GILK RADIOLOGY CONSULTANTS

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MRI Safety Policies & Procedures Checklist

1.0 MR Safety Policy Structure

MRI Safety Practices Review
Annual Review of Policies, Procedures, Practices
Annual (Re-)Endorsement of Clinical P&P by MR Clinical Head and / or MRMD
Annual (Re-)Endorsement of Operational P&P by MR Administrator
P&P Review Trigger Criteria (e.g., new clinical practice, or change to MR equipment)
Culture (protection of staff based on adhering to policies)

2.0 MRI Physical Environment Safety

Zones and Access Controls
- **Scope of Service Statement (Various)**
  - Describes 4-Zones
- **MRI Safety (Policy Draft)**
  - Describes 4-Zones
- **Intraoperative MRI (iMRI) Operating Room**
  - Describes 4-Zones
  - MRI Scanner Room (Zone IV) Restriction
- Quench Discharge Area Safety

Who is permitted within the MRI Controlled Access area(s) (Zones 3 and 4)
- Patients
- Visitors
- Associates
- MR Departmental Staff

Who is permitted within the MRI scanner room(s) (Zone 4)
Not During MR Scanning / During MR Scanning (Screening / Protection Required)
- Patients
- Visitors
- Clinical Associates (e.g., anesthesia)
- Non-clinical Associates (e.g., maintenance)
- MR Departmental Staff

3.0 MRI Safety Training & Staff Standards

Safety Training Levels
- **MRI Safety (Policy Draft)**
  - Describes MRI staff training requirements in very broad terms
- Level 1 Safety Training
  - Allowed Access / Restrictions
  - Different Training for different needs (e.g., 1a, 1b, 1c, 1d…)
- Level 2 Safety Training
  - Allowed Access
  - Situational Authority
  - Different Training for different needs (e.g 2a, 2b…)

BLS
ACLS
Staffing Minimums
Scope of Service Statement (Various)
Describes staffing minimums

Safety Training Content / Frequency
MRI Safety (Policy Draft)
MRI Safety Training
Intraoperative MRI (iMRI) Operating Room
Describes general MRI safety training, but no criteria or levels in main body (it is in Appendix D)
Level 1 (Associates)
Annual (Documented)
Training / Competency content by need / purpose
Joint Commission (Or Other Accreditation Body) Required Training
Annual (Documented)
Level 2 (MR Staff)
Annual (Documented)
Training / Competency content by need / purpose
Resident MRI Safety Training Requirements
BLS
ACLS
Structure of MR Safety Responsibility / Authority / Communication
MRSO
MRMD
MRSE
Staff Pregnancy
MRI Safety (Policy Draft)
Describes pregnant HC worker policy
Working outside Zone 4 during scanning
Staff Dress (Ferrous Free) Policy
Dress Attire for MRI Staff
Current review / revision date
Internal conflict between permission for metallic items (underwire / zippers) and 'detection of any metal must be addressed immediately and removed.'
Integration with site ferromagnetic detectors?

4.0 Patient Referral & Subject Screening / Preparation Process

Patient Referrals
Review / Protocol Exam Appropriateness
Review / Protocol Contrast
Remedial MR Exam Referral Criteria
Informed Consent
Process: Anticipated need (pacer / ICD only)
Process: Spontaneous need
Screening for MRI patients

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MRI Safety (Policy Draft)
Describes screening policy
Intraoperative MRI (iMRI) Operating Room
Describes general screening. Not consistent with 'unreliable historian' policies, elsewhere.

Referrer / Order-Entry
Appointment Call Pre-Screen (Outpatients)
Floor Pre-Screen (Inpatients)
MRI Safety for Emergency & Critical Care Patients
Review / revision over 2 years. No MRI / Radiology endorsements.
Doesn't cover low-acuity inpatients
References 2008 TJC SEA #38, which has been 'retired' in favor of ACR guidance on MRI safety.
Appointment Call 'day of' instructions
On-Site Clinical Screening Form
Non-English speaking / non-communicative patients
Minor Children with Parent / Guardian
On-Site Physical Screening
Clinical screening Technologist Review
Minor Child Clinical Screening Review
Dressing / Gowning
MRI Safety (Policy Draft)
Describes changing policy under "Preventing Excessive Heating…"
Ferromagnetic Detection
Review of screening form with patient
Technologist Review of Prior Films
'Time Out' Procedure
[Atypical Patient Type] "Unreliable Historians" (e.g., GCS Scores)
MRI Safety (Policy Draft)
Describes 'unreliable historians' as 'unconscious, unresponsive, altered, mentally impaired.' Does not provide objective standard / determination for altered / impaired.
[Atypical Patient Type] Prisoner / Detainee / 'Baker Act'
Patient Restraints
Guard / CO Clinical Screening (e.g., Device Contraindications)
Guard / CO Physical Screening (e.g., Firearms & ferromagnetic materials)
Emergent Patient Screening (e.g. Stroke Patients)
Screening for non-patients entering Controlled Access Areas with Emergent Patients (incl. Associates)
Screening for non-patients entering MRI Scanner Rooms
MRI Safety (Policy Draft)
Describes screening practices

