

The Abdominal Radiology Milestone Project

A Joint Initiative of

The Accreditation Council for Graduate Medical Education

and

The American Board of Radiology



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The Milestones are designed only for use in evaluation of fellows in the context of their participation in ACGME-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 six domains of physician competency, nor are they designed to be relevant in any other context.

Abdominal Radiology Milestones

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Milestone Reporting

This document presents milestones designed for programs to use in semi-annual review of fellow performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for fellow performance as a fellow moves from entry into fellowship through graduation. In the initial years of implementation, the Review Committee will examine Milestone performance data for each program's fellows as one element in the Next Accreditation System (NAS) to determine whether fellows overall are progressing.

For each period, review and reporting will involve selecting Milestone levels that best describe a fellow's current performance and attributes. Milestones are arranged into numbered levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert in the subspecialty.

Selection of a level implies that the fellow substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page v).

Level 1: The fellow demonstrates milestones expected of an incoming fellow.

Level 2: The fellow is advancing and demonstrates additional milestones, but is not yet performing at a mid-fellowship level.

Level 3: The fellow continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for fellowship.

Level 4: The fellow has advanced so that he or she now substantially demonstrates the milestones targeted for fellowship. This level is designed as the graduation target.

Level 5: The fellow has advanced beyond performance targets set for fellowship and is demonstrating "aspirational" goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional fellows will reach this level.

Additional Notes

Level 4 is designed as the graduation *target* and *does not* represent a graduation *requirement*. Making decisions about readiness for graduation is the purview of the fellowship program director. Study of Milestone performance data will be required before the ACGME and its partners will be able to determine whether milestones in the first four levels appropriately represent the developmental framework, and whether Milestone data are of sufficient quality to be used for high-stakes decisions.

Examples are provided with some milestones. Please note that the examples are not the required element or outcome; they are provided as a way to share the intent of the element.

Some milestone descriptions include statements about performing independently. These activities must occur in conformity to the ACGME supervision guidelines, as well as to institutional and program policies. For example, a fellow who performs a procedure independently must, at a minimum, be supervised through oversight.

Answers to Frequently Asked Questions about Milestones are available on the Milestones web page:

<http://www.acgme.org/acgmeweb/Portals/0/MilestonesFAQ.pdf>.

Radiology Subspecialty Assessment tools:

- End-of-Rotation Global Assessment
- Direct observation and feedback
- Reading out with resident
- Review of reports
- Rate of major discrepancies
- Self-Assessment and Reflections/Portfolio
- OSCE/simulation
- Completion of institutional safety modules, BCLS/ACLS
- Case/Procedure Logs, including complications
- Multi-Source Evaluations

The diagram below presents an example set of milestones for one sub-competency in the same format as the Milestone Report Worksheet. For each reporting period, a fellow's performance on the milestones for each sub-competency will be indicated by selecting the level of milestones that best describes that fellow's performance in relation to those milestones.

Consultant — Patient Care 1				
Level1	Level2	Level3	Level4	Level5
Demonstrates mastery of and consistently incorporates established evidence-based imaging guidelines such as American College of Radiology (ACR) Appropriateness Criteria® specific to abdominal imaging using relevant electronic medical record information	Integrates current abdominal imaging research and literature with guidelines, taking into consideration cost effectiveness and risk-benefit analysis, to recommend imaging specific to the subspecialty	With indirect supervision, supervises residents in using evidence-based imaging guidelines to protocol abdominal imaging studies	Independently supervises residents in using evidence-based imaging guidelines to protocol abdominal imaging studies	Participates in research, development, and implementation of abdominal imaging guidelines
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet rotated <input type="checkbox"/>

Selecting a response box in the middle of a level implies that milestones in that level and in lower levels have been substantially demonstrated.

Selecting a response box on the line in between levels indicates that milestones in lower levels have been demonstrated as well as **some** milestones in the higher level(s).

Consultant — Patient Care 1				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates mastery of and consistently incorporates established evidence-based imaging guidelines, such as the American College of Radiology (ACR) Appropriateness Criteria® specific to abdominal imaging, using relevant electronic medical record information	Integrates current abdominal imaging research and literature with guidelines, taking into consideration cost effectiveness and risk-benefit analysis, to recommend imaging specific to the subspecialty	With indirect supervision, oversees residents in using evidence-based imaging guidelines to protocol abdominal imaging studies	Independently supervises residents in using evidence-based imaging guidelines to protocol abdominal imaging studies	Participates in research, development, and implementation of abdominal imaging guidelines
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

Competence in Procedures — Patient Care 2				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Competently performs common procedures under direct supervision</p> <p>Recognizes and manages complications of procedures</p>	<p>Competently performs common procedures under indirect supervision</p>	<p>Able to instruct junior-level residents on performing common procedures and managing complications</p>	<p>Able to competently and independently perform the following procedures:</p> <ul style="list-style-type: none"> ▪ adult radiography and fluoroscopy ▪ hands-on adult ultrasound ▪ image-guided biopsy <p>Monitors outcomes of procedures, including complications and diagnostic yield, when appropriate</p>	<p>Competently performs complex abdominal imaging procedures, modifies procedures as needed, and anticipates and manages complications of complex procedures</p> <p>Participates in research involving abdominal imaging procedures</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Comments:</p>				<p>Not yet achieved Level 1 <input type="checkbox"/></p>

