



Magnetic Resonance Imaging

1. Introduction

Candidates applying for certification and registration under the primary eligibility pathway are required to meet the Professional Education Requirements specified in the *ARRT Rules and Regulations*. ARRT's *Magnetic Resonance Imaging Didactic and Clinical Competency Requirements* are one component of the Professional Education Requirements.

The requirements are periodically updated based upon a [practice analysis](#) which is a systematic process to delineate the job responsibilities typically required of magnetic resonance imaging (MRI) technologists. The result of this process is a [task inventory](#) which is used to develop the clinical competency requirements (see section 4 below) and the content specifications which serve as the foundation for the didactic competency requirements (see section 3 below) and the examination.

2. Documentation of Compliance

After the candidate submits the *Application for Certification and Registration*, the program director (and authorized faculty member if required) will verify that ARRT requirements were met using the Program Verification Form on the ARRT Educator website. The verification includes confirming the applicant has completed the educational program, including the ARRT Didactic and Clinical Competency Requirements and conferment of a degree meeting ARRT requirements. Candidates who complete their educational program during 2028 or 2029 may use either the 2025 Didactic and Clinical Competency Requirements or the 2028 requirements. Candidates who complete their educational program after January 31, 2030, must use the 2028 requirements.

3. Didactic Competency Requirements

The purpose of the didactic education requirement is to document that individuals had the opportunity to develop fundamental knowledge, integrate theory into practice, and hone affective and critical thinking skills required to demonstrate professional competency. Candidates must successfully complete coursework addressing the topics listed in the [ARRT Content Specifications](#) for the MRI Examination. These topics would typically be covered in a nationally recognized curriculum published by organizations such as the ASRT or ISMRT. Educational programs accredited by a mechanism acceptable to ARRT generally offer education and experience beyond the minimum requirements specified in the content specifications and clinical competency documents.

4. Clinical Competency Requirements

The purpose of the clinical competency requirements is to document that individuals have demonstrated competence performing the clinical activities fundamental to a particular discipline. Competent performance of these fundamental activities, in conjunction with mastery of the cognitive knowledge and skills as documented by the examination requirement, provides the basis for the acquisition of the full range of procedures typically required in a variety of settings. Demonstration of clinical competence means the candidate has performed the procedure independently, consistently, and effectively during the course of their formal education. The following pages identify the specific procedures for the clinical competency requirements. Candidates may wish to use these pages, or their equivalent, to record completion of the requirements. The pages do NOT need to be sent to the ARRT.



General Requirement: Remote scanning is not acceptable for completion of ARRT Clinical Requirements. The candidate must complete the examination or procedure at the facility where the patient and equipment are located. The candidate must be physically present during the examination or procedure.

4.1 General Performance Considerations

4.1.1 Patient Diversity

Demonstration of competence should include variations in patient characteristics such as age, gender, and medical condition.

4.1.2 Simulated Performance

The ARRT requirements specify that general patient care procedures may be simulated as designated in the specific requirements below. Simulations must meet the following criteria:

- ARRT defines simulation of a clinical procedure routinely performed on a patient as the candidate completing the hands-on task of the procedures on a live human being, using the same level of cognitive, psychomotor, and effective skills required for performing a procedure on a patient in a clinical setting standardized to mirror the physical facilities where practice occurs.
- ARRT requires that competencies performed as a simulation must meet the same criteria as competencies demonstrated on patients. For example, the competency must be performed under direct observation of the program director or program director's designee and be performed independently, consistently, and effectively.

4.1.3 Elements of Competence

Demonstration of clinical competence requires that the program director or the program director's designee has observed the candidate performing the procedure independently, consistently, and effectively during the course of the candidate's formal educational program.

Remote scanning is not acceptable for completion of ARRT Clinical Requirements. The candidate must complete the examination or procedure at the facility where the patient and equipment are located. The candidate must be physically present during the examination or procedure.

4.2 Magnetic Resonance Imaging Specific Requirements

As part of the education program, candidates must demonstrate competence in the clinical procedures identified below. These clinical procedures are listed in more detail in the following sections.

