The University of Chicago Biological Sciences Division

Department of Radiology

MRI Research Center

MRI Safety Policy

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PURPOSE

The purpose of this policy is to provide safety guidelines for MRI Research Center employees who access Magnetic Resonance (MR) areas and to provide a safe environment to patients, study subjects and volunteers undergoing MRI examinations, and is aligned with the MR Safety Policy of the University of Chicago Medical Center. The following guidelines are not meant to be comprehensive. The MRIRC Technical Director should be consulted if there is any doubt of how to handle a specific problem.

DEFINITIONS

MRI Zones

Zone 1: This includes all areas that are freely accessible to the general public. This area is comprised of the public hallways in the vicinity of the MR area through which patients, healthcare personnel, and other employees access the MR area. The lobby of the Q300 annex is in Zone 1.

Zone 2: This area is the interface between the publicly accessible uncontrolled Zone 1 and the strictly controlled Zones 3 and 4. The hallways behind the access-controlled double doors, including the changing rooms, are in Zone 2.

Zone 3: This area is the region in which free access by unscreened personnel and/or ferromagnetic objects and equipment can result in serious injury (the control room). All access to Zone 3 is restricted, with control maintained by MR personnel. Zone 3 regions are accessible by card swipe systems. This area is comprised of the technologist control area, i.e., rooms Q303 (Ingenia, west) and Q304 (Achieva, east).

Zone 4: This is the MR scanner room. As part of the Zone 4 site restrictions, all MR scanners are installed in such a way as to provide for direct visual observation, either by direct line of sight or through camera monitoring devices. Zone 4 magnet rooms are clearly marked with a warning of "Strong Magnetic Field" that is "Always ON".

a) For the protection of all involved, Zone 3 and 4 site access restriction must be maintained by the MRIRC personnel during resuscitations and/or other emergent situations.
b) In case of cardiac or respiratory arrest or other medical emergency within Zone 4 for which emergent medical intervention and/or resuscitation is required, appropriately trained and certified MR personnel should immediately initiate basic life support and/or CPR as needed, while the patient is being emergently removed from the MR room.

Personnel

I. **Non-MR Personnel:** Departments that are not anticipated to go past Zone 1 include Social Workers, Main Labs, Food Services, Office Workers and, Physical Therapy and are not required to take the online training. These employees will only have access to Zone 1 and Zone 2.

II. **Level 1 MR Personnel:** Employees who may need to enter the Zone 3 or 4 occasionally are required to take the online MR Safety Training course annually, to ensure their own safety as they work within Zones 3 and 4. Swipe access will not be granted to these employees. These employees include but are not limited to:

    a) House Staff,
    b) Nurses,
    c) Environmental Services,
    d) Patient Transportation,
    e) Non-MR Radiology Employees
    f) Clinical Engineers

III. **Level 2 MR Personnel:** will have unrestricted access to MRI Zones 1, 2, 3, and 4. Those whose job titles are listed below have been more extensively trained and intensively educated in broader aspects of MRI safety issues (including, for example, issues related to the potential for thermal loading or burns and direct neuromuscular excitation from rapidly changing gradients). These employees will be the only employees granted swipe access to Zone 3 and access must be approved by the Director of Radiology. Level 2 MR personnel are limited to:

    a) MR Technologists
    b) Radiology Physicians
    c) Radiology Nurses
    d) Radiology Physicists
    e) Radiology Physics Residents
    f) Radiology Administrators
    g) Radiology Engineers
    h) Anesthesiology
    i) Public Safety and Security
    j) Physical Plant

Users

I. **Visitors:** Visitors (including patients, study subjects, or volunteers) are individuals who have no specific MRI safety training. Visitors may enter the Q300 Entry Area (Zone 1), but they cannot enter Zone 2 without approval of a Level 1-3 user or Level 2 personnel, nor enter Zones 3 and 4 without the approval and supervision of Level 2 personnel. All visitors who intend to enter the magnet room must undergo MRI Safety Screening, and all visitors who will enter the magnet bore for scanning purposes must either undergo informed consent for the appropriate research protocol, or complete and sign a volunteer waiver form. No one will be scanned without signing one of these documents.

