BRIGHAM HEALTH

BRIGHAM AND WOMEN'S
Department of Radiology

HARVARD
MEDICAL SCHOOL

# Brigham and Women's Hospital
# Department of Radiology
# MRI Research Policy

## Contents

# Policy Title: Brigham and Women's Hospital MRI Research Policy

**Policy:** Research on BWH (main campus - 75, 70 & 45 Francis St, 60 Fenwood Ave. and 221 Longwood) MRI scanners may be conducted only by certified users. Either scanner operation and/or ongoing participation in a research study constitute "research." Research scanning in this context refers to all scanning of human subjects, clinical research patients, "normal" volunteers, animals and phantoms. This document outlines BWH Research guidelines, policies, and procedures.

## User Certification

- All researchers who will be working in the scanning area must complete the following requirements before being permitted entry into the scanning area: (see Researcher Checklist in Appendix III)

    - **General BWH Requirements**
        1. Medical clearance from Occupational Health
        2. MRI Safety Training (ANNUALLY – first time at MRI Safety Training Class, annually thereafter either via Healthstream (BWH employees) or via pdf form provided by Research Assistant)
        3. MRI Research Policy Training
    - **Site Specific MRI Training- Competency form must be completed and signed by both the site physicist-in-charge and supervising PI prior to granting MRI Access.**
        1. MRI Site Orientation Training
        2. MRI Site Safety Review
        3. Code Blue Response Review
        4. Code Red Review

- Researchers who need to complete these requirements should contact the Program Coordinator (see Contact List).
- Once the training and certification is completed, the Program Coordinator will notify the site Chief Technologist to arrange for the researcher to obtain a BWH ID badge with card reader access, which will allow them 24/7 access to the appropriate magnet areas.
- Subscribe to the scheduling mailing list: http://massmail.spl.harvard.edu/mailman/listinfo/signa
- Visitors/Observers/Collaborators may be present during research scans but they must be accompanied by the study PI or BWH Co-Investigator who is responsible for the visitor. The study PI or BWH Co-Investigator must sign the visitor in, the visitor must wear an ID tag and they must complete an MRI screening questionnaire upon their first visit and sign a waiver upon subsequent visits stating that nothing on the screening form has changed since their signing. Thereby agreeing to comply with the safety guidelines set forth in the MRI Safety Manual.

## MRI Scanner Operation

(See Appendix II for MRI scanner operation certification process flow chart)

- Researchers who will be operating the MRI scanner must complete training for the scanner platform on which research will be conducted. In other words, one must have training specific to GE scanners to operate GE scanners and training specific to Siemens scanners to operate Siemens scanners.
- It is the responsibility of the project PI to provide or arrange for the essential training for project staff persons who will be operating the MRI scanners. Advice on operational training should be sought from the Chief Technologist for Research or the site physicist-in-charge for the appropriate scanner (see Contact List).
- Project staff must undergo a minimum internship with the project PI (or other designated senior investigator) prior to being qualified to operate the MRI scanner. It is up to the PI to determine the appropriate length of the internship depending on the complexity of the planned project. The PI must also ensure that each researcher is appropriately trained on the usage of all special equipment that will be used as part of the research project, such as goggle systems and power injectors.
- Before being given authority to <u>independently</u> operate the MRI scanner, staff members that have completed training and internship must then complete a site orientation by the site's Chief Technologist and must also be cleared as to their competency to operate the MRI scanner by the site physicist-in-charge.
- Two check-off forms must be completed; one form attesting that the staff individual has completed the appropriate site orientation signed by the site Chief Technologist and one form indicating an internship was completed with the PI and scanner competency has been demonstrated on the scanner which will be used for the research study. This form must be signed by the project PI and the site physicist-in-charge. Both signed forms must be placed in the staff member's file maintained by the Program Coordinator (sample forms available from Program Coordinator).
- MR imaging for research purposes will be classified according to one of the following operator modes:
    1. <u>Routine Imaging Mode</u> is limited to the use of standard imaging sequences and imaging hardware provided by the MRI system manufacturer. Operation may be by a certified MR technologist or a research user who has completed training and internship and has been cleared to <u>independently</u> operate the scanner as described above.
    2. <u>Research Imaging Mode</u> includes the use of non-standard 'research' sequences. Operation is by persons as in the Routine Imaging Mode but before research sequences may be used on a scanner, the sequence must be certified by the physicist-in-charge and the site Chief Technologist must be notified.
    3. <u>Development Mode</u> includes image sequence development and/or installation of non-standard 'research' sequences. This is limited to projects directly supervised by a faculty MR physicist. It is the PI's responsibility to insure that any project, which

includes installation and/or development of new hardware and software, is cleared in advance with the site physicist-in-charge, MR field-service engineer and the MR Chief Technologist for the site. Only those who have completed suitable IDEA training for Siemens scanners or suitable EPIC training for GE scanners can operate the relevant scanner in Development Mode.

## Application to Use MRI Scanner for Research

- Groups applying to use an MRI scanner for any research purposes must provide the following information for each research project requesting MRI system usage. For projects being done through the Imaging Core (including R&D pilot imaging) see the procedures for scheduling research exams in the next section. The project PI is responsible for keeping information on a project up to date. If information is not submitted, scanning will not be permitted.
- Required information for each project (form available from Program Coordinator):
  1. Title of Project
  2. Name of Principal Investigator
  3. Name of physicist sponsor (e.g. faculty MR physicist, fMRI service)
  4. A short abstract describing the project goals and procedures
  5. A list of the investigators and personnel involved with the project.
     - This should also include a list of general competencies required of the personnel in the performance of their duties (e.g. operating special fMRI equipment).
     - For personnel involved in operating the scanner, the MRI procedures that they are required to perform must also be explicitly stated.
  6. A list of all MR scanner(s) planned to be used for the project
  7. A description of all equipment, sequences or procedures that modify the MRI environment in any way.
     - For example, a complete description must be given as to what non-standard pieces of equipment are being brought into the MRI site and how they are interfacing or interacting with the existing equipment.
     - Note that BWH policy requires that certain devices used in patient care or that come into direct contact with the human subject (such as EKG machines) are cleared and tagged by the Biomedical Engineering Department (Ext. 2-8889).
     - If intended modifications are permanent (e.g. drilling holes in a penetration panel or installing cables) this must be explicitly stated and requires review by physicist-in-charge for the affected MRI system.
     - Any temporary modification that is made, even if only for the period of the scan session, must also be described. For example, if an attenuator is used during scanning and removed after each research session, this must be stated.
     - All liquids brought into the MRI area for use in phantoms must be labeled and the Material Safety Data Sheet (MSDS) must be kept on site and a copy kept by the PI.
  8. Source of funding (NIH grant, departmental source, industry, or ‘none’)

9. IRB# to be used for scheduling (if available)
10. For human studies – copy of latest IRB approval documents with a list of all approved investigators on the associated study.