~~[Atypical Magnet] Transverse Magnetic Field Risks & MR Conditional Labeling~~
~~MRMD Direction~~
~~Implant / Device Clearance~~
~~[Atypical Magnet] Atypical Static Magnetic Field Strength & MR Conditional Labeling~~
~~MRMD Direction~~
~~Implant / Device Clearance~~
[Atypical Magnet] Intraoperative MRI System

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- **Intraoperative MRI (iMRI) Operating Room**
  - Current review / revision date
  - Repeats zone information
- Surgical Staff MRI Safety Training / Competence
- Zones / Access Controls

Patient Screening

- Piercings / Dermal Implants
  - Within vs. Beyond Volume of RF Deposition
  - Potential Gradient-Induced Vibration
  - Sensitive Locations (e.g. facial, genitalia, etc…)
- Tattoos
  - Within vs. Beyond Volume of RF Deposition
  - Sensitive Locations (e.g. facial, genitalia, etc…)
- Transdermal Patches
  - **Use of MRI in Patients with Implants and Devices**
    - Current review / revision date
  - Within vs. Beyond Volume of RF Deposition
  - Temperature-Sensitive Drug Delivery
  - Interruption of Drug Delivery (Prescribing Physician Coordination)
- Implanted Medical Devices
  - **Use of MRI in Patients with Implants and Devices**
    - Current review / revision date
  - Passive Device Policy
  - MR Conditional
  - Untested (but manufacturer information available)
  - Unidentified (or identified with no manufacturer information available)
- Active Device Policy
  - **Conditional MRI Policy**
    - Review / revision date 3.5 years old
    - Only pertains to pacer / ICD, not to other programmable devices such as neuro / pain stimulators.
    - Doesn't describe individual responsibilities for device setting / verification.
  - **Non-Conditional MRI Policy**
    - Review / revision date 3.5 years old
    - Only pertains to pacer / ICD, not to other programmable devices such as neuro / pain stimulators.
    - Doesn't describe individual responsibilities for device setting / verification.
  - MR Conditional
  - Untested (but manufacturer information available)
  - Unidentified
  - Pre-exam Device Settings (Pacer / ICD Only)
    - Instructions to Patient ('bring charged programmer')
    - Performed by rep / clinical group (e.g., cardiac, neuro, etc…)
    - Facilitated by tech (rep remote setting)
    - Performed by tech
  - Post-exam Device Interrogation / Re-set
    - Instructions to Patient ('bring charged programmer')
    - Performed by rep / clinical group (e.g., cardiac, neuro, etc…)

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- Facilitated by tech (rep remote setting)
- Performed by tech
- Retained Abandoned Leads
- Eipcardial
- Pericardial
- Categorical Device Policy (e.g. 'all coronary stents')
- [potential 'listed' implant safety approach]
- Safety White List (Proceed with proscribed exam as indicated)
- Joint Replacements
- Spinal Hardware
- Safety Grey List (Consult MRSO / Supervising Radiologist for Direction)
- Implantable Medication Pump (e.g. Baclofen)
- Safety Black List (Strong Contraindications)
- Unidentified Cerebral Aneurysm Clips
- Retained Foreign Body (e.g. shrapnel, projectiles, etc…)
- **MRI Safety (Policy Draft)**
- Describes screening / clearance for patients with suspected shrapnel / FB
- Shrapnel / FB in locations other than eye
- Foreign Body in Eye
- History of Penetrating Eye Injury
- Pregnancy
- **MRI Safety (Policy Draft)**
- Describes pregnant patient policy with unusual emphasis on unknown risks
- All trimesters equal
- See 'Contrast' for contrast policy for pregnant patients
- **MRI Safety (Policy Draft)**
- Describes avoidance of use of GBCA for pregnant patients policy

- Patient Contact / Visualization During Study
- Visual Observation (interruptable)
- Auditory Monitoring During Pulse Sequences
- Patient Contact Between Pulse Sequences
- Patient Alert (Squeeze Ball)
- Hearing Protection
- **MRI Safety (Policy Draft)**
- Describes hearing protection policy
- Provide Hearing Protection
- Provide Patient Instruction on Hearing Protection use
- Verify Fit & Function
- Alternative Methods
- Declination (Waiver of Liability)
- Diffuse Heating
- Heating risk factors (febrile patients, beta-blockers)
- SED / SAE Alerts
- Prevention of Burns
- **MRI Safety (Policy Draft)**
- Describes practice for 'Excessive Heating'
- Removal of all Superfluous Potential Electrical Conductors