II. **Level 1 Users:** Level 1 users are individuals who have undergone basic MRI safety training such as provided by MRIRC or the UCMC internal Oracle training modules (MRI Basic Safety), and have a basic familiarity with the MRI scanner and related equipment. Level 1 users may enter the scanner suite and may be present in Zone 3 with direct supervision, and they may assist Level 2 personnel with scan-related tasks as directed and desired. Level 1 users are not qualified to assume responsibility for the safety of visitors or other users. Level 1 users cannot enter the magnet room (Zone 4) nor operate the scanner without the supervision of Level 2 personnel. Level 1 users are not authorized to possess keys, passcodes, and passwords to the scanner area (Zones 3 and 4) and related equipment. Level 1 users typically include researchers and research coordinators, and ancillary support staff.

III. **Level 2 Users:** Level 2 users are individuals who have undergone advanced MRI safety training, such as provided by MRIRC or the UCMC internal Oracle training modules (MRI Advanced Safety) or equivalent, including training in the areas of MRI principles and practice, patient/subject/volunteer safety screening, equipment operating, and emergency procedures. Level 2 users are qualified to assume responsibility for the safety of visitors or other users. Level 2 users may enter all Zones 1-4 unescorted and may operate the scanner without supervision. They can create and modify scan protocols but not apply or remove software patches without the approval of Level 3 personnel. Level 2 users typically include MRI technologists and graduate students and post-docs. Level 2 users are authorized to possess the passwords required to operate the scanner and keys or passcodes to the scanner room. Level 2 authorization is automatically granted to any individual currently employed as an MRI Technologist by the University of Chicago Medical Center.

IV. **Level 3 Users:** Level 3 users are individuals who meet all of the criteria of a Level 2 user with additional advanced training in MRI physics and clinical MRI use, and who have experience with MRI research practice and procedures. Level 3 users may enter all areas of the scanner suite unescorted and may operate the scanner without supervision. Level 3 users may create or modify scan protocols and pulse sequences, and they may apply and remove software patches. Level 3 users are authorized to possess keys, passcodes, and passwords to the scanner area (Zones 3 and 4) and related equipment. Level 3 users typically include senior MRI Technologists, Research MRI Technologists, and MR Physicists

and Engineers. Level 3 authorization is automatically granted to any individual hired as an MRI Technologist or MR Physicist by the MRI Research Center.

RISKS

The MR Environment consists of MR scanner rooms and MR control rooms in the Department of Radiology. There are safety risks associated with MR such as:

I. Attraction of ferromagnetic objects (those containing iron, steel, or nickel: office supplies (clips, pens scissors), keys, equipment (cleaning, maintenance, patient support), metal jewelry, cellular phones, pagers, tablet computers).
II. Effects on implanted active devices such as cardiac pacemakers or insulin pumps.
III. Magnetic torque effects on indwelling metal (i.e. clips).
IV. Potential for heating of body tissue.
V. Danger due to cryogenic liquids.
VI. Application of contrast media.
VII. Acoustic noise

Due to these safety risks in MR environments, access to Zone 3 and Zone 4 is restricted to Level 2 and Level 3 MR personnel. Access to Zone 3 and Zone 4 will be by card swipe systems.

Personnel who are Level 1 and Level 2 compliant with the MRI safety training requirements will have their ID badges coded to provide access to the MRI areas (Zones 3 and 4). Access must be approved by the Director of Radiology prior to submitting the access request to Card Access Security.

Non-clinical study protocols are required to include an IRB-approved section describing risks of undergoing MRI examinations. Clinical study protocols will not be reviewed by the MRIRC.

AUTHORITY AND RESPONSIBILITY

The MRIRC Technical Director and MR Technologists are responsible for maintaining safety in the MR areas at all times, and are therefore authorized to control entry of personnel and devices into the MR areas.

