

Children’s Hospital and Health System Patient Care Policy and Procedure

This policy applies to the following entity(s):

- CHW - Milwaukee CHW - Fox Valley

SUBJECT: MRI Safety

POLICY

The MRI environment presents potential risks to patients, families and staff. Hazards may arise from static and time varying magnetic fields.

- All persons entering the MRI Zones will be screened prior to entry.
- Education will be provided and competencies documented for all staff entering restricted MRI zones.
- An MRI Medical Director will be appointed and maintained. Responsibilities of this position include ensuring that MRI Safe Practice guidelines are established and maintained.
- All MRI safety related policies will be reviewed and updated on a yearly basis by the MRI Medical Director and the MRI Management Team.
- The MRI Safety Policy and Procedure will be updated whenever MRI equipment is upgraded or significantly changed.
- The MRI Safety policy will be reviewed by all MRI Department staff on an annual basis.
- All adverse events, MRI safety incidents and “near misses” will be reported to the MRI Medical Director within 24 hours of their occurrence.

TABLE OF CONTENTS

Zoning.....	1
Emergency Procedures	2
MRI Personnel Screening:	3
Patient and Non-MRI Personnel Screening	3
Specific Screening Concerns.....	4
Additional Patient and Non-MRI personnel Safety Precautions	6
Equipment and Supply Safety Considerations.....	6
Education and Competencies	6
Addendum A – MRI Safety Screening Checklist (Outpatient)	8
Addendum B – Pacemaker Guidelines	9
Addendum C - Fox Valley MRU Safety Screen form	11

PROCEDURE

Zoning

The MRI Department is divided into four zones.

Zone 1: This includes all areas in which there is free public access including the waiting areas and the hallway outside of the MRI department.

Zone 2: This area is an interface between Zone I (free access) and Zone III (strictly controlled) where patient interview and preparation is performed.

Zone 3: This area is under strict control of the MRI personnel. Access to Zone 3 is limited to trained MR personnel and Support Service personnel who have completed MR Safety Education and have documented competencies. Zone 3 includes the MRI Control areas and may also include supply and equipment storage areas and computer room. Entrance to Zone 3 will be restricted by vicinity card

Supersedes: None

Effective: 07/2008

Revised 03/2009, 08/2012; FV added 01/2013; 07/2014

MRI Safety/ppp/ Process Owner: Diagnostic Nurse Manager: Imaging

readers. All persons who enter Zone 3 will have completed the annual MRI Safety Screening in Children's University or will complete a paper screening form (Addendum A) before entering.

Zone 4: This area is the actual MR scanner rooms. Access to this Zone is strictly limited to MRI personnel and patients undergoing scans and appropriately screened family members. Zone 4 is located within Zone 3. Zone 4 is clearly marked by a sign stating "The Magnet is Always On." Access to Zone 4 is restricted at all times even during an emergency code (see related section Emergency Procedures.) The MRI Scan rooms will be locked whenever MRI staff is not physically present.