Patient Safety — Patient Care 3				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Contrast Agents: Recognizes and manages contrast reactions</p> <p>Radiation Safety: Communicates the relative risk of exam-specific radiation exposure to patients and practitioners for abdominal imaging procedures</p> <p>Understands and adopts the concepts of Image Wisely[®] and Image Gently[®]</p> <p>Magnetic Resonance (MR) Safety: Applies principles of MR safety, including safety zones and pre-MR screening</p> <p>Conscious sedation (if applicable): Describes the principles of conscious sedation</p> <p>Selects appropriate sedation agent and dose for conscious sedation with direct supervision</p>	<p>Contrast Agents: Modifies procedures for patients with specific safety needs (e.g., allergies, immunocompromised state, previous contrast reactions, renal insufficiency)</p> <p>Radiation Safety: Protocols abdominal imaging exams to minimize radiation exposure while maintaining diagnostic quality</p> <p>MR Safety: Uses resources to communicate MR safety of common implants and retained foreign bodies to patients and practitioners</p> <p>Conscious sedation (if applicable): Selects appropriate sedation agent and dose for conscious sedation with indirect supervision</p> <p>Identifies and manages the complications associated with conscious sedation</p>	<p>Contrast Agents: Instructs residents on modifying procedures for patients with specific safety needs (e.g., allergies, immunocompromised state, previous contrast reactions, renal insufficiency)</p> <p>Radiation Safety: Instructs residents on protocoling abdominal imaging exams to minimize radiation exposure while maintaining diagnostic quality</p> <p>MR Safety: Teaches residents MR safety and use of resources</p> <p>Conscious sedation (if applicable): Modifies conscious sedation protocols for patients with special needs, such as chronic lung disease, allergies, etc., with indirect supervision</p>	<p>Contrast Agents: Understands the evidence-based rationale for using specific contrast agents in abdominal imaging studies based on patient needs</p> <p>Radiation Safety: Actively participates in a radiation safety program</p> <p>MR Safety: Actively participates in an MR safety program</p> <p>Conscious sedation (if applicable): Understands the evidence-based rationale for using specific sedation agents based on patient needs</p>	<p>Contrast Agents: Participates in research involving contrast agents</p> <p>Radiation Safety: Participates in developing or directing a radiation safety program</p> <p>MR Safety: Participates in developing or directing an MR safety program</p> <p>Conscious sedation (if applicable): Independently manages conscious sedation for complicated patients</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

Protocol Selection and Optimization of Imaging — Medical Knowledge 1				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Selects appropriate protocols and contrast agents/doses for common abdominal imaging studies, as defined by the program</p> <p>Recognizes suboptimal imaging for common abdominal imaging studies and applies physical principles to optimize image quality</p>	<p>Selects appropriate protocols and contrast agents/doses for uncommon and complex abdominal imaging studies, as defined by the program</p> <p>Recognizes suboptimal imaging for uncommon and complex abdominal imaging studies and applies physical principles to optimize image quality</p>	<p>Independently modifies protocols for abdominal imaging as determined by clinical circumstances</p>	<p>Supervises residents in protocoling studies</p>	<p>Develops and implements imaging protocols</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

Interpretation — Medical Knowledge 2				
Level 1	Level 2	Level 3	Level 4	Level 5
Provides accurate, focused, and efficient interpretations; prioritizes differential diagnoses; and recommends management for the following modalities: <ul style="list-style-type: none"> ▪ radiography and fluoroscopy ▪ computed tomography (CT) ▪ magnetic resonance imaging (MRI) ▪ positron emission tomography (PET)/CT 	Makes subtle observations and 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	Participates in clinical imaging research
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

Quality Improvement (QI)— Systems-based Practice 1				
Level 1	Level 2	Level 3	Level 4	Level 5
Describes specialty-specific QI initiatives Describes the departmental incident/occurrence reporting system	Incorporates specialty-specific QI into clinical practice Participates in the departmental incident/occurrence reporting system	Works in inter-professional teams to enhance patient safety and improve patient care quality	Participates in identifying system errors and implementing potential systems solutions	Leads a team in the design and implementation of a QI project for the program Routinely participates in root cause analysis
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

Health Care Economics — Systems-based Practice 2				
Level 1	Level 2	Level 3	Level 4	Level 5
Describes the technical and professional components of imaging costs in the subspecialty division	Demonstrates knowledge of departmental cost savings initiatives	Describes billing and coding of subspecialty-specific exams, and recognizes and corrects incorrect coding Creates reports that contain the elements necessary to support exam coding	Describes revenue cycle	Participates in creating evaluation and re-evaluation of CPT codes
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