PROCEDURES

I. Scanning Procedures

a) Any MRIRC personnel coming in direct contact with the patients, study subjects, or volunteers must wear face masks if cough, sneezing, etc., is present.

b) Before permitting entry to Zone 3 or 4, Level 2 Personnel must review the Patient MR Safety Screening Form with the patient, study subject, or volunteer.

c) If the patient or clinical study subject is incapable of responding, the screening questions must be reviewed with the referring physician or other caregiver. The documentation of the review must include:

   i) The physician's/caregiver's full name and pager number, if applicable
   ii) The MR Technologist's full name
   iii) The date and time of the review

   Non-clinical study subjects and volunteers will not be scanned if incapable of responding.

d) Patients, study subjects, or volunteers undergoing an MR procedure must remove all readily removable metallic personal belongings and devices on or in them (e.g., watches, jewelry, pagers, cell phones, body piercings (if removable), contraceptive diaphragms, metallic drug delivery patches, cosmetics containing metallic particles (such as eye make-up). Patients, study subjects, or volunteers must remove all clothing items that may contain metallic fasteners, hooks, zippers, loose metallic components, metallic threads, glitter, etc. It is therefore advisable to require that the patients, study subjects, or volunteers wear a site-supplied gown with no metal fasteners when feasible.

e) Patients, study subjects, or volunteers must be under the immediate supervision (e.g., visual or verbal contact) of a Level 2 employee for the duration of their time within Zone 3 or Zone 4.

f) If a patient's or clinical study subject's MR safety status is not known and there is a question of a ferromagnetic foreign object or implanted active devices, a review of available radiographic images will occur and/or CT or plain films may be requested. Non-clinical study subjects and volunteers will not be scanned if their MR safety status is not known and radiographic images are not available.

g) If an individual is suspected of having a non-removable ferromagnetic foreign object in or on their body, the object must be localized and identified as "MRI safe" prior to performing a MRI study.

   i) Documentation will include a note on the MRI Safety Screening Form, including signature and date/time of physician or MRIRC Technical Director authorizing the object as "MRI safe".

   ii) If verbal approval of the "MRI safe" object is obtained from the physician, documentation will include a note on the MRI Screening Form stating the following:

      (1) Verbal per authorizing physician (include name and pager number)
      (2) MR Technologist's initials
      (3) Date and Time

h) Any accompanying individuals will be screened in a similar manner.

i) Patients, study subjects, or volunteers undergoing an MR procedure and accompanying individuals should wear appropriate ear protection against acoustic noise.

j) Before the exam, the scanner bed should be covered with a clean sheet and any pillows used should be encased in a pillowcase. After the exam, the sheets should be changed

and scanner table and any surfaces touching the subject skin should be wiped down using sanitizing wipes.

k) Before the MR scan can be started, Level 2 MR personnel must do a final check to make sure that the patient, study subject, or volunteer is positioned safely and comfortably in the MR scanner without direct skin to bore contact. Patient, study subject, or volunteer extremities must be positioned so as to not create RF loops. Additionally, coils must be checked for damage and proper connection to the scanner, and cables must not create RF loops or touch the skin of the patient. Patients, study subjects, or volunteers must be given the 'call button'/'squeeze ball' as means for alerting the MR Technologist, and a two-way communication must be established during the exam.

II. Employee Training and Screening

All individuals working at MRIRC including UCMC/BSD employees who, as part of their job are expected to enter Zone 3 or 4, regardless of how frequently:

a) are required to have documented successful completion of the online UCM MRI Safety course.
b) must renew this safety competency requirement annually.
c) any person not meeting these safety requirements will be denied access the MR environment by the MR Manager or designee.
d) documentation records will be kept in Oracle.
e) will be permitted restricted access under the direct supervision of a Level 2 employee after completion of the Employee MR Safety Screening Form by a Level 2 employee.
f) must remove all readily removable metallic personal belongings and devices on or in them (e.g., watches, jewelry, pagers, cell phones) before entering Zone 4.