Emergency Procedures

- a) **Code Blue:** In the event of a Code Blue situation, the MRI technologists and MRI Nurses will enter the room, secure the patient's airway and remove the patient as quickly as possible from the MRI scan room to the Zone 3 control area. If the Code Team arrives prior to patient's removal, no team members will be allowed to bring equipment into the scan room. MRI compatible resuscitation equipment will always be available in each of the MRI Scan rooms. **Code Blue's should not be run inside the MRI scan rooms (Zone 4).**
- b) **Fire:** In the event of a fire, MRI compatible fire extinguishers should be used to put out the fire. These extinguishers are kept in the Zone 3 control area. In the event that the Fire Department is called, MRI personnel should be available to warn fire personnel of the hazards of the MRI environment. MRI Safety Education will be provided to the Wauwatosa Fire Department and New Berlin Fire Department on an annual basis. In the event of a fire situation in the MRI Department, all MRI staff will immediately return to the MRI department to assist with patient and family evacuation and to properly secure the area. In the event of a fire during off- hours, the Security Department will be responsible for securing the MRI area and assisting fire personnel. (See Shared Q- Safety P&P's- Fire Plans- MRI Fire Plan).
- c) **Emergency Quench:** An emergency quench of the magnet can be performed to quench the magnetic field in approximately one minute. A magnet quench should only be undertaken after careful consideration and preparation. A magnet quench can be hazardous to personnel, equipment and physical facilities and should not be done unless absolutely necessary. It is not recommended that emergency quenches be performed for code situations but may need to be done in the event of a fire that threatens the MRI area.
- d) **Water Damage:** Water from leaking pipes, roof failure or flooding has the potential to cause serious damage to the MRI equipment. It only takes a small amount of water to incapacitate an MRI scanner. Care should be taken to keep water away from MRI equipment.
- e) **Power Outage:** Without electrical power to the vacuum pump/cold head to keep the cryogen within the MRI liquefied, the cryogen will begin to boil off at an accelerated rate. If power is not restored to the magnet, the magnet will spontaneously quench discharging most or all of its remaining cryogen gasses. This discharge poses a safety risk to anyone near the discharge. In the event of an electrical power outage, a temporary power source should be utilized. The MRI scanners have a dedicated back-up power supply.
- f) **Medical Gas Outage (Milwaukee Campus MRI Department):** In the event of a main campus medical gas outage in the center tower, Facilities Management will automatically switch to the East Tower supply. In the event that there is an outage in both the center and west towers, back up MRI compatible medical gas tanks are available. A back-up MRI compatible oxygen tank with MRI compatible regulator will be kept on each anesthesia machine and in Zone 2 at New Berlin.

MRI Personnel Screening:

All individuals working within Zone 3 of the MRI environment should be documented as having successfully completed MRI Safety Education approved by the MRI Medical Director. Education should be reviewed annually and documented accordingly (see Education section for details)

There are two levels of MRI personnel:

- 1) Level 1 MRI personnel are identified as those who have passed minimal safety education efforts to ensure their own safety as they work within Zone 3. Examples of Level 1 personnel are ASR Schedulers, Environmental Services, Security Services and Facilities Services personnel who have regular work within the MRI environment.
- 2) Level 2 MRI personnel are identified as those who have been more extensively trained and educated in the broader aspects of MRI safety issues including but not limited to issues related to the potential for thermal burns and direct neuromuscular excitation from rapidly changing gradients. The MRI Medical Director will approve all education for Level 2 MR personnel and identify those individuals who qualify as Level 2 MRI personnel. Level 2 personnel include all MRI Technologists, Radiologists, Imaging Nurses, and Imaging Physician Assistants. A MRI Safety Screening form will be completed when hired, kept on file and updated as needed. All new MRI staff members are considered Level 1 MRI personnel until orientation and education are completed.

All MRI personnel (Level 1 and 2) will complete a personal MRI Screening form which will be kept on file in the Employee Health and Wellness Department.

Non- MRI Personnel Screening

All non-MRI personnel (ie: inpatient RN's and RCP's) wishing to enter Zone 3 must first pass the MRI safety screening process. Only Level 2 MRI personnel with documented competency are permitted to perform MRI Safety Screenings.

All non-MRI personnel should be accompanied by or under the immediate supervision of a specifically identified Level 2 MRI staff member while in Zone 3 or Zone 4 restricted regions.

All non-MRI personnel will place their belongings in dedicated storage unit while in Zone 3 or 4.

Once screened, non-MRI personnel will wear a lanyard designating their safety screened status.

Patient and Family Member Screening:

All patients must have the MRI Safety Screening Checklist completed in the medical record. The checklist is completed by Level 2 MRI personnel for all outpatients. For EDTC and inpatients, the checklist is completed prior to coming to the MRI department by an Emergency Department Trauma Center (EDTC)/Inpatient nurse. The checklist should be carefully reviewed by a Level 2 MRI staff member during the interview process.

Family members entering Zone 3 and 4 will complete a paper MRI safety screening checklist (Addendum A for main campus/New Berlin and Addendum D for Fox Valley). Family members are restricted from entering Zone 4 with patients who are being sedated or under general anesthesia. One family member may be allowed to stay with the patient during the induction phase in Zone 3. For non-sedated patients, one adult family member may stay with the patient if their presence is deemed to be helpful for the child to get through the scan. All family members must change into hospital provided scrubs prior to entering Zone 3.