- New research users will be referred to the Chief Technologist for Research to initiate the application procedure.
- The physicist-in-charge for each MRI system and the site Chief MRI Technologist will be responsible for assessing and approving the proposed project. Relevant information will be communicated to the Clinical MRI Physics Committee, which oversees policy on issues related to research use of MRI scanners.
- Applicant PI's are advised to contact the physicist-in-charge and site Chief Technologist as early as possible to discuss issues of training or use of any non-standard equipment, sequences or procedures. New Equipment request must be filled out and submitted to the Chief Technologist. The faculty MR physicist and Chief technologist will review new equipment requests and will follow the policy for New Equipment. Involvement of a faculty MR physicist in this process is strongly recommended, especially if any such non-standard equipment, sequences or procedures is anticipated.
- Any specific testing or certification, which is deemed necessary by the physicist-in-charge or by the Clinical MRI Physics Committee before granting permission to use a piece of equipment or sequence, is the sole responsibility of the PI. For example, if it is ruled that a coil be certified by the manufacturer that good manufacturing practices were used to manufacture the coil before being permitted, it is the PI's responsibility to arrange the certification and to bear all associated costs.
- The Principal Investigator must inform the site Chief Technologist and Research Assistant prior to scheduling first study. Provide IRB-number and imaging protocol (if applicable), and the estimated start date.

## Pilot Study Application Process

- Research-in-development users, with no funding for pilot scans, can apply for up to 10 pilot study exams. Contact Director of Radiology Research and Education for the application, or download the application form on the Radiology Research Administration intranet site https://www.radcommons.org/research/research.htm.
- Once the Research and Development pilot scans are approved by the Director of Radiology Research and Education and the Vice Chair of Radiology Research, a maximum of ten pilot scans is allowed. Scanning is only permitted during non-primetime hours, (generally after 6:00 PM and varies with each scanner) or when the scanner is idle.

## Research Scheduling

- All research scheduling through the Imaging Core begins with the Research Assistant.
- An intake form to get the research project set up in the Imaging Core infrastructure can be found on the Imaging Core website here: https://www.brighamandwomens.org/radiology/research-imaging-core/bwh-research-imaging-core-bric
- Once the project is set up in the Imaging Core scheduling system, researchers must email the Research Assistant with the subject's Name, DOB and Gender, and the day/time requested for the exam. For large animal research (221 Longwood ONLY) and phantom research an email request for MRI scan time to the Research Assistant is sufficient. The Research Assistant can be emailed at any time; confirmations will be sent back during the Research Assistant's scheduled hours Monday – Friday 9:30 AM – 6:00 PM. No animal or human imaging can be done until a confirmation email has been received that the exam has been scheduled by the Research Assistant.
- Human subject schedule requests should be sent to the Research Assistant at least 2 business days in advance. There can be no guarantee you will get the scan time requested if request is sent with less than 2 business days' notice.
- Funded studies may request a weekly standing or set time.
- For developmental research or groups that do not want a set amount of time each week, the Research Assistant, the PI, and MRI Management will coordinate to find appropriate times for them to conduct their research.
- Scheduling will be based upon the following basic tenets:
  1. Highest priority: funded studies for human research
  2. Funded animal research
  3. Funded phantom research
  4. Non funded human research
  5. Non-funded animal research
  6. Non-funded phantom research
- When scheduling a research human subject scan with the Research Assistant, the Ordering Provider required by the Percipio scheduling system is the PI or chief researcher involved in the study.
    - If an incidental finding is found by a BWH Radiologist doing the safety read of the scan, the Radiologist must notify the PI of the finding.
    - It is the PI's responsibility to notify the subject if an incidental finding is found when the subject's scan is read by a BWH Radiologist.
        - The PI will contact the subject to obtain permission to send the scan and summary to his/her primary care physician (PCP). If the subject does not have a PCP, a referral list of PCPs will be given to the subject.
        - If the subject permits the scan and summary to be sent to her/his physician, the PI will ask the Radiologist to send the report to the patient's PCP.
        - The PI and study staff will also send a letter of explanation to the physician explaining the context of the report (i.e., "One of your patients participated in an MRI research study during which an incidental finding was discovered"). The subject's physician will then decide whether to

follow-up on the initial finding and may contact the BWH Radiologist with questions.

- Scheduling research imaging exams through EPIC – first an order must be created and linked to the study IRB/fund number, the patient must be linked to the study, and then the exam will be scheduled in EPIC and should have a beaker in the top right corner indicating the exam is part of a research study. Questions should be directed to Margaret Lyons in BWH Research

## Cancellation Policy

- Researchers must give, at least, a 24-hour notice to cancel a scheduled exam by notifying the Research Assistant.
- Groups who must cancel with less than 24-hour notice must alert the Research Assistant, MRI Clinical Manager, and email signa@bwh.harvard.edu to let others know that the scan time slot will be open.
- Groups who cancel with less than 24-hour notice may be billed for the entire block of time. Exceptions to this rule include last minute subject cancellations or emergencies. In these cases, you must send an email to the Research Assistant – with the reason for the last minute cancellation.
- Two or more no-shows or last minute cancellations will result in the inability to schedule for several weeks at the discretion of Research Administration and the Clinical MRI Physics Committee.

## General Research Guidelines

- Always be aware of MRI safety. The magnet is always ON. It is the responsibility of all researchers participating in the MRI exam to ensure that all safety precautions are taken to prevent incidents involving research subjects, research staff or equipment.
- Absolutely no food or drinks in console area or scanner room.
- Sign logbook (available at each scanner) at every imaging session:
    - Name
    - Time in
    - Time out
    - Indicate you cleaned the room
    - Indicate quality assurance scan (3 plane localizer) was performed – record exam number and series number of scan
    - Record problems with scanner in log book
- If scanner is found in a down (non-functioning) state or in a limited use state or goes down during use:
    - Document in logbook.