Note: In the event of a fire in Zone 4 a Level 2 Personnel will hit the quench magnet button before granting emergency responder access to the room.

III. Device/Equipment/Object Screening

a) As part of Zone 3 restriction and equipment testing/clearing responsibilities, all sites will have ready access to a handheld magnet. This will enable the MR Technologist, to test external devices or implants for the presence of ferromagnetic attractive forces on all employees, patients, study subject, volunteers, or caregivers entering Zone 3. Found items will be set aside and returned.
b) All portable metallic or partially metallic devices that are on, external to and/or implanted will be positively identified using appropriate reference materials and will be documented in writing on the MRI Safety Screening form as non-ferromagnetic and either MRI safe or MRI compatible prior to permitting them into a Zone 3 area.
c) All portable metallic or partially metallic objects and equipment used within the MRI areas will be screened and labeled with a MRI Safe, MRI Conditional or red Not MRI Safe label. Only MRI Safe and certain MRI Conditional (e.g., anesthesia machines, respirators) objects may be brought into the Zone 4 area. For MRI Conditional equipment:
    i) Only previously identified MRI Conditional items will be allowed in Zone 4.

ii) The location designated as safe by the MRI Physicist for specific MRI conditional items in Zone 4 will be clearly marked on the floor.
iii) The MRI Conditional items will not be moved outside of the designated location.

d) All equipment to be used within the MR areas must be checked and tagged by the Clinical Engineering Department and then listed and rechecked by the Radiology Engineering Department to verify the equipment is safe/conditional for MRI. Radiology Engineering needs to re-certify the equipment as MRI safe/conditional every time it leaves and returns to the MR areas (e.g., for maintenance).

IV. Patient, Study Subject, and Volunteer Screening

a) Pacemakers, Pacewires, and Neurostimulators

i) If a patient, subject or volunteer has a cardiac pacemaker, epicardial pacer wire, or any other type of muscle or nerve stimulator, the patient will not be scanned at MRIRC

b) Scans will not be performed if the following devices have not successfully passed device/object screening as MRI safe or MRI compatible:

i) Intracranial Aneurysm Clips
ii) Arteriovenous Malformation Clips
iii) Ports for dialysis, IV therapy, etc...
iv) Prosthetic Eyes
v) Ear Implants

c) Intravascular Devices

i) If the device was implanted six or more weeks ago, the scan can proceed.
ii) If the device was implanted less than six weeks ago, the scan can proceed only if the radiologist has identified the device as MRI safe or MRI compatible based on appropriate references, or the subject presents a medical card identifying the device as safe to scan.

d) Eye Surgery or Eye Injury

i) If the surgery was performed at UCMC since 1982, the patient, subject or volunteer may be scanned.
ii) If the surgery was performed at UCMC before 1982 or at an outside institution, the patient, study subject or volunteer should be scanned only if their ophthalmologist informs the PI and the MRIRC staff that no metal was implanted or the radiologist interprets biplanar radiographs as showing that no metal was implanted.
iii) If the eye injury involved a metallic object or fragments, biplanar radiographs should be interpreted as showing no residual metal before the scan can be performed.

e) Permanent Eyeliner, Lip Liner, Lip Coloring and Tattoos

i) The patient, study subject or volunteer should be informed of the relatively minor risk associated with the site of the tattoo.

ii) The patient, study subject or volunteer should be advised to immediately inform the MR technologist regarding any unusual sensation felt at the site of the tattoo in association with the MR procedures.
iii) The patient, study subject or volunteer should be closely monitored using visual and auditory means throughout the entire operation of the MR system to ensure safety.
iv) As a precautionary measure, a cold compress may be applied to the tattoo site during the MR procedure.