Non-emergent patients should be safety screened on-site by a minimum of two separate individuals. At least one of the two screenings should be done verbally or interactively. Emergent patients may be screened only once provided the screening is completed by a Level 2 MRI staff member.

If any implanted device is found, it should be checked against the Reference Manual for Magnetic Resonance Safety, Implants, and Devices (Shellock, Frank) located in the MRI Department. An updated version of this manual will be available each year for staff use. Updated information may also be obtained online on the MRI safety website or manufacturer website. If the implanted device is deemed to be unsafe, the patient will not be placed in the MRI scan room.

All patients and family members should be accompanied by or under the immediate supervision of a specifically identified Level 2 MRI staff member while in Zone 3 or Zone 4 restricted regions.

All patients entering Zone 4 and undergoing an MRI procedure must remove all readily removable metallic personal belongings and devices on or in them including but not limited to:

- Watches
- Jewelry
- Pagers, Cell phones and other electronic devices
- Body Piercings (if removable)
- Contraceptive diaphragms
- Metallic drug delivery patches
- Cosmetics containing metallic particles
- Clothing items that may contain metal fasteners, hooks, zippers or loose metallic components. Some Spandex material may also cause artifact.

All patients entering Zone 4 will be changed into a hospital provided gown or scrubs.

A MRI Safety Time Out will be performed prior to any patients entering Zone 4.

All persons entering Zone 4 will be screened for external metal objects using a hand-held ferromagnetic detector.

Specific Screening Concerns

a) History of Eye Injury with metallic foreign body

- If the patient has a history of eye injury with any type of metallic object, the patient will be screened with orbital plain films to assess the presence of metallic foreign bodies. If any foreign metallic bodies are present, the patient will not be scanned.

b) Surgical/Nonsurgical Metallic Foreign Bodies

Patients who are known or suspected to have foreign objects (such as but not limited to shrapnel, bullets, BB's, surgical/medical implements) in their body require further investigation of the object/s prior to imaging.

- 1) Efforts will be made to gather as much information as possible about the foreign object/s (i.e.: date and details of implantation, past medical records, prior medical imaging, manufacturer data, and current papers/research/positions)
- 2) Initial or repeat radiographic imaging may be ordered by the radiologist overseeing the potential study to assist in the evaluation.
- 3) After gathering all available data, the overseeing radiologist, with the help of MRI staff, will determine to the best of their ability the potential safety and imaging concerns.

- 4) The radiologist will then contact the ordering physician to discuss any safety and imaging related concerns raised to determine whether another imaging modality should be utilized or to proceed with the MRI exam.
- 5) The radiologist will obtain verbal informed consent from the patient/parents is a decision is made to continue with the MRU despite potential uncertainty of foreign object.
- 6) If proceeding with the MRI exam, the overseeing radiologist will make protocol changes and the scanning MRI technologist will make parameter adjustments as needed to maximize patient safety and minimize the effect of the foreign object on image quality.
- 7) If not already performed, the foreign object(s) will be documented in the implant record.

Implanted medication ports are safe to scan

c) Pregnant Patients

-The effect of magnetic fields and radio frequency stimulation on a fetus has not been established. There are no documented negative effects to a developing fetus. Pregnant patients can be accepted into the MRI scanner at any point during their pregnancy under the following conditions:

- Both the radiologist and the patient's physician agree that the risk benefit to the patient warrants that the study be performed.
- The information requested from the MRI scan cannot be obtained by alternate means. (i.e. ultrasonography)
- The information to be obtained from the MRI scan will be used to affect care of the patient or fetus during pregnancy.
- The referring physician does not feel that it is prudent to wait until the patient is no longer pregnant.
- The patient is willing to undergo the scan.
- MRI Contrast agents should not be used unless deemed necessary by a radiologist.

d) Vagal Nerve Stimulators (VNS)

