Standards, and national recommendations. Ensures that all local and national regulations and accreditation requirements as relating to medical physics are met and performs EPE for MRI systems, including systems used for radiation therapy treatment planning.

Provides imaging protocol consultation with radiologists and other health care providers. Ensures the safe and appropriate implementation and use of imaging procedures and equipment as they pertain to diagnostic and treatment needs. Ensures the safety of the MRI environment. Provides guidance regarding controlled access to MRI areas. Establishes and oversees radiation and/or MR safety programs to meet local and national regulations, accrediting organization technical specifications.

Develops an MRI safety program. Acts as the facility’s MR Safety Expert or MR Safety Officer. Provides MRI safety training to health care team members and emergency responders. Provides consultation regarding patient safety in MRI, such as SAR considerations, prevention of patient burns, implanted devices, etc.

Provides consultation regarding patient safety in MRI, such as SAR considerations, prevention of patient burns, implanted devices, etc. Provides MR safety training in health care team members and emergency responders. Provides imaging protocol consultation with radiologists and other health care providers. Ensures the safety of the MRI environment.

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Charge:
- To monitor and report on emerging MR safety issues;
- To develop methods and recommend procedures for MRI safety testing;
- To establish liaisons with commercial entities regarding the safety of MRI equipment; and
- To develop and recommend safety components for multi-center MR protocols.

MR Safety Related Committees & Task Groups

Working Group on MR Safety (WGMRS)

Implants in MRI: Challenges & Changes

AAPM Policy 1: Definition of A Qualified Medical Physicist

- For purposes of clinical professional service, a Qualified Medical Physicist (QMP) is an individual competent to independently provide clinical professional services in medical physics subfields in which they are certified.

Medical Physics Subfields:
- Therapeutic Medical Physics: Diagnostic Medical Physics, Nuclear Medical Physics, Medical Health Physics, Magnetic Resonance Imaging Physics
- QMP meets each of the following criteria:
  - Earned a bachelor’s or doctoral degree in physics, medical physics, biophysics, radiological physics, medical health physics, or equivalent disciplines from an accredited college or university;
  - Granted certification in the specific subfield(s) of medical physics with its associated medical health physics aspects by an appropriate national certifying body and abide(s) by the certifying body’s requirements for continuing education.

National certifying bodies deemed appropriate for subfields:
- Therapeutic Medical Physics: ABR, ABMP, or CCPM
- Diagnostic Medical Physics: ABR, ABMP, or CCPM
- Nuclear Medical Physics: ABR, ABMP, or ASNM
- Medical Health Physics: ABR (HP), ASNM (Radiation Protection), ABMP (HP), or ASNM (Radiation Protection & Controls (MHP))
- Magnetic Resonance Imaging Physics: ABR-MR, ABMP-MR, or ASNM-MR.

AAPM Policy 17: Scope of Practice of Clinical Medical Physics

MR Safety Related AAPP Activities
Medical Physicist as MR Safety Expert (MRSE)

- Must be able to clearly communicate impact of technical nuance on risks in MRI environment to aid MR faculty and staff in making effective patient management decisions.
- Does not make medical decisions (such as to move forward with scanning a specific patient).
- Does not advise on technical conditions for scanning on label.
- May be asked to advise on approaches to scanning off-label and associated risks.

Medical Devices & Implants in MRI Environment

- Active Implanted Medical Devices (AIMD)
  - CIED (pacemakers, ICD)
  - Neurostimulators (deep brain, vagal nerve, spine, jaw and bladder)
  - Pumps (drug, insulin)
  - Cardiac loop recorders

- Passive implants & retained foreign objects
  - Neurosurgical (aneurysm clips, coils, shunts)
  - Orthopedic (prosthetics, rods, screws)
  - Cardiovascular and Vascular (stents, coils & filters)
  - Breast (implants, tissue expanders)
  - Retained foreign objects (metal in orbits, bullet fragments, etc)

- External objects and devices
  - On-body injectors
  - Permanent makeup, tattoos, piercings, etc

WGMRS: Proposed Task Group

- Developed method and promote best practices for QMP assessment of risk in patients with implanted medical devices as well as reporting and communication considerations with staff and/or clinicians.
- Develop methods and promote best practices for QMP assessment of risk in patients with implanted medical devices as well as reporting and communication considerations with staff and/or clinicians.
- Review general considerations and approaches to modifying MR acquisitions to accommodate conditions for MR safety versus protocol effectiveness.
- Identify common pitfalls and areas requiring research or better standardization.

Summary

- Increased global use of MRI as well as in radiation oncology have heightened MR Safety awareness within the AAPM membership.
- MRI has emerged as a distinct subfield of Medical Physics.
- MR physicists often looked to as MR safety experts.
- Challenges that need to be addressed:
  - Scope of practice in MR safety [and MR physics]
  - Implanted, partially implanted and ancillary devices in the MR environment
  - Hybrid suites and special use scanners
  - MR siting and specifications report that addresses modern safety concerns
  - Ongoing education and training on par with current efforts in image quality.
- Partnering with ISMRM on MR safety issues potentially beneficial.

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Thank you for your time!