    - Follow procedure in Equipment Malfunctions and Site Issues Policy section of this policy document.
- A user or research group will be held accountable if they do not document an equipment problem or issue and take appropriate action, even if they were not the cause of the problem or issue (see Equipment Malfunctions and Site Issues Policy section of this document).
- Violations by a user or research group will result in a penalty:
    - First offense – verbal warning
    - Second offense – suspension of scan time
    - Third offense – suspension of scan time and other measures to be decided on an individual basis by the Vice Chair of Research
- User must remove all ferromagnetic materials prior to entering the scan room; wallet, keys, cell phones, pagers etc.
- Under no circumstance will any material or piece of equipment be brought into the magnetic field unless it is purchased or screened by MRI staff. All equipment must be non-ferrous and be specifically purchased as such. All equipment entering Zone IV must be specifically identified whether it is ferrous or non-ferrous for that magnetic field strength. A handheld magnet is available at each scanner area. MRI staff must test all equipment for ferrous components using the hand held magnet.
- Do not use paper clips or other small metal objects (staples, etc.) around scanner room door/console area.
- Clean up:
    - Return all equipment to its labeled place on the shelves or in the drawers.
    - Place soiled linens in the laundry hamper in the scanner room. Empty and replace the linen bag if it is more than half full, or if the linens are heavily soiled.
    - Contaminated materials (excluding sharps) must be placed in biohazard disposal bin (red or orange bag). Contaminated materials are never to be placed in the wastebasket. Bring contaminated biohazard bag to designated trash area. Replace biohazard bag after removal.
        - All supplies used for Animals at 221 Longwood Ave must be removed from MRI space by Research staff.
        - Animal waste must be segregated from other biohazard waste. All animal waste must be placed in a red or orange biohazard disposal bag, labeled as animal waste and given to Environmental Services for appropriate disposal. Environmental Services can be paged at: Page AM-13284 Page PM-11312
        - Waste from recombinant DNA research is designated BioSafety Level (BSL) 3 and 4 waste, which are the most hazardous types of research waste and require onsite disinfection per the DPH regulations on medical/biological waste. BSL 3 and 4 waste must be disposed of separately from all other biohazard waste and Environmental Services must be paged for aid in proper disinfection and disposal. Environmental Services can be paged at: Page AM-13284 Page PM-11312
    - All sharps are to be placed in the plastic sharps container located in the magnet room. Sharps are never to be placed in any wastebasket. Any sharps used on

animals must be placed in a separate sharps container and must be removed from the MRI space by Research staff.
    - If trash is full, call housekeeping to empty.
- Researchers must ensure that any modifications that were made, additions or equipment that were connected to any part of the MRI system (computer, the magnet or software) to do their research exam, must be disconnected as soon as the research exam is finished and prior to the routine final QA scan. The MRI system must be returned to its original status after each research exam is completed, so that other research projects and clinical exams can be performed.
    - Violation of this policy or interference with the normal operation of the MRI system may result in the suspension of any non-compliant research projects.
- Quality assurance:
    - Run the 3 plane localizer at the end of your session.
    - Update record in the logbook.

## Human Subject Research

- Follow all procedures in General Research Guidelines section of this document.
- Certified user must be listed on an Investigation Review Board (IRB) protocol approved for the purpose of data collection: http://healthcare.partners.org/phsirb/guidance.htm
- All human subjects recruited for a study are screened by phone to rule out contraindications for MRI:
    - Telephone Confirmation Checklist
    - Weight must be < 500 lbs on GE scanners
    - Weight must be < 550 lbs on all Siemens
- Human subjects must be consented for IRB studies by an investigator listed on the associated IRB. The subject must sign the IRB consent form.
- Human subjects must sign an MRI Procedure Screening Form prior to entering scanner room. These forms are available at each MRI location.
- If there is uncertainty regarding contraindication for MRI with a Human subject:
    - Consult MRI Technologist and or Radiologist.
    - Refer to MRI Safety manual or www.mrisafety.com. Reference manuals are found at each scanner.
    - Do not scan if implanted device cannot be deemed safe.
- MRI Technologist must review the MRI safety screening form and sign off on the form prior to volunteer entering zone 3 and prior to imaging.
- The researcher should make two copies of the signed screening form and the signed consent form.
    - The original signed screening form, and the original signed IRB consent form must be filed in the “completed paperwork” bin in the scanner control room.
    - The human subject should keep one copy of the signed consent and screening forms for their records, and the researcher should keep the other copy of each in their files.

- An MRI technologist or BWH employed physician must oversee all scanning involving human subjects.
    - The BWH employed physician must meet the following four criteria
        - Must have an M.D. or D.O. degree
        - Must be licensed to practice medicine in the Commonwealth of Massachusetts
        - Must be a credentialed clinical physician at BWH
        - Must have active (non-expired) ACLS certification
    - A BWH Radiologist (who meets the 4 criteria as defined above) or an MRI technologist, with an above-defined BWH Radiologist within one minute accessibility, must be present at the scanner or control room for all studies involving human subjects where any type of prescribed drug or gas via injection, oral ingestion or inhalation is part of the research scan.
    - A human subject MRI exam in which no type of prescribed drug or gas via injection, oral ingestion or inhalation is part of the research scan must have a BWH Radiologist who meets the 4 criterial above, or an MRI Technologist (with active, non-expired BLS certification) present at the scanner at all times.
        - The only exception is MRI scanning of healthy BWH researchers taking place at night or during "off hours" in which no type of prescribed drug or gas is being used either via injection, oral ingestion or inhalation as part of the research scan. In this, and only in this case, the research scan can be conducted by no less than two researchers that have met all compliance requirements for scanner usage and have the required clearance forms fully signed in their file attesting to their training.
    - If an MRI Technologist is present for the imaging, he/she will function as the site MRI Safety Expert and is empowered and authorized to halt any imaging that is being conducted contrary to safe MRI practices.
- Human subject must remove all jewelry/metal and change into gown prior to entering scan room. Patient gowns are provided in gowning area. Human subject will also be screened using the Ferroguard Screener and the Assure system.
- Human subject must wear ear protection. Earplugs and or headphones available in each scanner room.
- Human subject must be given patient alarm squeeze ball/button. Human subject must test alarm squeeze ball prior to start of scanning.
- Ensure RF coil cables do not make contact with patient or form loop to prevent burns.
- Ensure ECG cables do not make contact with patient or form loop to prevent burns.
- Prior to leaving the scanner room at the end of the imaging exam, the researcher must make sure they have reviewed and conducted all post-scanning requirements as listed on the Post-Scanning Checklist posted in the scanner room.
- It is the responsibility of the MRI technologist to complete the exam in Epic Radiant system and send structural images to clinical PACS or research PACS for a safety read.

## 7T MRI Safety Policy

- All general safety, screening and scanning policies apply to the 7 Tesla MR scanner. In addition, there are unique issues that exist in this environment.
- The current hardware involved in 7T scanning is limited to Head and Knee scanning. Both coils for Head and Knee scans are Transmit/Receive Radiofrequency coils.
- Implant screening for any other coils will change the safety profile for heating and require a revision of this policy.
- For the fringe field outside the bore, safety restrictions with respect to spatial gradients and static field safety should be identical to our 3T environments.
- All equipment that is conditional to our 3T scanners should be able to be used in the 7T scan room but not in the bore.
- RF safety concerns for non-ferrous metal are primarily limited to areas and implants that are physically encased by RF coils.
- If the metal is non-ferrous and not in the coil coverage no significant heating should occur. Interactions between the system gradients and non-ferrous metals is still possible and a potential concern for implants, however, these interactions are similar to those on lower field systems with similar gradient equipment therefore no other concerns are present for MR safety for non-ferrous metals.
- Static field concerns are similar for all magnetic fields.
- Any ferrous objects or devices must not enter the 7T scan room.
- The 5G line is just outside of the room and clearly marked. No electronic equipment or ferrous components will be allowed inside the 5G line unless the device is MR-conditional, and the conditions permit the equipment to be beyond the 5G line.
- Spatial gradients and spatial-gradient products in the bore can be considerable as objects and patients pass through a very strong magnetic field and transverse a steep magnetic field gradient on the way to isocenter.
- The scanner bed is designed to move slowly, and any manual table controls necessary for patient care should adhere to this procedure.
- Patients may feel dizzy or experience vertigo as they transverse the bore towards/away from isocenter. This feeling should pass when the table stops. The patient should be monitored closely entering and exiting the scanner.
- Implant testing is not yet widespread for 7T. If an implant exists, the MRI staff will research and determine MR safety. If no testing has been performed, a Risk/benefit assessment will take place to determine if the scan will move forward. IRB would need to approve the implanted device.
- Per FDA guidelines the patient body weight must be at least 66lbs. This pertains to the 7T Terra only currently.
- Screening forms and intake sheets will record patient weight and must be checked prior to scheduling 7T exam or research study.

