❑ Know how to label a scan (accession number, name, exam description, etc.).

8. **Archiving, Networking, PACS** (Instructor/Date: _____)
   - ❑ Be able to push to the picture archiving and communication system (PACS).
   - ❑ Know the PACS nodes, both clinical and research PACS.
   - ❑ Be able to check an archiving push, and remove unneeded data from console computer.
   - ❑ Be able to archive to CD/DVD.

9. **Scan Parameters** (Instructor/Date: _____)
   - ❑ Fully understand patient entry (head/feet first).
   - ❑ Fully understand patient position (supine/prone, left/right decubitus).
   - ❑ Be familiar with pulse sequences (i.e. PSDs).
   - ❑ Know how to prescribe graphically.
   - ❑ Know how to prescribe and save a series.

10. **Pre-scan and Scan** (Instructor/Date: _____)
    - ❑ Know the steps of pre-scan, both manual and automatic.
    - ❑ Be able to perform a manual pre-scan.
    - ❑ Be familiar with and understand the keyboard scan buttons (start/stop/pause).
    - ❑ Know how to use the audio options (talk, listen, volume).

11. **Viewing and Creating Protocols** (Instructor/Date: _____)
    - ❑ Know how to navigate between interface options on the 3T console.
    - ❑ Be familiar with the image viewing functions (window width/level, zoom, paging, etc.).
    - ❑ Know where to find the protocols.
    - ❑ Know how to modify existing protocols and create new ones.
    - ❑ Understand the differences between Clinical and Research protocols.

12. **Review Standard Operating Procedures** (Instructor/Date: _____)
    - ❑ Two people in the control room, including an approved Operator (level 2) and a level 1 or 2 person.
    - ❑ Be familiar with Imaging Centre requirements for participants changing to gowns, scrubs etc.
    - ❑ Understand crowd control in and around the MR control room.
    - ❑ Equipment in the MR scan room is not to be moved except by authorized personnel.
    - ❑ Be familiar with Imaging Centre policy on incidental findings.

Supervised Scanning of Research Subjects

Applicant: _____ **Supervisor:**_____

At this stage the applicant must have completed all previous steps and must be directly involved in all phases of the scan procedure.

	Date	Supervising Operator (Name / Signature)
1		
2		
3		
4		
5		
6		
7		
8		
9		

Final Scan Approval

As Scientific Director or designate, I have supervised the applicant's final (10th) research scan, and I support the approval of this applicant as a Level 2 trained MR Operator. I understand and agree to the risks associated with this individual operating the 3T MRI.

Date: _____ **Name:**_____ **Signature:**_____