f) Dental devices

i) Most dental devices can be safely scanned, including fillings, crowns, dental implants, fixed bridges, permanent retainers, palate expanders, and others. The devices must be firmly attached to the teeth or the bone.
ii) The arch wire in common braces can be scanned in place if the patient, study subject or volunteer is able to communicate any possible heating sensation to the MR Technologist.
iii) Patients and clinical study subjects with magnetic dentures can be scanned if the dentures are removed. In addition, before MRI of head and neck is performed the magnetic tips should be unscrewed from the dental implants to prevent demagnetization and artifacts. Non-clinical study subjects and volunteers with magnetic dentures will not undergo head and neck MRI examinations.
iv) For dental devices installed outside the US the patients, study subjects and volunteers must be able to communicate any possible heating sensation to the MR Technologist.

g) Other Metallic Implants

i) Patients, study subjects or volunteers with the following implants may be scanned safely:

(1) Orthopedic or dental implants that are firmly attached to bone (e.g. joint prosthesis, screws, plates, suture wires, dental amalgam).
(2) Ordinary hemostatic surgical clips.
(3) Port-a-Cath central lines.
(4) Feeding tubes or NG tubes.

Patients with any other implants should not be scanned unless a radiologist has been consulted and has approved the scan.

h) Miscellaneous metal objects

i) Wedding bands and other non-removable jewelry can be scanned if the patient, study subject or volunteer is able to communicate any possible heating sensation to the MR Technologist, and if the magnetic forces exerted on the item do not pose a tearing risk to the tissue. For patients and clinical study subjects who are unable to communicate, the MR safety of the items will be determined on a case-by-case basis.

ii) If bullets, shrapnel, or other metal fragments are embedded, the safety of performing an MRI scan must be evaluated on a case-by-case basis. This may

include evaluation by a Radiologist or Physician and/or reviewing existing or ordering current X-ray or CT exams.

iii) Copper-based intrauterine devices (IUDs) are safe to scan at 1.5 and 3T, after the patient, study subject, or volunteer has been informed of the small possibility of dislocation.

iv) If a drug delivery patch, including contraceptive and nicotine replacement patches, is located within the imaged volume, it needs to be reviewed and may have to be removed prior to scanning. Icing/cooling the area is not recommended.

i) Electromagnetic Devices

i) Patients, study subjects or volunteers will not be scanned if any electromagnetic device is attached to or implanted in the patient's body. Examples of such devices include:

(1) Ventilators which are not specifically designed for use in MRI.
(2) IMED, IVAC, morphine pumps, or other pumps
(3) Holter monitors
(4) Chemotherapy pumps

Exception: Clinical study subjects with implanted Medtronic pumps may be scanned after the clinical service has turned the pump off, removed all drug from its reservoir, and filled the reservoir with a saline solution.

j) Pregnant Patients, Subjects or Volunteers and Healthcare Workers

i) Pregnant non-clinical study subjects and volunteers will not be scanned at MRIRC. Patients and clinical study subjects can be accepted to undergo MR scans at any stage of pregnancy if the referring clinician determines that the risk–benefit ratio to the patient warrants that the study be performed. The following should be documented in the radiology report or the patient's medical record:

(1) The information requested from the MR study cannot be acquired via other non-ionizing means (e.g., sonography).
(2) The data are needed to potentially affect the care of the patient or fetus during the pregnancy.
(3) The referring physician does not feel it is prudent to wait until the patient is no longer pregnant to obtain these data.

ii) Pregnant MR Technologists and healthcare workers, regardless of the trimester, are permitted to perform MR procedures, to enter Zone 4, and to attend to patients. However, the pregnant MR Technologist or healthcare worker should not remain within Zone 4 during the actual scanning of the patient. This is especially important for those MR personnel and users involved in interventional MR-guided examinations and procedures, since it may be necessary for them to be directly exposed to the MR system's electromagnetic fields at levels similar to those to which the patients are exposed.