- All Vagal Nerve Stimulators will be adjusted to minimal output (commonly referred to as "turned off") prior to entering the MRI scan room by a staff member with demonstrated competency. The VNS will be returned to normal settings after the scan is completed

e) Transdermal Medication Delivery Patches

- All transdermal medication delivery patches must be removed from patients prior to being scanned. Many patches contain a metallic foil layer.

f) Tattoos

- Patients with tattoos containing paint with metallic fragments may experience irritation after an MRI scan. All patients with tattoos in the area(s) being scanned should be notified in advance of this possibility. Patients with tattoos may be scanned. Ice packs may be utilized. Patients with new tattoos (within 48 hours) may also experience smearing or smudging of the tattoo edges.

g) Baclofen Pumps

- Patients with implanted Baclofen pumps should have an ice pack applied to the area above the pump during scanning.

- h) Pacemakers
 - See Addendum C for pacemaker procedure guidelines
- i) Programmable Ventriculoperitoneal (VP) Shunts
 - Patients with programmable VP shunts may be scanned but the VP shunt needs to be re-programmed after the scan by the Neurosurgery Service.

Additional Patient and Non-MRI Personnel Safety Precautions

- 1) Patients, family members and Non-MRI Personnel remaining in the MRI scan room during the scan will be given ear plugs or headphones for hearing protection.
- 2) All patients will be continuously observed during the MRI scanning via the use of video cameras.
- 3) All sedated patients will be monitored with an MRI compatible physiological monitor.
- 4) Precautions should be taken to prevent patient burns during scanning:
 - a) Ensure that no conductive items such as leads or cables are formed into a loop
 - b) Use non-conductive foam padding to prevent a patient's skin from touching the bore of the magnet.
 - c) Only MRI-compatible EKG leads will be used on patients undergoing MRI scans.
 - d) Ensure that the patient's arms and legs are positioned so that they do not form large conductive loops. Patients should not cross their arms or legs in the MRI scanner
- 5) Proactive planning should occur prior to scanning critically ill patients. Continuous infusion of life sustaining medications should be accomplished by running extended lengths of tubing through the dedicated wave guide. All critically ill patients will be monitored with a full cardio respiratory monitoring set-up.

Equipment and Supply Safety Considerations

All capital equipment purchases will be evaluated for MRI safety prior to purchase. The initial evaluation will be completed by Clinical Engineering but may include a review by the MRI Safety Committee if applicable.

All supply items will be evaluated for MRI safety prior to entering Zone 4. Material Services will evaluate MRI safety for all new items entering supply chain. The MRI Safety Committee will review new supply items as needed.

Education and Competencies

Level 2 MRI Personnel

All Level 2 MRI Personnel will complete the MRI Safety Education (Level 2) during their 90 day orientation period.

Curriculum includes the following components:

- 1) Completion of a personal Employee Screening Form
- 2) Viewing of MRI safety video
- 3) Tour of MRI Department with emphasis on location of emergency equipment
 - a) Location of Quench button

- b) Location of Emergency Stop button
 - c) Location of MRI Compatible Fire Extinguishers
 - d) Procedure for Unlocking MRI Scan Tables
 - e) Location of back-up MRI compatible medical gas tanks
- 4) Discussion of MRI Safety Concerns including:
- a) MRI Screening Procedures including zones
 - b) MRI Safety for Medical Implants and Equipment
 - c) Burn Prevention during scanning
 - d) Treatment of Patients with Altered Mental Status

The MRI Safety Competency Verification form will be completed for each staff member and maintained in the employee's file.

Level 1 MRI Personnel

All Level 1 MRI Personnel will complete the MRI Safety Education (Level 1) prior to being granted key card access to the MRI Department.

Curriculum includes the following components:

- 1) Completion of personal Employee Screening Form
- 2) Viewing of MRI Safety video
- 3) Tour of Department and explanation of zoning

Non-MRI Personnel who may enter MRI Department

The annual online Safety Education will include a section on MRI safety. This education will be completed by all direct patient care staff members who may interface with the MRI Department.

