

Radiation Oncology Milestones

The Accreditation Council for Graduate Medical Education



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Radiation Oncology Milestones

The Milestones are designed only for use in evaluation of residents in the context of their participation in ACGME-accredited residency programs. The Milestones provide a framework for the assessment of the development of the resident in key dimensions of the elements of physician competence 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.

Radiation Oncology Milestones

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American Board of Radiology
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Review Committee for Radiation Oncology

Understanding Milestone Levels and Reporting

This document presents the Milestones, which programs use in a semi-annual review of resident performance, and then report to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME Competencies organized in a developmental framework. The narrative descriptions are targets for resident performance throughout their educational program.

Milestones are arranged into levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert resident in the specialty or subspecialty. For each reporting period, the Clinical Competency Committee will review the completed evaluations to select the milestone levels that best describe each learner's current performance, abilities, and attributes for each subcompetency.

These levels *do not* correspond with post-graduate year of education. Depending on previous experience, a junior resident may achieve higher levels early in the educational program just as a senior resident may be at a lower level later in the educational program. There is no predetermined timing for a resident to attain any particular level. Residents may also regress in achievement of their milestones. This may happen for many reasons, such as over scoring in a previous review, a disjointed experience in a particular procedure, or a significant act by the resident.

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

Additional Notes

Level 4 is designed as a graduation *goal* but *does not* represent a graduation *requirement*. Making decisions about readiness for graduation and unsupervised practice is the purview of the program director. Furthermore, Milestones 2.0 include revisions and changes that preclude using Milestones as a sole assessment in high-stakes decisions (i.e., determination of eligibility for certification or credentialing). Level 5 is designed to represent an expert resident whose achievements in a subcompetency are greater than the expectation. Milestones are primarily designed for formative, developmental purposes to support continuous quality improvement for individual learners, education programs, and the specialty. The ACGME and its partners will continue to evaluate and perform research on the Milestones to assess their impact and value.

Examples are provided for some milestones within this document. Please note: 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 ACGME supervision guidelines as described in the Program Requirements, as well as to institutional and program policies. For example, a resident who performs a procedure independently must, at a minimum, be supervised through oversight.

A Supplemental Guide is also available to provide the intent of each subcompetency, examples for each level, assessment methods or tools, and other available resources. The Supplemental Guide, like examples contained within the Milestones, is designed only to assist the program director and Clinical Competency Committee, and is not meant to demonstrate any required element or outcome.

Additional resources are available in the <u>Milestones</u> section of the ACGME website. Follow the links under "What We Do" at www.acgme.org.

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

Professionalism 2: Accountability/Conscientiousness				
Level 1	Level 2	Level 3	Level 4	Level 5
Takes responsibility for failure to complete tasks and responsibilities, identifies potential contributing factors, and describes strategies for ensuring timely task completion in the future	Performs tasks and responsibilities in a timely manner with appropriate attention to detail in routine situations	Performs tasks and responsibilities in a timely manner with appropriate attention to detail in complex or stressful situations	Recognizes situations that may impact others' ability to complete tasks and responsibilities in a timely manner	Takes ownership of system outcomes
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middle of a leve	el implies that at level and in lower	between levels indicates the in lower levels have been strated as well as somilestones in the higher levels.	at milestones ubstantially ome	

Patient Care 1: Consult				
Level 1	Level 2	Level 3	Level 4	Level 5
Takes basic medical history and performs general physical exam	Takes site-focused history and performs basic site- focused physical exam	Takes comprehensive site-focused history and performs advanced site-focused physical exam	Completes a history/physical for complex clinical scenarios	
	Lists treatment options	Selects treatment(s) for common clinical scenarios and formulates multidisciplinary care plan	Selects treatment and coordinates the multidisciplinary care plan for complex clinical scenarios	Leads the multidisciplinary care team
Lists the elements of the informed consent process	Answers questions about treatment plan and seeks guidance, when needed	Identifies risks and benefits of common treatment options and obtains informed consent	Identifies risks and benefits of complex treatment options and obtains informed consent	
Comments: Not Yet Completed Level 1 Not Yet Assessable				

Patient Care 2: Simulation				
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies the members of interprofessional team involved in simulation	Lists simulation parameters	Selects simulation parameters for common clinical scenarios to balance tumor exposure and patient comfort	Selects simulation parameters for uncommon clinical scenarios to balance tumor exposure and patient comfort	Develops a new simulation immobilization technique
Identifies role of the radiation oncologist in simulation process	Supervises simulation to ensure parameters are met	Recognizes common problems that arise during simulation scans and works with interprofessional team to resolve	Recognizes uncommon problems that arise during simulation scans and works with interprofessional team to resolve	
Comments: Not Yet Completed Level 1 Not Yet Assessable				

Patient Care 3: Contouring and Target Delineation					
Level 1	Level 2	Level 3	Level 4	Level 5	
Identifies relevant organs at risk	Contours common organs at risk	Contours complex organs at risk	Identifies errors in organ at risk contours		
Identifies diagnostic imaging modalities useful for target delineation	Selects diagnostic images to aid in high-quality target delineation	Verifies accuracy of co- registration of the image fusions with the planning scan	Resolves errors in co- registration	Anticipates treatment planning challenges and proactively adjusts target volumes	
Lists target volume	Contours simple target	Contours moderately	Contours complex		
definitions	volumes	complex target volumes	target volumes		
Comments:					
Not Yet Completed Level 1 Not Yet Assessable					