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- Use of Separation Padding
- Patient Positioning To Prevent Large-Calibre Body Loops
- Use of Insulating Materials
- Use of Heat-Sinks At Locations Of Focal Heating Risk
- Use of MR Conditional tested materials

Medical Supervision / Authorization For First Level
- RF
- Time-Varying Gradients

Bariatric (Patients of Size)
- Patient lift / positioning
- Bore diameter
- Patient table weight limits
- Padding

Contrast
- **IV Contrast Media Guidelines - Adult**
  - Review / revision just over 1 year.
- Contrast Risk Factors, Screening and Administration Criteria
  - Elderly
  - Pediatric
  - Pregnant
  - eGFR
  - Prior Allergic-Like Reaction
- Indications for Greater Than Single (Weight-Based) Dose
- Prescribed 'not to exceed' Dose By Weight
- Contrast Reaction
- Patient Information Form (FDA required for outpatients)
- Refusal of Contrast (Waiver of Liability)
- Patient Questions Regarding Contrast
- Contrast Reaction
- Contrast & Breastfeeding

Claustrophobia

Sedation / Analgesia / Anesthesia
- Patient Self-Medication
  - **MRI Safety (Policy Draft)**
    - Describes external physician prescriber & driver policy
  - Discharge to self-drive?
- Allied Clinical Services (Sedation / Anesthesia)
  - Screening
  - Training

Clinical Monitoring / Clinical Support of MR Patients
- **MRI Safety (Policy Draft)**
  - Describes patient alert / intercom policy
- EKG / ECG
- Pulse Oximetry
- Infusion Pumps
- Ventilation
- Anesthesia

MR-Guided Procedures
- Breast Biopsy
- Catheterization

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Infection Control
- ABHR vs. Handwashing
- Contagious Patient (e.g. active TB)
- Reverse Quarantine Patient (e.g. immuno suppressed)
- Interventional MR Procedures
- Terminal Cleaning Procedures

Use of MR Conditional Equipment
- **MRI Safety (Policy Draft)**
  - Generally describes labeling & presumptive 'unsafe' of unlabeled equipment.
- **Intraoperative MRI (iMRI) Operating Room**
  - Describes general MRI safety labeling in Appendix E.
- Tested and Labeled
- MR Safe, MR Conditional, MR Unsafe
- Labeled Objects Within Zone 3

Environmental Services In MRI
- Restricted Access Cleaning
- MRI Scanner Room Cleaning

Facilities / Maintenance Services in MRI
- Restricted Access Maintenance
- MRI Scanner Room Maintenance
- Rooftop / Quench Pipe Discharge area
- Quench Pipe Annual Inspection

Emergency Response
- Code Blue (Cardiopulmonary Arrest)
  - **Emergency Procedures in MRI**
    - Current review / revision date
    - Appropriate direction of response to this situation, but no indication of specific risks in code / emergent situations when focus is more likely to be on emergency / emergent response than MRI related risks, particularly with outside code responders.
  - **MRI Safety (Policy Draft)**
    - Repeats above.

- Code Red (Fire)
  - **Emergency Procedures in MRI**
    - Current review / revision date
    - Appropriate direction of response to this situation, but no indication of specific risks in code / emergent situations when focus is more likely to be on emergency / emergent response than MRI related risks, particularly with outside code responders. For external (to hospital) first responders (e.g., fire / police), no indication of coordination on MRI risks.
  - **MRI Safety (Policy Draft)**
    - Repeats above.

- Emergency Power Off
- MRI Magnetic Entrapment
- MRI Magnet Quench
  - **MRI Safety (Policy Draft)**

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Describes intentional quench process, only.

Intraoperative MRI (iMRI) Operating Room

Describes intentional quench process, only.

Intentional Quench

Spontaneous Quench

Quench Preparation (Intentional) or Response (Spontaneous)

Ferromagnetic (suspected) Object Discovered During Imaging

5.0 Adverse Event Reporting

Adverse Event Reporting / Documentation

MRI Safety (Policy Draft)

Describes internal iReport process, only.

Joint Commission Required PI Data Collection

Adverse Event Reporting to Device Manufacturers (MR system, external device, implanted device)

Adverse Event Reporting to FDA

Internal Hospital / Enterprise Adverse Event Reporting

Adverse Event Reporting to State DoH (as indicated)

6.0 After-Event Aftercare

Aftercare (after suspect event)

Directly Administered Aftercare (e.g., Wound Dressing)

Referred Aftercare (e.g., Referring Physician, Clinic, Device Specialist)

Department Scope of Service (Various)

Current review / revision date

Curious about why so much identical content between departments is repeated. If the department-specific policies only identified differences from standard policy, less opportunity for conflict.

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