## Emergency Medical Code Responses

***LOCATION: Lee Bell MRI,***

1. Immediately remove the human subject from the scanner and scanner room (Zone 4) using MRI conditional stretcher located in Zone 3 or 4.
2. Lock door to MRI scanner room.
3. Move human subject to Zone 3 (control area) at Lee Bell.
4. If the human subject is unresponsive, Dial 26555, Code Blue,
    a. Lee Bell Breast Center MRI, CWN II. Be sure to direct the code team to the MRI Code area.
5. Initiate Basic Life Support (BLS) immediately and continue until Code Team arrives. The code cart is available in the Code room.
6. Remain with the Code Team throughout the resuscitation efforts to assure MR Safety.
7. Initiate Automated External Defibrillator (AED) operation if deemed necessary by the Radiologist during normal business hours or by Research Physician-off hours.

***LOCATION: BMRC, 221 Longwood***

Refer to BWH Emergency Response Guide: Located in the research binder at the scanners at the 221 Longwood Avenue Complex. Emergency phone numbers are listed in the Contact List section of this policy.

1. Immediately remove human subject from scanner and scanner room.
2. Lock door to MRI scanner room and move to Zone 3 (control area).
3. If the human subject is unresponsive, activate the Boston Emergency Medical Services (EMS) 911 to 221 Longwood, Ground Floor MRI. Note: you must dial 9-911 from hospital phones.
4. Initiate Basic Life Support (BLS) immediately and continue until EMS arrives.
5. Initiate Automated External Defibrillator (AED) operation if deemed necessary by the Radiologist during normal business hours or Research Physician off-hours.
6. Call Security Line 26565 to report an emergency
7. Remain with EMS throughout the resuscitation efforts to assure MR Safety.

***LOCATION: L1***

1. Immediately remove the human subject from the scanner and the scanner room (Zone 4) using MRI compatible stretcher located in Zone 3.
2. Lock door to MRI scanner room.
3. Move human subject to Zone 2 located in patient holding area (bed park).
4. If the human subject is unresponsive, Dial 26555, Code Blue, ASB2 L1 MRI. Be sure to direct the code team to the MRI Code area.
5. Initiate Basic Life Support (BLS) immediately and continue until Code Team arrives.
6. Remain with the Code Team throughout the resuscitation efforts to assure MR Safety.
7. Initiate Automated External Defibrillator (AED) operation if deemed necessary by the Radiologist during normal business hours or by Research Physician off-hours.

***LOCATION: Shapiro MRI***

1. Immediately remove the human subject from the scanner and the scanner room (Zone 4) using MRI compatible stretcher located in patient transfer room.
2. Lock door to MRI scanner room.
3. Move human subject to Zone 2 located in patient holding area (bed park).
4. If the human subject is unresponsive, Dial 26555, Code Blue, Shapiro MRI treatment room, RM# L2-026. Be sure to direct the code team to the MRI treatment room.
5. Initiate Basic Life Support (BLS) immediately and continue until Code Team arrives.
6. Remain with the Code Team throughout the resuscitation efforts to assure MR Safety.
7. Initiate Automated External Defibrillator (AED) operation if deemed necessary by the Radiologist during normal business hours or by Research Physician off-hours.

***LOCATION: Hale BTM MRI***

1. Immediately remove the human subject from the scanner and the scanner room (Zone 4) using MRI detachable table or conditional stretcher located in the scanner room.
2. Lock door to MRI scanner room.
3. Move human subject to Zone 2, BTM Code room 1 or 2
4. If the human subject is unresponsive, Dial 26555, call Code Blue
5. HALE BTM L2 building, 60 Fenwood Road,
6. Be sure to direct the code team to the MRI Code room.
7. Initiate Basic Life Support (BLS) immediately and continue until Code Team arrives.
8. Remain with the Code Team throughout the resuscitation efforts to assure MR Safety.
9. Initiate Automated External Defibrillator (AED) operation if deemed necessary by the Radiologist during normal business hours or by Research Physician off-hours.

## Magnet Quench

- **The Quench or 'Run-Down' Button** eliminates the magnetic field and should only be used in an extreme emergency such as:
    - Life threatening situation, for example, if a person is pinned against the magnet by a large metal object.
    - Advanced firefighting equipment must be brought into the scanner room.
- Procedure for **Emergency Quench**:
    1. Announce intention to quench.
    2. Activate Quench or Run-Down.
    3. Tend to injured.
    4. Evacuate patients and personnel.
    5. Switch on secondary exhaust fan.
    6. Monitor oxygen level detector.
    7. Notify BWH Radiology Administrator On Call (AOC): beeper #12640

- **<u>CAUTION</u> RELATED TO USE OF QUENCH OR RUN DOWN BUTTON:** The cost to get the magnet back online may be in the tens of thousands of dollars and there can be physical damage to the magnet. There is also a slight risk of leakage of gases into the scan room that, although non-toxic, can lead to asphyxiation. Therefore, if time or the situation allows, contact the Department of Radiology Administrator On Call beeper #12640 AOC (see Contact List) at the main hospital to help in this decision process.
- **Spontaneous Quench:** On rare occasions, the magnet undergoes a spontaneous quench whereby the magnetic coils lose superconductivity and the liquid helium boils off at an explosive rate. Gases should be vented safely to the outside. There is a small risk, however, of leakage of gases into the scan room that, although non-toxic, can lead to asphyxiation. The following procedure should be followed in the event of a spontaneous quench (same procedures should be followed in the event of an Intentional Quench):
    1. Evacuate patients and personnel from the scan room.
    2. Switch on the secondary exhaust fan.
    3. Close and lock MRI scanner room door.
    4. Notify BWH Radiology Administrator on call (AOC): beeper #12640.

## Fire Policy

In case of fire, it is MRI policy that all persons shall be evacuated from the area of danger to a designated safe area.

