

Diagnostic Radiology Milestones

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The Milestones are designed only for use in evaluation of resident physicians in the context of their participation in Accreditation Council for Graduate Medical Education–accredited residency or fellowship programs. The Milestones provide a framework for the assessment of the development of the resident physician in key dimensions of the elements of physician competency in a specialty or subspecialty. They neither represent the entirety of the dimensions of the 6 domains of physician competency, nor are they designed to be relevant in any other context.

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PATIENT CARE AND TECHNICAL SKILLS 1: CONSULTANT					
TABLE 1					
Level 1	Level 2	Level 3	Level 4	Level 5	
Uses established evidence-based imaging guidelines such as American College of Radiology (ACR) Appropriateness Criteria Appropriately uses the Electronic Health Record to obtain relevant clinical information	Recommends appropriate imaging of common* conditions independently	Recommends appropriate imaging of uncommon* conditions independently	Integrates current research and literature with guidelines, taking into consideration cost effectiveness and risk-benefit analysis, to recommend imaging	Participates in research, development, and implementation of imaging guidelines	

* As defined by the residency program.

PATIENT CARE AND TECHNICAL SKILLS 2: COMPETENCE IN PROCEDURES					
TABLE 2					
Level 1	Level 2	Level 3	Level 4	Level 5	
Competently performs basic procedures* under indirect supervision Recognizes and manages complications of basic procedures	Competently performs intermediate procedures as defined by the residency program Recognizes and manages complications of intermediate procedures	Competently performs advanced procedures, as defined by the residency program Recognizes and manages complications of advanced procedures	Able to competently and independently perform the following procedures: - adult and pediatric fluoroscopic studies - lumbar puncture - image-guided venous and arterial access - hands-on adult and pediatric ultrasound studies - drainage of effusions and abscesses - image-guided biopsy - nuclear medicine I-131 treatments (≤33 and >33 mCi)	Able to teach procedures to junior-level residents Competently performs complex procedures, modifies procedures as needed, and anticipates and manages complications of complex procedures	

* Basic procedures, as defined by each residency program, include those needed to take independent call.

MEDICAL KNOWLEDGE 1: PROTOCOL SELECTION AND OPTIMIZATION OF IMAGES					
TABLE 3					
Level 1	Level 2	Level 3	Level 4	Level 5	
Selects appropriate protocol and contrast agent/dose for basic imaging, including protocols encountered during independent call as defined by the residency program Recognizes suboptimal imaging	Selects appropriate protocols and contrast agent/dose for intermediate imaging as defined by the residency program	Selects appropriate protocols and contrast agent/dose for advanced imaging as defined by the residency program Demonstrates knowledge of physical principles to optimize image quality	Independently modifies protocols as determined by clinical circumstances Applies physical principles to optimize image quality	Teaches and/or writes imaging protocols	

MEDICAL KNOWLEDGE 2: INTERPRETATION OF EXAMINATIONS					
TABLE 4					
Level 1	Level 2	Level 3	Level 4	Level 5	
Makes core observations, formulates differential diagnoses, and recognizes critical findings Differentiates normal from abnormal	Makes secondary observations, narrows the differential diagnosis, and describes management options	Provides accurate, focused, and efficient interpretations Prioritizes differential diagnoses and recommends management	Makes subtle observations Suggests a single diagnosis when appropriate Integrates current research and literature with guidelines to recommend management	Demonstrates expertise and efficiency at a level expected of a subspecialist Advances the art and science of image interpretation	

PROFESSIONALISM 1: PROFESSIONAL VALUES AND ETHICS				
TABLE 5				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates the following professional behaviors: ■ recognizes the importance and priority of patient care and advocates for patient interests ■ fulfills work-related responsibilities ■ is truthful ■ recognizes personal limitations and seeks help when appropriate ■ recognizes personal impairment and seeks help when needed ■ responds appropriately to constructive criticism ■ places needs of patients before self ■ maintains appropriate boundaries with patients, colleagues, and others ■ exhibits tolerance and acceptance of diverse individuals and groups ■ maintains patient confidentiality ■ fulfills institutional and program requirements related to professionalism and ethics ■ attends required conferences	Is an effective health care team member Demonstrates professional behaviors listed in the second column	Is an effective health care team leader, promoting primacy of patient welfare, patient autonomy, and social justice Demonstrates professional behaviors listed in the second column	Serves as a role model for professional behavior Demonstrates professional behaviors listed in the second column	Participates in local and national organizations to advance professionalism in radiology Mentors others regarding professionalism and ethics

TABLE 6 INTERPERSONAL AND COMMUNICATION SKILLS 1: EFFECTIVE COMMUNICATION WITH PATIENTS, FAMILIES, AND CAREGIVERS				
Level 1	Level 2	Level 3	Level 4	Level 5
Communicates information about imaging and examination results in routine, uncomplicated circumstances Obtains informed consent	Communicates, under direct* supervision, in challenging circumstances (eg, cognitive impairment, cultural differences, language barriers, low health literacy) Communicates, under direct supervision, difficult information, such as errors, complications, adverse events, and bad news	Communicates, under indirect* supervision, in challenging circumstances (eg, cognitive impairment, cultural differences, language barriers, low health literacy)	Communicates complex and difficult information, such as errors, complications, adverse events, and bad news	Serves as a role model for effective and compassionate communication Develops patient-centered educational materials

* See ACGME definition of direct supervision in the Program Requirements.