Self-directed learning — Practice-based Learning and Improvement 1				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Is aware of personal limitations and seeks help when appropriate</p> <p>Uses feedback from teachers, colleagues, and patients</p> <p>Develops a learning plan and uses published review articles and guidelines</p>	<p>Continually seeks and incorporates feedback to improve performance</p> <p>Assesses and provides feedback to junior learners</p>	<p>Demonstrates a balanced and accurate self-assessment of competence, and investigates clinical outcomes and areas for continued improvement</p> <p>Selects evidence-based information to answer specific questions</p>	<p>Performs self-directed learning using evidence-based information</p> <p>Develops a personal continuing education plan</p> <p>Organizes educational activities</p>	<p>Develops an educational curriculum and/or assessment tools</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Comments:</p>				<p>Not yet achieved Level 1 <input type="checkbox"/></p>

Scholarly Activity — Practice-based Learning and Improvement 2				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Demonstrates critical thinking skills and understanding of research design</p> <p>Demonstrates knowledge of basic principles underlying the ethical conduct of research and the protection of human subjects</p>	<p>Critically reviews and interprets the literature with the ability to identify study aims, hypotheses, design, and biases</p> <p>Identifies a mentor and a potential scholarly project</p>	<p>Makes progress on scholarly project</p> <p>Applies the principles of ethics and good clinical practice to the protection of human subjects recruited to participate in research, if applicable</p> <p>Maintains data safety and patient monitoring to ensure continued protection of human subjects</p>	<p>Demonstrates understanding of statistics and epidemiology in analysis of data</p> <p>Presents completed scholarly activity to peers for review and critique</p>	<p>Independently plans and executes research project</p> <p>Explores funding mechanisms on local, regional, and national levels</p> <p>Obtains extramural funding for research study</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Comments:</p>				<p>Not yet achieved Level 1 <input type="checkbox"/></p>

Individual — Professionalism 1				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Is an effective health care team member, promoting primacy of patient welfare, patient autonomy, and social justice</p> <p>Demonstrates the following professional behaviors:</p> <ul style="list-style-type: none"> ▪ 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 	<p>Actively reflects on personal professional behavior and discusses professionalism issues as identified in Level 1 with students and residents</p>	<p>Is an effective health care team leader, promoting primacy of patient welfare, patient autonomy, and social justice</p>	<p>Serves as a role model for professional behavior as identified in Level 1</p>	<p>Mentors others regarding professionalism and ethics</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Comments:</p>				<p>Not yet achieved Level 1 <input type="checkbox"/></p>

Systems — Professionalism 2				
Level 1	Level 2	Level 3	Level 4	Level 5
<p>Is an effective health care team member that demonstrates the following professional behaviors:</p> <ul style="list-style-type: none"> ▪ recognizes the importance and priority of patient care and advocates for patient interests ▪ fulfills work-related responsibilities ▪ maintains patient confidentiality ▪ fulfills Institutional and Program Requirements related to professionalism and ethics ▪ prepares for and attends required conferences 	<p>Recognizes opportunities to improve professionalism in the workplace, and takes part in programs to improve clinical care and professional behavior as identified in Level 1</p>	<p>Is an effective health care team leader, promoting departmental and institutional goals regarding primacy of patient welfare, patient autonomy, and social justice</p>	<p>Serves as a role model for professional behavior as identified in Level 1</p>	<p>Accepts leadership roles in institutional regional and national organizations to advance professionalism</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Comments:</p>				<p>Not yet achieved Level 1 <input type="checkbox"/></p>

Effective Communication with Patients, Families, and Caregivers — Interpersonal and Communication Skills 1				
Level 1	Level 2	Level 3	Level 4	Level 5
Exhibits basic communication skills, and with indirect supervision can effectively communicate patient information in non-stressful situations	Communicates complex and difficult information, such as medical errors, complications, and adverse events	Working with program faculty members, oversees and teaches other more junior learners on how to communicate effectively with patients, families, and caregivers	Serves as a role model for effective and compassionate communication	Develops models and guidelines for communication, and seeks leadership opportunities in the department and/or national professional organizations with regards to patient-centered communication
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

Effective communication with members of the health care team (written and oral) — Interpersonal and Communication Skills 2				
Level 1	Level 2	Level 3	Level 4	Level 5
Efficiently generates clear and concise reports that do not need substantial faculty member corrections on common cases	Efficiently generates clear and concise reports that do not need substantial faculty member corrections in all cases	Generates tailored reports meeting the specific needs of the referring physicians	Serves as a role model for effective and professional communication	Develops and implements standardized report templates
Communicates effectively and professionally in non-stressful situations	Communicates effectively and professionally in all situations	Working with program faculty members, oversees and teaches other more junior residents on how to communicate effectively and professionally	With faculty member supervision, helps to organize departmental and interdisciplinary teaching conferences	Independently leads departmental and interdisciplinary teaching conferences
Understands the institutional policy for transitions of care and hand-offs	Effectively manages transitions of care and hand-offs	Actively participates in departmental and interdisciplinary teaching conferences		Develops models and guidelines for written and oral communications, and seeks leadership opportunities in the department and/or national professional organizations
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>