Special Considerations for Children's Hospital of Wisconsin- Fox Valley

MRI services for inpatients at Children's Hospital of Wisconsin-Fox Valley (CHW-FV) are provided by Theda Clark Medical Center, the host location of CHW-FV. MRI safety practices may differ and are under the direction and management of Theda Clark Medical Center with the following exceptions:

- All CHW-Fox Valley patients will have an MRI safety screening completed by CHW-Fox Valley staff prior to MR Imaging at Theda Clark Medical Center.
- CHW- Fox Valley staff will complete Annual MRI Safety Education which satisfies Level 1 education requirements.
- All CHW-Fox Valley staff who will have direct contact with MRI at Theda Clark Medical Center will complete the annual staff MRI Safety Screening

References:

- Berlin L. "Radiation exposure and the pregnant patient." American Journal of Radiology 1996: 167: 1377.
- Kanal, E et al. "ACR Guidance Document on MR Safe Practices: 2013" Journal of Magnetic Resonance Imaging (JMRI) Volume 37:501-530 January 2013
- Radiographic Imaging CEU Source, LLC, part 6, MRI safety for Health Care Personnel
- "Working Together to Improve MRI Safety" *The Joint Commission Perspectives on Patient Safety*, Vol. 7 Issue 2, February 2007

Approved By:

The Joint Clinical Practice Council 04/2014
Approved and added: CHW- FV: JCMC 01/2013

**Addendum A –
MRI Safety Screening Checklist (Family Members/Milwaukee Campus and New Berlin)**



**MRI
Safety Screening Checklist
(Out Patient)**

Parent/Caregiver _____ Relationship to Patient _____
 Patient Name _____

Before entering the MR room, patients must remove ALL metallic objects including:

hearing aids	pens	coins	beeper	jewelry
eyeglasses	pocket knife	money clip	cell phone	body piercing jewelry
dentures	nail clipper	credit cards	keys	watch
partial plates	tools	bank cards	clothing w/metal fasteners	hair pins
safety pins	paperclips	magnetic strip cards	clothing w/metallic threads	barrettes

Please consult the MRI Technologist or Radiologist if you have any questions/concerns BEFORE you enter the MR room.
 Note: You may be advised or required to wear earplugs or other hearing protection during the MR procedure to prevent possible problems or hazards related to acoustic noise.

Do any of the following apply?

	Yes	No		Yes	No
Aneurysm clip(s)	<input type="checkbox"/>	<input type="checkbox"/>	Eyelid spring or wire	<input type="checkbox"/>	<input type="checkbox"/>
Cardiac pacemaker	<input type="checkbox"/>	<input type="checkbox"/>	Artificial or prosthetic limb	<input type="checkbox"/>	<input type="checkbox"/>
Implanted defibrillator	<input type="checkbox"/>	<input type="checkbox"/>	Metallic stent, filter or coil	<input type="checkbox"/>	<input type="checkbox"/>
Cochlear, otologic or other ear implant	<input type="checkbox"/>	<input type="checkbox"/>	Shunt (spinal or intraventricular)	<input type="checkbox"/>	<input type="checkbox"/>
Vagus nerve stimulator (VNS)	<input type="checkbox"/>	<input type="checkbox"/>	Vascular access port and/or catheter	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> VNS Current <input type="checkbox"/> VNS Past			Radiation seeds or implants	<input type="checkbox"/>	<input type="checkbox"/>
If you answered YES to any of the above, contact the MRI Technologist before you continue.			Swan-Ganz or thermodilution catheter	<input type="checkbox"/>	<input type="checkbox"/>
Electronic implant or device	<input type="checkbox"/>	<input type="checkbox"/>	Medication patch (Nicotine, Nitroglycerine)	<input type="checkbox"/>	<input type="checkbox"/>
Magnetically-activated implant or device	<input type="checkbox"/>	<input type="checkbox"/>	Any metallic fragment or foreign body	<input type="checkbox"/>	<input type="checkbox"/>
Neurostimulation system	<input type="checkbox"/>	<input type="checkbox"/>	Wire mesh implant	<input type="checkbox"/>	<input type="checkbox"/>
Spinal cord stimulator	<input type="checkbox"/>	<input type="checkbox"/>	Tissue expander (e.g. breast)	<input type="checkbox"/>	<input type="checkbox"/>
Internal electrodes or wires	<input type="checkbox"/>	<input type="checkbox"/>	Surgical staples, clips or metallic sutures	<input type="checkbox"/>	<input type="checkbox"/>
Bone growth/bone fusion stimulator	<input type="checkbox"/>	<input type="checkbox"/>	Joint replacement (hip, knee, etc)	<input type="checkbox"/>	<input type="checkbox"/>
Insulin or other infusion pump	<input type="checkbox"/>	<input type="checkbox"/>	Bone/joint pin, screw, nail, wire, plate, etc.	<input type="checkbox"/>	<input type="checkbox"/>
Implanted drug infusion device	<input type="checkbox"/>	<input type="checkbox"/>	Body piercing jewelry	<input type="checkbox"/>	<input type="checkbox"/>
Any type of prosthesis (eye, penile, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	Hearing aid (remove before entering MR room)	<input type="checkbox"/>	<input type="checkbox"/>
Heart Valve Prosthesis	<input type="checkbox"/>	<input type="checkbox"/>	Other implant _____	<input type="checkbox"/>	<input type="checkbox"/>
			Pregnant _____	<input type="checkbox"/>	<input type="checkbox"/>