The MRI Researcher will follow these steps:

***Location Hale BTM, Shapiro, Lee Bell, L1***

1. Pull the nearest fire alarm and call CODE RED with room location.
2. Dial "26555"; say CODE RED; give exact fire location; identify yourself.
3. Evacuate the MRI suite.
4. Close the MRI suite door.
5. Move subjects to the specified safe zone when directed by responsible person.

***BWMRC 221 Longwood***

1. Pull the nearest fire alarm.
2. Dial 9-911-Location 221 Longwood Ground Floor MRI.
3. Evacuate the MRI suite.
4. Close and lock MRI scanner room door.
5. Move subjects to the specified safe zone when directed by responsible person.
6. Call Security Line 26565 to report a CODE RED 221 Longwood Ground Floor MRI

Additional steps must be taken during evacuation to ensure safety for all personnel, including fire personnel.

**In the event of an out-of-control fire, the magnet may need to be quenched to provide safety access by the fire department. This is achieved by pressing the "Emergency Run Down" button in the MRI suite (see notes on quench above).**

**In the event of a suspected fire (electrical), you must press the "Emergency Power Button (EPO)" (Red Button) on the scanner or the magnet gantry. This will terminate all electrical power to the MRI system**

## Equipment Malfunctions and Site Issues Policy

**Policy Title:** Researchers Responsibilities for Equipment Malfunctions and Site Issues

**Policy:** All researchers should follow these guidelines and procedure when they encounter equipment problems or site issues from 5pm – 7am Monday – Friday, and 24 hours per day on Saturday, Sunday, and holidays. This will help minimize the impact on other research and clinical staff.

Failure to adhere to this policy may result in the suspension of rights to access the MRI scanners and sites.

Issues will generally fall into one of three broad categories:

1. Equipment/Scanner Problems
2. Site Problems (heating, cooling, odors, flood, safety/security etc.)
3. Personnel Injury

**Procedure:** The researcher and MRI technologists will work as a team to resolve all issues.

<u>Equipment Problems:</u>

When a problem with the scanner occurs, perform the following initial steps:

- *Researchers Responsibility:* The researcher should perform basic trouble shooting efforts (i.e. reboot the scanner, etc.).

- *Researchers Responsibility:* Enter a description of the problem in the logbook at the scanner for all errors/problems encountered.

- *Researchers Responsibility:* If basic trouble shooting efforts are unsuccessful, notify the MRI technologists working on L1 (telephone 3-3224, or beeper # 15845) of the problems and ask for additional help trouble shooting. If trouble shooting with technologist is unsuccessful, determine, with the technologist if the vendor service line should be called.

- *Researchers Responsibility:* If it is determined a service call is appropriate, place a service call to the appropriate vendor's service line (GE CARES, Siemens Uptime). The toll free number and the system ID# are located at the control console for each scanner. The usual information requested by the service center when a call is placed includes:
    - ID # functional Location number
    - Name of the person placing the call
    - Nature of the problem
    - Any error messages, Save Error log on Siemens scanners
    - Call back number

***** Make sure to write down the Reference # given for the call, this # will be used to identify which problem/ magnet is being referred to for all discussions with the vendor's service team – until the problem is fixed. Give this # to the technologist on L1 *****

- The service center can sometimes determine from the errors if the scanner can be repaired remotely, or whether a Field Engineer (FE) needs to be dispatched. The researcher placing the call should work with the service center to try and make repairs without dispatching an FE. The FE may call back to the researcher with suggested actions that may resolve the problem.

- If an FE needs to be dispatched refer the service center and question to the L1 MRI technologists. They will be able to assess the scheduled patients for the next day, and provide the Administrator on Call with the correct recommendation (have service come in, or wait until the next morning). AOC will approve OT (if warranted) for service to be performed immediately to avoid delays to the clinical schedule.

- *Technologist Responsibility:* The MRI technologist on L1 will be responsible for paging the Radiology Administrator On-Call (AOC) (beeper 12640) and apprising him/her of the situation. The L1 technologist should also provide a summary of the schedule for the next day's patients.

- The Radiology AOC will either authorize the FE to come in, or wait until the next day.

- *Technologist Responsibility:* The L1 MRI Technologists will call back both the service center and the researcher to apprise them of the decision.

- *Researcher Responsibility:* The researcher will send an email to SIGNA (signa@bwh.harvard.edu) to notify others of the down equipment.

- *Site Manager Responsibility:* Once the problem has been resolved, FE will notify the MR Site Manager; the Site Manager will send an email to SIGNA indicating the scanner is fixed and operational.

<u>Site Problems:</u>

- Environmental Services issues should be called/paged to the appropriate beeper:

**221 Longwood-**
Page AM-13284
Page PM-11312

**BWH Main Campus**
617-732-7130- 7am-10pm
617-732-7199 10pm-7am
Page 11312 24hr/7days per week

**Shapiro-**
Page AM-36782
Page PM-11312

Environmental services will cover all locations 24 hours a day with pager 11312

- Engineering:
  BWH Engineering
  **617-732-6720 24hr/7days all locations**

  Engineering On Call
  **617-573-2050**
  **Pager# 61080**

Personnel Problems:

- If any staff sustain a work-related injury or illness they should report to the Occupational Health Services (or to the Emergency Department when Occupational Health Services is closed) immediately following the injury/illness. Refer to the work related injury/illness policy & procedure, HR-405 for more detailed information: (http://www.brighamandwomens.org/HumanResources/Documents/Policies%20and%20Procedures/Policies/HR-405_Work-Related%20Accident%20and%20Injury.pdf)

- HR-405 can be found on the BWH website (www.brighamandwomens.org) under Human Resources Policies and Procedures. Once on the website type in HR-405 in the search field to see the entire policy and procedure.

## Process to Report Incident

- Risk Management Department (or Partners attorney on call through the hospital paging system if after regular business hours) is available as a resource if the clinician has questions about appropriateness of discussion, timing of discussion, involved parties, consideration of financial reimbursement, etc.
- The clinician is encouraged to discuss the event with a colleague.

- Other resources available to the clinician include: the Ethics Service, the Radiology Administrator-On-Call and the Nursing Administrator.
- In addition, the Department of Psychiatry and the Employee Assistance Program are also available for the debriefing and processing of the event.