- 7 mandatory general patient care procedures
- ~~10~~8 mandatory MRI safety requirements
- ~~30~~47 mandatory MR imaging procedures
- ~~10~~42 of the ~~3~~12 elective MR imaging procedures and
- ~~10~~7 mandatory MRI quality control procedures

One patient may be used to document more than one competency. However, each individual procedure may be used for only one competency. For example, an MRI of the abdomen cannot be used for both liver and kidneys. The candidate cannot perform more than three competencies per day on the same patient.

4.2.1 General Patient Care Procedures

Candidates are required to be BLS or ~~ACLS~~/CPR certified. They must have demonstrated competence in the remaining 6 patient care procedures listed below. The procedures should be performed on

*"e.g." is used to indicate examples of the topics covered, but is not a complete list



patients whenever possible, but simulation is acceptable if state or institutional regulations prohibit candidates from performing the procedures on patients.

General Patient Care Procedures	Date Completed	Competence Verified By
BLS <u>or</u> ACLS Certified/ CPR		
Vital Signs (Blood Pressure, Pulse, Respiration)		
Sterile <u>and</u> Medical Aseptic Technique		
Standard Precautions		
Transfer of Patient		
Care of Patient Medical Equipment (e.g., * Oxygen Tank, IV Tubing)		
Venipuncture		

4.2.2 MRI Safety Requirements

Candidates must demonstrate competence in 108 areas of MRI Safety listed below.

MRI Safety Requirements	Date Completed	Competence Verified By
Screening Patients, Personnel, and Non-Personnel for MR Safe, MR Conditional, and MR Unsafe Devices and Objects		
<u>Identify and implement implant specific parameters</u>		
Identify MR Safety Zones		
Static Magnetic Field (e.g., Translational and Rotational Forces)		
Radiofrequency Field (e.g., Thermal Heating [SAR], Coil Positioning, Patient Positioning, Insulation)		
Gradient Magnetic Fields (e.g., Induced Current, Auditory Considerations)		
Communication and Monitoring Considerations (e.g., Sedated Patients, Verbal and Visual Contact, Vital Signs)		
Contrast Media Safety (e.g., <u>Acute Adverse Events</u> NSF , Renal Function, <u>Pregnancy</u>)		
Other MRI Safety Considerations (e.g., Cryogen Safety, Fire, Medical Emergencies, Laser Alignment Lights, Quench)		
<u>Differentiate the roles and responsibilities between Non MR Personnel and Level 1 or Level 2 MR personnel</u>		



4.2.3 MRI Procedures

Candidates must demonstrate competence in the [3017](#) mandatory procedures listed on the following pages. ~~For the mandatory procedures, candidates must be evaluated while scanning actual patients.~~ Candidates are also required to demonstrate competence for [102](#) of the [312](#) elective procedures. ~~Elective~~ Procedures should be performed on patients; however, up to [85](#) of the ~~elective~~ procedures may be performed on volunteers, as long as your institution has a policy that assures the protection of both the volunteer's and the institution's interests.

When performing MRI procedures, the candidate must independently demonstrate appropriate:

Patient skills including:

- evaluation of requisition and/or medical record
- identification of patient
- documentation of patient history including allergies
- safety screening including implants
- patient education concerning the procedure
- patient care and assessment
- preparation of examination room
- Standard Precautions
- preparation and/or administration of contrast media
- MRI safety procedures and precautions
- patient discharge with postprocedure instructions

Technical and procedural skills including:

- selection of optimal imaging coil
- patient positioning
- protocol selection
- parameter selection
- image display, networking, and archiving
- postprocessing
- documentation of procedure and patient data in appropriate records
- [data acquisition](#)
- [implementing implant specific conditions](#)

Evaluation skills including:

- analysis of the image for technical quality
- demonstration of correct anatomic regions
- proper identification on images and patient data
- recognition of relevant pathology
- exam completeness