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 MR procedure that I will be observing.

Signature of Person Completing Form _____ Date _____

Signature of Person Reviewing Form _____ Date _____

Radiology Department

C7565N (7/07)

MRI Technologist Nurse



Addendum B: Pacemaker Guidelines

To ensure the safety of patients with an internal pacemaker that requires MR imaging. An external pacemaker is a contraindication if the device cannot be disconnected. Implanted Cardioverter Defibrillators are also contraindicated at this time. Patients who are pacemaker dependant are excluded from MR imaging.

PRE-EXAM PROCEDURE

1: A referring physician desiring MR imaging of their patient consults with a radiologist regarding alternative imaging procedures that may satisfy the clinical concerns and discuss the risk vs. benefit of proceeding with an MR exam.

2: After the above discussion has occurred, the referring physician enters a request for the desired MR exam/s. In the request the following information will be entered: Pacemaker Make/Model, Implantation Date, consulting Radiologist and name of patient's Cardiologist. This information is required for scheduling to proceed.

3: The MRI scheduler will bring the order the attention of the MR staff to generate and begin completion of the MRI WITH PACEMAKER PROCEDURE CHECKLIST form found at the end of this policy.

4: A pre-MRI Cardiology evaluation may be recommended to be scheduled/completed prior to scheduling the MR exam. The patient and/or family must be counseled by Cardiology or Electrophysiology about the risks of the procedure with regards to their device.

5: MR exam/s are scheduled. (Please note that the exam cannot be scheduled within 6 weeks of pacemaker implantation unless it is a medical emergency.) This will be coordinated with the Electrophysiology Team who must be present for the exam.

EXAM PROCEDURE

1: The following personnel must be present for the entire exam: Cardiologist or a member of the Electrophysiology Team, MR Technologist and Radiology/MR Nurse.

2: Patient arrives in MRI suite and is processed as per routine. Informed consent should be obtained.

3: With patient in prep room, pacemaker is interrogated by Electrophysiology Team. Existing settings are recorded.

4: Pacemaker is adjusted to sensing mode. Patient is monitored & observed by the RN in prep room for five (5) minutes. ECG and Pulse Oximetry monitoring is established. Blood pressures are taken every five (5) minutes.

5: If patient tolerates initial observation period, patient can be moved to the MR exam table and be prepared for imaging. Monitoring and observation is again done for 5 minutes.

6: If patient tolerates the 2nd observation period, patient is advanced into magnet bore for imaging and a third, 5 minute monitoring and observation period is carried out.

7: If patient remains stable and tolerates final observation period imaging can begin.

8: Patient will be monitored continuously during imaging.

Supersedes: None

Effective: 07/2008

Revised 03/2009, 08/2012; FV added 01/2013; 07/2014

MRI Safety/ppp/ Process Owner: Diagnostic Nurse Manager: Imaging

9: The supervising Radiologist will be made aware of pacemaker patient in order to keep imaging time to the minimum required.