Details of process:

1. A copy of all Adverse Events reports is submitted to the MRI Safety Officer (see Contact List).
2. The Partners Healthcare incident report can be filled out on-line.
   - On Partners PC, click Start, click Partners Applications, click Safety reporting
   - http://safetyreporting.partners.org/riskweb3/riskweb3.dll/FrmSite
3. Ask for help from the MRI Safety Officer or MRI Operations Manager in filing the report if necessary.
4. Related documents:
   - Guidelines Related to Disclosure of Adverse Patient Events http://www.bwhpikenotes.org/HospitalwidePoliciesAndManuals/AdministrativePolicyManual/V-18A.doc
   - BWH Principles of Patient Safety http://www.bwhpikenotes.org/ComplianceCorner/JCAHO/PatientSafety/BWH%20Principles%20of%20Patient%20Safety.doc
   - Adverse Event Reporting http://www.bwhpikenotes.org/ComplianceCorner/JCAHO/RiskManagement/RM-Adverse%20Event%20Reporting.doc
5. If the study is done under a Partners IRB, also file an Adverse Events report with the Human Research Committee - http://ohr.partners.org

## Contact List

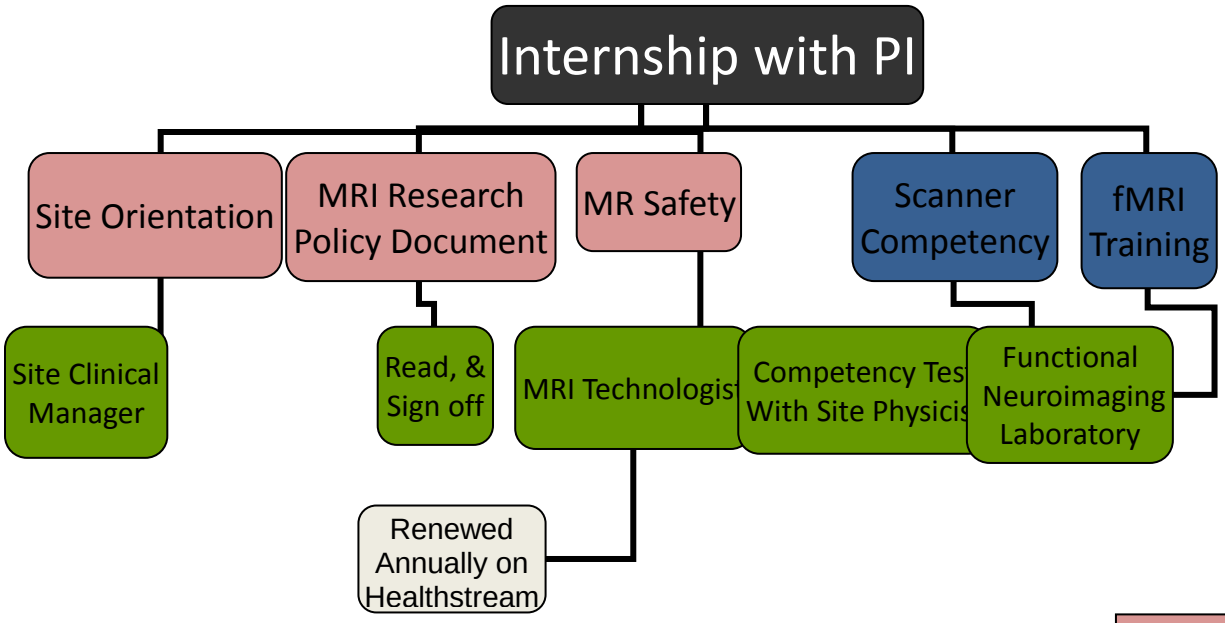
| | |
|---|---|
| **Medical Emergency, 221 Longwood** | **9-911** |
| Medical Emergency, Main Campus | 26555 |
| Security | 26565 |

- Clare Tempany, Vice Chairman of Radiology Research
  ctempanyafdhal@bwh.harvard.edu 617-732-8772
- Patti Goldberger, Senior Director Radiology Research and Administration
  pgoldberger@ bwh.harvard.edu 617-525-8758
- Stuart Hooton, Clinical Director-MRI
  shooton@bwh.harvard.edu 617-525-8954
- Aida Faria, Assistant Clinical Director-MRI- and Chief Technologist for Research
  Afaria1@bwh.harvard.edu 617-525-9424 (office), 781-467-8814 (cell)
- Danielle Chamberlain, Program Coordinator
  dchamberlain@bwh.harvard.edu 617-525-8596
- Peter Beckwith, Research Assistant
  pbeckwith@bwh.harvard.edu 617-525-8792
- To contact user community : signa@bwh.harvard.edu
- GE Cares (system I.D. on front of scanner) 800-GE-Cares
- Siemens Uptime 800-888-7436
- To use the Partners pager system, dial 25656 then enter pager number.

## Clinical MRI Physics Committee Members

1. Lawrence Panych (Co-chair and Physicist-in-charge: L1 Bay1, Bay 2, Bay3, Shapiro Siemens 3T, BTM Prisma (2), Skyra, Aera, Terra, and Lee-Bell Siemens 3T
2. Srini Mukundan (Co-chair)
3. George Chiou (Physicist-in-charge: 221 Longwood Skyra, 221 Longwood GE 3T)
4. Stuart Hooton
5. Aida Faria
6. Patti Goldberger

## Appendix I – MRI Scanner Operation Certification Process




Must be completed for access to the scanner site and scheduling

Must be completed to run the Scanner and/or fMRI System.

**Please send all completed and signed paperwork to Danielle Chamberlain for your Research Compliance File**

**Site Orientation (Site Clinical Managers)**
BWMRC (221 Longwood) and Lee Bell: Kelsey Gentile
MRI L1: Nancy Trane
MRI Hale BTM AND MRI Shapiro: Lauren Scannell

**MRI Safety Training**
Vera Kimbrell- vkimbrell@bwh.harvard.edu

**fMRI Training**
bwhfmriservice@partners.org

**Site Physicist**
Larry Panych: panych@bwh.harvard.edu

**Research Compliance**
Danielle Chamberlain: dchamberlain@bwh.harvard.edu

## Appendix II - Researcher Checklist

Please send the following to Danielle Chamberlain, Program Coordinator:

**Email: dchamberlain1@bwh.harvard.edu**
**Fax: 617-582-6033**
**Office: Surgical Planning Lab**

**1. MRI Research Policy Sign Off**
- Read, Review, Sign & Date last page

**2. Application to Use MRI Scanner**
- Complete only if you are the PI of this project

**3. MRI Safety Training**
- Contact Vera Kimbrell at vkimbrell@bwh.harvard.edu for date/time of next training session.
- Certificate of Completion must be sent to Danielle.
- Renewed yearly on Healthstream.

**4. Site Orientation**
- MRI BWMRC (221 Longwood)- and MRI Lee Bell: Kelsey Gentile,
- MRI L1- Nancy Trane
- MRI Hale BTM and MRI Shapiro: Lauren Scannell

**5. fMRI Training Completion**
- Required for anyone using fMRI at BTM, Lee Bell, L1 or 221 LNW
- Contact bwhfmriservice@partners.org for date/time of next training (typically held the 3rd Wednesday of the month after 4p).

**6. MRI Scanner Competency Form**
- Required if wish to run the scanner without a technologist present.
- Must be signed by PI, Site Physicist, and Preceptor.