k) Breastfeeding Patients, Subjects or Volunteers

i) Breastfeeding patients, subjects or volunteers scheduled for non-contrast studies may be scanned using same guidelines as for MRI patients in general.
ii) Breastfeeding non-clinical study subjects and volunteers will not be scanned using protocols calling for gadolinium-based contrast media.
iii) Breastfeeding patients and clinical study subjects will be scanned only if the scan is approved by the referring clinician and the subject agrees to receive contrast. This conversation should be documented on the MR Safety Form.
iv) The amount of MRI contrast agent that the child will absorb from the breast milk is far less than the amount deemed safe if the child were receiving contrast for a medical indication. Thus it is not considered medically necessary for the mother to stop breast feeding after the contrast-enhanced MRI.
v) If the patient refuses contrast administration, this should be documented on the MR Safety Form. The study PI should be consulted to determine whether the scan should proceed without the contrast-enhanced sequences, or be cancelled.

l) Gadolinium-based contrast media

i) Patients and study subjects will be screened for adequate kidney function prior to administration of contrast agents according to the UCMC practice. Volunteers will not be scanned using contrast media.

ii) Contrast agent will only be used in accordance with the study IRB-approved research protocol. Changes in dosing (total dose) of contrast agents, including multiple infusions will only be made in accordance with the study IRB-approved research protocol.

iii) For Gadolinium contrast agent doses of 0.1-0.3 mmol/kg, it is not necessary to discontinue metformin. When higher doses are administered, (e.g., in angiography), for subjects at risk of contrast-induced kidney injury metformin should be discontinued for 48h while kidney function is monitored.

V. MRI Safety Incidents

MRI safety incidents or "near incidents" must be reported to the MRIRC Technical Director and/or Safety Officer who will create a follow up report, including an incident summary, root cause and any corrective actions. This report will be submitted to the Director of MRIRC and kept on file.

INTERPRETATION, IMPLEMENTATION, AND REVISION

The overall effectiveness of the MRI Safety Program at the MRIRC is evaluated annually at the close of the fiscal year. The MRIRC Safety Policy is reviewed at least every three years by the MRIRC Technical Director and/or Safety Officer.

REFERENCES:

1. A06-01 Work Related Injury, Illness and Exposure Reporting
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4. Guidelines for Diagnostic Imaging During Pregnancy and Lactation, Committee Opinion, Obstetrics and Gynecology, 127(2):e75-e80 (2016)
5. Radiofrequency heating and magnetically induced displacement of dental magnetic attachments during 3.0T MRI, Dentomaxillofacial Radiology, 41:668-674 (2012).
6. Copper T 380A IUD and magnetic resonance imaging, Contraception, 75:93-95 (2007).
7. Imaging-related medications: a class overview, Proc (Bayl Univ Med Cent), 20(4):408-17 (2007).

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THE UNIVERSITY OF CHICAGO MEDICINE

Appendix A
Patient MR Safety Screening Form

Patient Name:_____Date of Birth ____/____/____Age:____

MRN:_____Height: _____Weight:_____Allergies:_____

Do you have any of the following items in or on your body?

☐Yes ☐No Aneurysm clip or coil
☐Yes ☐No Cardiac pacemaker, pacer wires, or implanted cardioverter defibrillator (ICD)
☐Yes ☐No Neurostimulator (e.g. brain, spine, bone)
☐Yes ☐No Hearing aid, eye or ear implants, springs or wires (e.g. cochlear implant)
☐Yes ☐No Tissue expanders (e.g. breast)
☐Yes ☐No Metallic stent, filter, coil or heart valve
☐Yes ☐No Magnetically activated implant or programmable device (e.g. VP shunt)
☐Yes ☐No Shunt (e.g.: spinal, brain or intraventricular)
☐Yes ☐No Insulin or other infusion pump
☐Yes ☐No Joint replacement or any type of prosthesis (including pins, screws, nails)
☐Yes ☐No Swan Ganz catheter
☐Yes ☐No Surgical staples, clips, or metallic sutures
☐Yes ☐No Dental plate(s)
☐Yes ☐No Medication patch (e.g. Nicotine, Fentanyl, Nitroglycerine)
☐Yes ☐No Penile implant or pump
☐Yes ☐No Body piercing, tattoos, or any other metallic fragment or foreign body

Do any of the following apply to you?