TABLE 7 INTERPERSONAL AND COMMUNICATION SKILLS 2: EFFECTIVE COMMUNICATION WITH MEMBERS OF THE HEALTH CARE TEAM				
Level 1	Level 2	Level 3	Level 4	Level 5
Adheres to transfer-of-care policies Written/Electronic: Generates accurate reports with appropriate elements required for coding Verbal: Communicates urgent and unexpected findings according to institutional policy and ACR guidelines	Written/Electronic: Efficiently generates clear and concise reports that do not require substantive faculty member correction on routine cases Verbal: Communicates findings and recommendations clearly and concisely	Written/Electronic: Efficiently generates clear and concise reports that do not require substantive faculty member correction on common complex cases Verbal: Communicates appropriately under stressful situations	Written/Electronic: Efficiently generates clear and concise reports that do not require substantive faculty member correction on all cases Verbal: Communicates effectively and professionally in all circumstances	Leads interdisciplinary conferences Written/Electronic: Generates tailored reports meeting needs of referring physician Develops templates and report formats Verbal: Serves as a role model for effective communication

TABLE 8 SYSTEMS-BASED PRACTICE 1: QUALITY IMPROVEMENT (QI)				
Level 1	Level 2	Level 3	Level 4	Level 5
Describes departmental QI initiatives Describes the departmental incident/occurrence reporting system	Incorporates QI into clinical practice Participates in the departmental incident/occurrence reporting system	Identifies and begins a systems-based practice project incorporating QI methodology	Completes a systems-based practice project as required by the ACGME Review Committee Describes national radiology quality programs (eg, National Radiology Data Registry, accreditation, peer review)	Leads a team in the design and implementation of a QI project Routinely participates in root cause analysis

SYSTEMS-BASED PRACTICE 2: HEALTH CARE ECONOMICS					
Level 1	Level 2	Level 3	Level 4	Level 5	
Describes the mechanisms for reimbursement, including types of payers	States relative cost of common procedures	Describes the technical and professional components of imaging costs	Describes measurements of productivity (eg, RVUs)	Describes the radiology revenue cycle	

PRACTICE-BASED LEARNING AND IMPROVEMENT 1: PATIENT SAFETY—CONTRAST AGENTS, RADIATION SAFETY, MR SAFETY, SEDATION					
Level 1	Level 2	Level 3	Level 4	Level 5	
Contrast Agents: Recognizes and manages contrast reactions	Contrast Agents: Redemonstrates recognition and management of contrast reactions	Contrast Agents: Redemonstrates recognition and management of contrast reactions	Contrast Agents: Redemonstrates recognition and management of contrast reactions	Contrast Agents: Teaches appropriate treatment of contrast reactions	
Radiation Safety: Describes the mechanisms of radiation injury and the ALARA ("as low as reasonably achievable") concept	Radiation Safety: Accesses resources to determine exam-specific average radiation dose information	Radiation Safety: Communicates the relative risk of exam-specific radiation exposure to patients and practitioners	Radiation Safety: Applies principles of Image Gently and Image Wisely	Radiation Safety: Promotes radiation safety	
MR Safety: Describes risks of MRI	MR Safety: Accesses resources to determine the safety of implanted devices and retained metal	MR Safety: Communicates MR safety of common implants and retained foreign bodies to patients and practitioners	MR Safety: Applies principles of MR safety, including safety zones and pre-MR screening	MR Safety: Participates in establishing or directing a safe MR program	
...	...	...	Sedation: Describes the principles of conscious sedation	Sedation: Selects appropriate sedation agent and dose for conscious sedation	

PRACTICE-BASED LEARNING AND IMPROVEMENT 2: SELF-DIRECTED LEARNING					
Level 1	Level 2	Level 3	Level 4	Level 5	
Develops an annual learning plan based on self-reflection and program feedback	Evaluates and modifies learning plan	Evaluates and modifies learning plan	Evaluates and modifies learning plan	Advocates for lifelong learning at local and national levels	

PRACTICE-BASED LEARNING AND IMPROVEMENT 3: SCHOLARLY ACTIVITY					
Level 1	Level 2	Level 3	Level 4	Level 5	
Documents training in critical thinking skills and research design	Works with faculty mentors to identify potential scholarly projects	Begins scholarly project	Completes and presents a scholarly project	Independently conducts research and contributes to the scientific literature and/or completes more than one scholarly project	Completes an IRB submission