**7. Subscribe to the Signa email distribution list**
- http://massmail.spl.harvard.edu/mailman/listinfo/signa

## Appendix III – MRI Animal Research Policy

**All processes that grant researcher access to BWH MRI facility must be met prior to Animal research application. Violations to these Policies and Procedures will result in a review of the incident or event with the MRI Safety Committee, the Principal Investigator and the responsible individual. Appropriate penalties will be administered.**

Additionally, the following requirements must be met prior to scheduling Animal research at any BWH MRI facility:

I. Animal protocol approved by BWH Standing Committee on Animals (BWH IACUC)
II. IACUC Training: Humane Care and Use of Laboratory Animals in Research and Teaching – Required Every Three Years (must be completed before being added to animal protocol) http://bwhbri.partners.org/Research_Compliance/Documents/Animal%20Research/animaltraining.aspx
III. Personnel must be listed on animal protocol approved by the BWH Standing Committee on Animals (BWH IACUC)

**Follow all General Research Guidelines of MRI Research Policy**

**User Certification**

I. To begin this certification process outlined below, contact the Program Coordinator
II. All researchers who will be in the scanning area must complete the following:
    a. Occupational Health Clearance
        i. TB Test – Twice per year if working with non-human primates
        ii. Animal Exposure Surveillance Program Screening Form (completed form must be submitted to Occupational Health ONCE PER YEAR)
    b. HealthStream Online Training Modules
        i. Completion of "Research Lab Safety General Training Quiz" (1X PER YEAR)
        ii. Completion of HIPAA Quiz (1X PER YEAR)
    c. MRI Safety Training; Contact MRI Safety Officer
        i. 1st training IN PERSON with MRI Safety Officer
        ii. Annual refresher training on HealthStream
        iii. Site orientation, and Policy and Infection Control Training for each intended magnet bay (Contact: Kelsey Gentile for the 3T clinical scanners)
III. Once the training is completed, Program Coordinator will provide the researcher with a card reader badge which will allow them 24/7 access to the Center. If a researcher plans to house at the SAIL satellite animal facility, they must also attend an orientation to the facility with the animal facility manager (contact below).

**General Guidelines**

I. Follow all BWH BWMRC (Brigham and Women's MRI Research Center) -221 Longwood Ave. Infection Control Policies
   http://www.bwhpikenotes.org/GeneralClinicalResources/InfectionControl/InfectionControl.asp
II. Personnel must be listed on animal protocol approved by the BWH Standing Committee on Animals

**Animal Research Scheduling**

I. Contact the Research Coordinator to schedule animal studies
II. Submit copy of IACUC-approved protocol to Research Coordinator
III. Animal scans are permitted anytime during day or night, seven days a week, with the following qualifications:
IV. The scan area must not be utilized for human patients/research subjects until at least 90 minutes (1.5 hours) have passed from the time the animal leaves the MRI suite. Refer to EH+E "Modeling and Review of Ventilation Characteristics of BWH MRI Suite at 221 Longwood Ave" report dated 4/16/12 for more information. Purpose of 90 minute turnover time is broken down to a 60 minute 'purge cycle' that performs a high air turnover and exhausts 100% of the air in the room out of the building followed by a 30 minute cycle to stabilize room temperature between 72 and 76 degrees. Purge cycle controls: staff manually press clearly marked button at each control counter, a timer installed as part of the building automation system will control the full 90 min cycle, no other work as part of the purge cycle needs to be performed by staff.
V. PI must notify 221 Longwood via telephone prior to animal arriving onsite
VI. Research Coordinator must be notified of cancellations at least one week prior to scheduled time if possible

**Animal Compliance**

I. Animal must not be in quarantine
II. Animal must be free of clinical signs of common zoonotic diseases (e.g. salmonellosis)
III. Non-human primates must be serologically negative for *Herpesvirus simiae*

**Animal Transportation**

I. All animals must be accompanied at all times by research staff from the institution of origin or a BWH designee.
II. Animals transported to, from, and within BWH buildings must be in vehicles and enclosures that comply with federal laws and regulations and the Guide.
III. Animal transport procedures must be pre-approved by BWH CCM veterinary staff
   a. BWH CCM will transport animals if coming from a BWH CCM barrier facility
   b. BWH CCM will transport animals if there is elevated risk of shedding virus/infection, to be determined by BWH CCM veterinary staff

IV. Animals must be transported in HEPA filtered, disinfected transporter, and covered in order to eliminate all sensory contact with patients (animals cannot be seen, heard, or smelled)
V. During NON-CLINICAL hours, animals may be transported to 221 Longwood at 221 Longwood loading dock, through MCP, or by entrance at Louis Pasteur Ave.
VI. During CLINICAL hours, large animals may be transported through MCP to enter Bay 3 (Siemens 3T Skyra) through side door to avoid entering main patient corridor.
VII. Preparations must be done before the animal is brought into the MRI suite- 221 Longwood Area

**Transport to MCP facility (done either on day of or day before MRI scan)**

I. Schedule a pick-up time with BWH CCM driver. Try to give him at least a couple days' notice, if feasible.
II. Make sure MRI equipment box is stocked with appropriate equipment. Check portable ventilator: oxygen, sodasorb.
III. Day of transport: Weigh animal in Thorn 16, then load animal(s) into transport cart. Place the appropriate animal records and cage cards into the MRI chart folder. You need to take this folder with you. Mark the animal(s) off of the census list.
IV. After animals are loaded into the transport cart, confirm arrival of the BWH CCM truck and then proceed down the Thorn elevators to the 1st floor back door. Load the transport cart, ventilator, and gray cart onto the truck and secure in place.
V. At 221 Longwood: push the transport cart and equipment to MCP animal facility. Unload animal(s) into cages. Place cage cards on front of cages and leave record folder in animal room. Mark the animals in on the census list. Fill up water buckets and food trays as needed.

**Day of MRI scan**

I. Prep MRI scanner and scanner suite per facility protocol (i.e., cover scanner bed, cover storage units, cover counters, etc.)
II. Sedate animal as per protocol (i.e., Telazol, Isoflurane), load onto cart, and intubate. Cover animal with drape and/or gowns. Document appropriately in animal record.
III. Transport animal to MRI suite.
IV. Load animal onto scanner, perform scan. Change oxygen tanks during scan as needed.
V. After scan is done, load animal back onto cart and transport back to MCP facility. Extubate once the animal has woken up and is breathing spontaneously. Place the animal back into cage.
VI. Document appropriately in animal record.
VII. All non sharp disposables are placed in a leak-tight plastic bag, and placed in biohazard waste back in the animal facility.
VIII. All sharps are placed in a sharps container brought along for this purpose, and removed from the MRI suite.
IX. Surfaces in contact with the animal are cleaned using germicidal Asepti II wipes.
X. Work surfaces shall be cleaned from cleanest to dirtiest, and from top to bottom.