4.2.3 MRI Procedures (continued)

Head and Neck	Mandatory	Elective	Eligible for Simulation Patient or Volunteer	Date Completed	Competence Verified By
Brain (e.g., MS, seizure)	✓		Patient		
Internal Auditory Canals (IACs)	✓		Patient		
Pituitary	✓		Patient		
Orbits	✓	✗			
Cranial Nerves (nonIACs) (e.g., skull base, trigeminal nerve)	✓	✗	✓		
Vascular Head MRA	✓		Patient		
Vascular Head MRV	✓	✗	✓		
Brain Perfusion		✓	✓		
Brain Spectroscopy		✗			
CSF Flow		✓	✓		
CSF Leaks		✓	✓		
Face (e.g., sinuses)		✓	✓		
Soft Tissue Neck (e.g., parotids, thyroid)	✓	✗	✓		
Vascular Neck MRA	✓		Patient		
Vascular Neck MRV		✓	✓		
Spine					
Cervical	✓		Patient		
Thoracic	✓		Patient		
Lumbar	✓		Patient		
Spinal Trauma		✓	✓		
Total Spine (Large FOV)		✓	✓		
Sacrum and-Coccyx	✓	✗	✓		
Sacroiliac (SI) Joints		✓	✓		
Lumbar Plexus		✓	✓		
Thorax					
Chest (noncardiac) (mediastinal mass, chest wall)	✓	✗	✓		
Breast (screening and diagnostic, breast implant)		✓	✓		
Vascular Chest MRA Thorax	✓	✗	✓		
Vascular Chest MRV		✓	✓		
Brachial Plexus		✓	✓		



4.2.3 MRI Procedures (continued)

Abdomen and Pelvis	Mandatory	Elective	Eligible for Simulation Patient or Volunteer	Date Completed	Competence Verified By
Liver	✓		Patient		
Iron Quantification		✓	✓		
Pancreas		✓	✓		
MRCP	✓		Patient		
Adrenals		✓	✓		
Kidneys		✓	✓		
Enterography		✓	✓		
Vascular Abdomen MRA		✓	✓		
Vascular Abdomen MRV		✓	✓		
Soft Tissue Pelvis (e.g., bladder, rectum)	✓		✓		
Female Soft Tissue Pelvis (e.g., Uterus)	✓	✗	✓		
Male Soft Tissue Pelvis (e.g., Prostate)		✓	✓		
Vascular Pelvis MRA		✓	✓		
Vascular Pelvis MRV		✓	✓		
Musculoskeletal					
Temporomandibular Joints (TMJs)		✓	✓		
Sternum/ Sternoclavicular (SC) Joints		✓	✓		
Sternoclavicular (SC) Joints		✓	✓		
Shoulder	✓		Patient		
Scapula		✓	✓		
Long Bones (Upper Extremity)	✓	✗	✓		
Elbow	✓	✗	✓		
Wrist or Hand	✓		Patient ✓		
Hand		✗			
Finger (2nd-5th digits) / Thumb		✓	✓		
Thumb		✓	✓		
Bony Pelvis	✓	✗	✓		
Hip	✓		Patient		
Long Bones (Lower Extremity)	✓	✗	✓		



Knee	✓		Patient		
Ankle	✓		Patient		
Foot	✓		Patient		
Arthrogram		✓	✓		
Vascular Extremities (e.g., runoff MRA)		✓	✓		
Soft Tissue (e.g., tumor, infection)		✓	✓		

4.2.3 MRI Procedures (continued)

Additional Imaging Procedures	Mandatory	Elective	Eligible for Simulation	Date Completed	Competence Verified By
Image Postprocessing (e.g., MIP Reformation, MPR, Subtraction)	✓				
CINE (e.g., CSF Flow Study, TMJs)		✗	✗		

4.2.4 MRI Quality Control Procedures

Candidates must demonstrate competence in the 107 quality control activities listed below. The first 74 procedures are performed on a QC phantom.

MRI Quality Control Procedures	Date Completed	Competence Verified By
Signal to Noise Ratio		
Table Position Accuracy		
Center Frequency		
Transmitter Gain or Attenuation		
Geometric Accuracy		
High Contrast Spatial Resolution		
Low Contrast Detectability		
Artifact Evaluation		
Equipment Inspection (e.g., Coils, Cables, Door Seals)		
Monitor Cryogen Levels		
Room Temperature and Humidity		