POST EXAM PROCEDURE

1: Following completion of imaging, patient is brought back to prep room. Pacemaker is returned to its normal settings.

2: Pacemaker is interrogated again to confirm normal operation. Patient is monitored & observed by the RN in prep room for five (5) minutes prior to discharge or transfer.

Addendum C:

Fox Valley- MRI SAFETY SCREENING FORM

WARNING:
 Certain implants, devices, or objects may be hazardous to you and/or may interfere with the MR procedure. Do not enter the MR room or MR environment if you have any question or concern regarding an implant, device, or object. Consult the MRI Technologist BEFORE entering the MR system room. Remember, the MR system magnet is ALWAYS on.

Patient Name _____ D.O.B. _____
 Last First Middle Initial

H _____ W _____ Age _____ Referring Physician _____

Please answer each question carefully, circle "Y" for yes and "N" for no.

If Yes to below unable to perform MRI

Do you have?

- A. Pacemaker/Pacer WiresY N ***If Yes, answer (a.)**
 - a) Is it Revo pacemaker?Y N
 - i. If (Y), contact MRI department for approval
 - ii. If (N), unable to perform
- B. Defibrillator.....Y N
- C. Breast Tissue Expander.....Y N
- D. Bladder/Sacral Nerve/Gastric StimulatorY N
- E. Deep Brain StimulatorY N ***If Yes, only Head/Brain MRI can be scanned**
- F. Vagus/Vagal Nerve Stimulator.....Y N ***If Yes, only Head/Brain MRI can be scanned**

If Yes to any of the following, document the manufacturer, make & model number. Bring card if available

- | Do you have? | Manufacturer_____ | Model/Serial #_____ | | |
|--|-------------------|---------------------|---|--|
| A. Brain Aneurysm clips/coils.....Y N | | | H. Drug Infusion Pump..... Y N | |
| B. Shunt (Spine or Intraventricular)Y N | | | I. Any Stents/Filter or Coil. (Heart/groin) Y N | |
| C. Ear/Eye Implants (other than cataracts).....Y N | | | J. IUD/ESSURE Device/Penile Prosthesis Y N | |
| D. Eyelid Spring or WireY N | | | K. Internal Electrodes or Wires..... Y N | |
| E. Cochlear Implant.....Y N | | | a. If Yes an x-ray may be needed | |
| F. Implanted Heart ValvesY N | | | L. Any other implant or device not listed? Y N | |
| G. Bone Growth/Bone Fusion StimulatorY N | | | M. Spinal Cord Stimulator (only Head/Knee on 4 channel) | |

Do you have?

- A. Artificial or prosthetic limb/ joint replacement / Harrington rod, bone screw, nail, pins, plates, etc in body..... Y N
- B. Have you ever had a penetrating injury to the eye or metal removed from the eye by a physician Y N
- C. Medication Patch (Nicotine, Nitroglycerine, Fentanyl, etc.)..... Y N
- D. Metallic fragment or foreign body (gunshot wound or other) Y N
- E. Body piercings/tattoos/permanent eye makeup Y N
- F. Hearing Aides/Denture/Partial Y N
- G. Claustrophobia, pain or anxiety Y N
- H. Pregnant/Breast Feeding Y N
- I. Diabetic/Kidney/Renal Disease Y N
- J. Seizure disorder Y N
- K. Personal history of cancer Y N
- L. Surgery in the past 6 weeks Y N
- M. Surgery related to ordered exam Y N

IF YES AN ORBIT X-RAY IS NEEDED

If IV contrast is ordered:

Do you have a contrast allergy?..... Y N

A Creatinine (&GFR), done within the last 30 days, is needed if the patient is 65+, and/or has renal failure, is diabetic, or has kidney disease.

Contrast & dose _____

List any previous MRI scans, CT scans, angiograms or X-rays related to today's exam. Example: what, where and when.

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 MR procedure that I am about to undergo.

Signature of Person Completing Form: _____ Date ____/____/____

Signature of Person Reviewing form Information: _____