**Transport to Thorn (usually done day after MRI scan)**

I. Schedule a pick-up time with BWH CCM driver.
II. Load animal(s) into transport cart. Place the appropriate animal records and cage cards into the MRI chart folder. You need to take this folder with you. Mark the animal(s) off of the census list.
III. After animals are loaded into the transport cart, confirm arrival of the HCCM truck and then proceed to the loading dock at 221 Longwood. Load the transport cart, ventilator, and gray cart onto the truck and secure in place. You may leave the ventilator at MCP if you will be scanning again in the near future.

At Thorn: enter Thorn via 1st floor rear doors and transport up to Thorn 16. Unload animal(s) into appropriate cages. Place cage cards back on cage fronts, and place records back into appropriate folders. Mark animal back in on census list

**Care of the Environment**

I. Equipment not required for the study must be removed or covered with non-pervious drapes before the animal is brought into the examination room (e.g., cover power injector with blue linen bag).
II. Place absorptive padding under animals (e.g., chucks, diaper)
III. Areas that may come in contact with animal blood, body fluids and dander must also be draped
IV. The MR control area doors must be kept closed while animals are in the room; no one other than personnel actively involved in the research project will be allowed in the scan room
V. The area should not be utilized for human patients until at least 90 minutes have passed from the time the animal leaves the MRI suite. The log will be signed by the researcher documenting the time the animal leaves the area.
VI. If a BL-2 animal is being scanned, the MRI suite will be designated BL-2 for the entire duration of the study and clean-up period. Investigators must display temporary signage indicating BL-2 level. BL-2 cart containing necessary PPE will be left outside MRI suite so investigators may don appropriate attire before entering.

**User Requirements**

I. PPE: If user must handle the animal at any time, protective clothing will be worn as required. Gloves must be changed before touching control panels, video equipment, telephones, doorknobs, or other devices.
    a. For BL-1 Animals: gowns or scrubs, gloves, masks, and shoe covers
    b. For BL-2 Animals or designated BL-2 Areas: disposable solid front gowns, double gloves (with a thicker nitrile glove) hair cover, shoe cover, and face mask
II. User handling the animals or sample material must wash their hands prior to leaving the MRI suite
III. The log book will be signed by the researcher documenting the time the animal enters and leaves the area.

**Clean up**

I. Universal clean-up policy below must be followed after every animal study in all BWMRC MRI suites
    a. All equipment and surfaces that come in contact with animal should be wiped down with BWH approved antiseptic wipe, including inside of magnet bore.
    b. Surface must remain visibly wet for entire amount of time specified by antiseptic wipe used (usually 2-5 minutes). Additional wipes may be used if necessary to ensure surface is wet for entire contact time.
    c. Floor should be mopped if necessary (e.g. medical waste splashes on floor).
    d. Sharps, soiled linens, drapes, medical supplies, etc. should be properly disposed of in SAIL soiled linen area (NOT IN BL-2 HOUSING/PREP AREA).
    e. Supplies and Equipment Needed for Post-study clean-up:
        i. Detergent cleaning (e.g. Buell, Organisol, Klenzyme)
        ii. Disinfectant solution (e.g. Bleach)
        iii. Antiseptic wipes (BWH approved)
        iv. Protective Wear

II. The situations described below require additional clean-up:
    a. A human patient or research subject scan immediately follows an animal scan: The MRI suite must be closed for 90 minutes after the animal has left before a human may be scanned.
    b. In order to decrease the chances of cross-contamination between colonies, whenever an animal from an outside program (NOT BWH, HMS, or RPC) is scanned either prior to or following an BWH CCM animal: The MRI suite must be closed for 90 minutes between scanning animals from BWH CCM and outside colonies.
    c. Animal being scanned has non-intact skin: SAIL staff may require equipment sterilization in the case of pathogenic tissue.
    d. BL-2 Animals: All BL-2 protocols must be followed, including proper disposal of PPE in biowaste container, appropriate and sufficient cleaning regimen, and removal of temporary BL-2 sign.

**Inspect scanner room and console area before you leave using the Animal Policy Self-Checklist:**

**Animal Policy Self-Check List**

- Animal removed
- Animal hair and body fluids cleaned
- Wipe table top, MRI coil, bore and other surfaces potentially in contact with animal using a cleaning solution
- Housekeeping called to empty trash (if necessary)
- All equipment used in research removed from area
- Uncover clinical equipment
- Pull shade back up

- Sign logbook (room cleaned, QA scan performed)
- Take with you when you leave:
    - Medical waste in biohazard container
    - Sharps in sharps container
    - Linens in linen bag

**Contact List**

Medical Emergency, 221 Longwood……. 9-911
Security…….. 26565
Occupational Health…… 28501
Animal Exposure Surveillance Program Coordinator…… 26258

| | |
|---|---|
| Clare Tempany, M.D.<br>*Vice Chairman of Radiology Research* | (617) 732-8772<br>ctempanyafdhal@ bwh.harvard.edu |
| Srini Mukundan, Ph.D., M.D.<br>*SAIL Director* | (617) 732-7260<br>smukundan@ bwh.harvard.edu |
| Patti Goldberger<br>*Director of Radiology Research and Education* | (617) 525-8758<br>pgoldberger@ bwh.harvard.edu |
| Stuart Hooton<br>*Clinical Director of MRI* | (617) 525-8594<br>shooton@ bwh.harvard.edu |
| Aida Faria<br>*Assistant Clinical Director* | (617) 525-9424<br>Afaria1@bwh.harvard.edu |
| Kathryn Holthaus<br>*Director of Animal Welfare* | (617) 732-5761<br>kholthaus@ bwh.harvard.edu |
| Sharon Peled, Ph.D.<br>*7T Bruker MRI Manager* | (617) 525-6528<br>speled@ bwh.harvard.edu |
| Jinyin Ding<br>*Research Coordinator* | (617) 525-8769<br>Jding7@bwh.harvard.edu |

To contact User Community: signa@bwh.harvard.edu
To contact SAIL Community: sailinfo@partners.org

**Online Resources**

| | |
|---|---|
| BWH Infection Control Policies: | http://www.bwhpikenotes.org/GeneralClinicalResources/InfectionControl/InfectionControl.asp |
| BWH Standing Committee on Animals: | http://animal.bwh.harvard.edu/ |
| BWH Research Compliance: | http://bwhbri.partners.org/Research_Compliance/Documents/Animal%20Research/animalresearchlanding.aspx |

## Appendix IV – Acknowledgment of Understanding of BWH MRI Research Policy

I hereby acknowledge that I have read the BWH Department of Radiology MRI Research Policy and I understand and agree to abide by the policies and procedures contained within to ensure safe usage of MRI equipment at BWH. If there was something I did not understand, I was able to have my questions answered prior to signing this acknowledgment.

I understand that this "Policy Sign Off" sheet will be placed in my research compliance file and retained by Radiology Research Administration.

I understand that any breaches of policy or safety could result in the loss of MRI scanning privileges at BWH.

---

Signature

---

Date

---

Printed Name