GENERAL IMPLANT INFORMATION & POLCIES

PURPOSE

- To ensure patients with active and passive implants and foreign bodies are appropriately evaluated and safely undergo MRI.
- To decrease the incidence of patients being denied MRI due to the presence of implants.

DEFINITIONS

- MR safe implants/materials are those that are composed of nonmetallic, nonmagnetic and nonconductive components that post no known hazards in any MRI environment. An implant composed entirely of plastic or glass is an example of a MR safe implant.
- MR conditional implants are those that have been demonstrated to pose no known hazards when imaged under specified conditions (static magnetic field strength, spatial gradient, time rate of change of the magnetic field, RF fields and specific absorption rate (SAR)).
- MR unsafe implants are those that are known to pose hazards in all MRI environments.
- MR nonconditional implants are those that have not received a designation of MR safe, MR conditional or MR unsafe.
- Passive implants are conditional metallic implants that have no electronic components (surgical clips, vascular stents, cardiac valves, orthopedic fixation hardware, etc.).
- Active implants are conditional metallic implants that have electronic components (pacemakers, defibrillators, cardiac event recorders, deep brain / spinal / peripheral nerve stimulators, cochlear implants, etc.).

MR SAFE AND "OK TO SCAN" IMPLANTS

- "OK to scan" implants can be scanned at 1.5 Tesla and 3.0 Tesla either due to being composed of nonmetallic components, non-ferromagnetic metallic components or ferromagnetic components of sufficiently low mass as to pose a limited safety risk.
- These implants do not need radiologist approval or Foreign Body / Implant / Device form (MI-0651) completed; however, the MRI technologist must verify the accuracy of the patient's history sheet and implant information.
- These implants do not require a waiting period prior to being scanned.
- Altered, unconscious, sedated and intubated patients with a MR safe or "OK to scan" implant can undergo MRI (without obtaining radiologist approval).
- Normal scan mode can be used with these implants.
- The following passive implants are regarded as MR safe or "OK to scan":
  - Gastrointestinal – nasogastric/orogastric tubes; Dobbhoff/enteric tubes; percutaneous biliary catheters; cholecystostomy drains; esophageal, biliary and colonic stents; percutaneous gastrostomy, gastrojejunostomy and jejunostomy tubes; gastric bands

- Genitourinary – Foley/suprapubic bladder catheters, bladder slings, percutaneous nephrostomy drains, ureteral stents, intrauterine devices (IUDs), fallopian tube occlusion devices (Essure), vaginal pessaries, urethral bulking agents
- Orthopedic – joint replacements; fixation rods, plates, screws and wires
- Neurologic – spinal hardware (excluding Harrington rods), CSF valves/shunts, Ommaya reservoirs
- Cardiac – sternotomy wires/plates, coronary artery stents, all cardiac valves & annuloplasty rings, Watchman devices, left atrial appendage ligation clips, temporary epicardial pacer leads (both intact and abandoned)
- Vascular – metallic stents, aneurysm coils (must verify coils and not clips, some aneurysm clips are MR unsafe), embolization coils and glue, synthetic grafts, AV fistulas, IVC filters, venous access devices (peripheral IV, PICC, midline, TICC, TLC, Quinton, Permacath and chest port)
- Oncologic – prostate radiation seeds, radiation fiducial markers
- Surgical Materials – surgical clips, hernia repair mesh material, gastric bands, percutaneous drainage catheters
- Miscellaneous – acrylic/glass eye replacements

MR CONDITIONAL PASSIVE IMPLANTS

- MR conditional passive implants are metallic implants that contain no electronic components.
- Unless included in the MR safe or "OK to scan" list above, the MRI technologist must research the implant and complete the Foreign Body / Implant / Device form (MI-0651). The supervising radiologist will then review the form and supporting documentation and determine whether to proceed with MRI.
- MR conditional passive implants that have been researched and approved within the past **6 months** do not need a new device form completed provided:
  - There have been no changes to the implant since the last MRI.
  - The implant's conditions can be met on the MRI scanner to be used.
  - If approved by the supervising radiologist, an altered, unconscious, sedated or intubated patient with an MR conditional active implant can undergo MRI provided the implant conditions can be met.

MR CONDITIONAL ACTIVE IMPLANTS

- MR conditional active implants are metallic implants that contain electronic components.
- The MRI technologist must research the implant and complete the Foreign Body / Implant / Device form (MI-0651) or Cardiac Implanted Electronic Device MR Approval form (MI-0664). The supervising radiologist will then review the form and supporting documentation and determine whether to proceed with the MRI.

- MR conditional active implants that have been researched and approved within the past **6 months** do not need a new device form completed provided:
  - Another timeframe is not specified in the implant's conditions.
  - There have been no changes to the implant since the last MRI examination.
  - The implant's conditions can be met on the MRI scanner to be used.
- If approved by the supervising radiologist, an altered, unconscious, sedated or intubated patient with an MR conditional active implant can undergo MRI provided the implant conditions can be met.