☐Yes ☐No Have you had an injury to the eye involving a metallic object or fragment?
☐Yes ☐No Have you ever been injured by a metallic object (e.g. bullet, shrapnel)?
☐Yes ☐No Do you have any breathing problems or claustrophobia?

For Female Patients:

☐Yes ☐No Are you pregnant or suspect that you might be?
☐Yes ☐No Are you breast-feeding?
☐Yes ☐No Do you have an IUD?

Please complete the following, if your exam is ordered with contrast:

☐Yes ☐No Have you had an allergic reaction to iodinated or gadolinium contrast or a severe reaction to any allergen?
☐Yes ☐No Do you have more than 5 drug allergies?
☐Yes ☐No Do you have severe, symptomatic and poorly controlled cardiac disease, sever structural heart disease or pheochoromocytoma?
☐Yes ☐No Do you have asthma that is not controlled with IV, oral or aerosolized steroids?
☐Yes ☐No Do you have a history of kidney disease as an adult?
☐Yes ☐No Are you currently on hemodialysis or peritoneal dialysis?
☐Yes ☐No Do you have a condition called Nephrogenic Systemic Fibrosis (NSF)?
☐Yes ☐No Are you diabetic?
☐Yes ☐No Do you have hypertension treated by medication?
☐Yes ☐No Are you taking any potentially nephrotoxic medications?

Comments:

_____

_____

I attest that the above information is correct to the best of my knowledge. I read and understand the contents of this form and had the opportunity to ask questions regarding the information on this form and regarding the MRI procedure I am about to undergo.

_____	_____	_____
Patient or Legal Guardian Name (Print)	Patient or Legal Guardian Name (Sign)	Date/Time
_____	_____	_____
Reviewed By (Print)	Reviewed By (Sign)	Date/Time

THE UNIVERSITY OF CHICAGO MEDICINE

Appendix B
Employee MR Safety Screening Form

Employee Name:_____

Do you have any of the following items in or on your body?

☐Yes ☐No Aneurysm clip or coil
☐Yes ☐No Cardiac pacemaker, pacer wires, or implanted cardioverter defibrillator (ICD)
☐Yes ☐No Neurostimulator (e.g. brain, spine, bone)
☐Yes ☐No Hearing aid, eye or ear implants, springs or wires (e.g. cochlear implant)
☐Yes ☐No Tissue expanders (e.g. breast)
☐Yes ☐No Metallic stent, filter, coil or heart valve
☐Yes ☐No Magnetically activated implant or programmable device (e.g. VP shunt)
☐Yes ☐No Shunt (e.g.: spinal, brain or intraventricular)
☐Yes ☐No Insulin or other infusion pump
☐Yes ☐No Joint replacement or any type of prosthesis (including pins, screws, nails)
☐Yes ☐No Swan Ganz catheter
☐Yes ☐No Surgical staples, clips, or metallic sutures
☐Yes ☐No Dental plate(s)
☐Yes ☐No Medication patch (e.g. Nicotine, Fentanyl, Nitroglycerine)
☐Yes ☐No Penile implant or pump
☐Yes ☐No Body piercing, tattoos, or any other metallic fragment or foreign body

Do any of the following apply to you?

☐Yes ☐No Have you had an injury to the eye involving a metallic object or fragment?
☐Yes ☐No Have you ever been injured by a metallic object (e.g. bullet, shrapnel)?
☐Yes ☐No Do you have any breathing problems or claustrophobia?

For Female Patients:

☐Yes ☐No Are you pregnant or suspect that you might be?
☐Yes ☐No Are you breast-feeding?
☐Yes ☐No Do you have an IUD?

Comments: _____

_____

I attest that the above information is correct to the best of my knowledge. I read and understand the contents of this form and had the opportunity to ask questions regarding the information on this form and regarding the MRI procedure I am about to undergo.

_____	_____	_____
Employee Name (Print)	Employee Name (Sign)	Date/Time
_____	_____	_____
Reviewed By (Print)	Reviewed By (Sign)	Date/Time