Level 1	Level 2	Level 3	Level 4	Level 5
Identifies the role of the radiation oncologist in treatment planning	Evaluates a simple radiotherapy plan and recognizes when revision is needed	Evaluates a moderately complex radiotherapy plan and recognizes when revision is needed	Evaluates a complex radiotherapy plan and recognizes when revision is needed	Consistently anticipates challenges dosimetrists may incur with plan design and offers prospective advice on how to maximize target coverage and minimize dose to organs at risk
Identifies different treatment planning techniques	Identifies basic treatment planning techniques	Suggests plan revisions that incorporate simple planning techniques	Suggests plan revisions that incorporate complex planning techniques	
Understands that target coverage must be balanced with dose to organs at risk	Demonstrates general knowledge of organs at risk tolerance (serial and parallel) with conventional fractionation	Demonstrates general knowledge organs at risk tolerance for fractionation other than conventional	Independently evaluates a reirradiation plan using biologically effective dose or equivalent dose calculations	

Patient Care 5: Treatment Delivery				
Level 1	Level 2	Level 3	Level 4	Level 5
Describes the purpose of on-treatment visits including eliciting symptoms	Anticipates and elicits common treatment-related acute toxicities	Manages common treatment-related acute toxicities	Manages complex/high- grade treatment-related acute toxicities	
Identifies the importance of online/offline imaging review	Assesses online and offline imaging to evaluate for basic set-up	Assesses online and offline imaging to evaluate for complex set-up	Independently decides on re-simulations and start adaptive radiotherapy	Designs novel set-up strategies
Identifies the importance of continued coordination of care during combined modality treatments	Identifies issues during treatment that require multidisciplinary discussion	Coordinates the multidisciplinary care of patient receiving combined modality therapy	Manages multidisciplinary care that requires a deviation from the initial treatment course (such as treatment break)	
Comments: Not Yet Completed Level 1 Not Yet Assessable				

Patient Care 6: Follow-Up				
Level 1	Level 2	Level 3	Level 4	Level 5
Participates in post- treatment cancer surveillance	Recommends appropriate cancer surveillance in routine situations	Recommends appropriate cancer surveillance in complex or rare situations	Formulates and coordinates a comprehensive cancer survivorship plan	Exemplifies formulation and coordination of a comprehensive cancer survivorship plan
Describes the purpose of follow-up visits and surveillance including eliciting symptoms related to radiation	Recognizes and elicits common radiation-induced late toxicities	Manages common radiation- induced late toxicities	Manages complex/high- grade radiation-induced late toxicities	
Comments: Not Yet Completed Level 1 Not Yet Assessable				

Patient Care 7: Brachyth	erapy			
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies brachytherapy applicators	Places simple intracavitary applicators during the implant procedure and participates in perioperative care	Implants patients for common intracavitary/interstitial procedures and manages peri-operative care including common complications	Implants patients for complex intracavitary/interstitial procedures and manages peri-operative care including challenging peri-operative complications	Exemplifies best practices in brachytherapy
Identifies targets/organs at risk for brachytherapy	Delineates common brachytherapy targets/organs at risk	Delineates moderately complex brachytherapy targets/organs at risk	Delineates complex brachytherapy targets/organs at risk	
Participates in brachytherapy treatment plan review	Evaluates the plan for common brachytherapy treatment	Evaluates the plan for moderately complex brachytherapy treatment	Demonstrates consistent ability to evaluate the plan for complex brachytherapy treatment	
Comments: Not Yet Completed Level 1 Not Yet Assessable				

Patient Care 8: Procedures: Stereotactic Radiosurgery (SRS) and Stereotactic Body Radiation Therapy (SBRT)				
Level 1	Level 2	Level 3	Level 4	Level 5
Participates in discussions of SRS/SBRT indications	Demonstrates awareness of indications for SRS/SBRT	Makes recommendations for simple SRS/SBRT	Makes recommendations for complex SRS/SBRT	Exemplifies best practices in complex SRS/SBRT
Identifies SRS/SBRT targets/organs at risk	Delineates simple SRS/SBRT targets/organs at risk	Delineates moderately complex SRS/SBRT targets/organs at risk	Delineates complex SRS/SBRT targets/organs at risk	
Recognizes an SRS/SBRT treatment plan	Evaluates a simple SRS/SBRT plan	Evaluates a moderately complex SRS/SBRT plan	Evaluates a complex SRS/SBRT plan	
Comments: Not Yet Completed Level 1 Not Yet Assessable				

Medical Knowledge 1: Applied Sciences (Radiation Physics, Radiation and Cancer Biology, Biostatistics, Trial Design, Oncoanatomy)				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of basic radiographic anatomy of normal structures	Demonstrates knowledge of basic radiographic anatomy of abnormal (oncologic) structures and can apply to relevant staging systems	Integrates knowledge of pathologic anatomy and targeting guidelines in common clinical situations (e.g., breast/head and neck nodal anatomy)	Integrates knowledge of pathologic anatomy and guidelines as needed to complex clinical situations	Demonstrates exemplary knowledge of the application of anatomic and radiographic knowledge
Recognizes the importance of medical physics in radiation oncology	Discusses basic concepts of medical physics	Applies concepts of medical physics to common clinical situations	Applies medical physics concepts to complex clinical situations	Demonstrates exemplary knowledge of medical physics concepts in the clinic
Recognizes the importance of radiation/cancer biology in radiation oncology	Discusses basic concepts of radiation/cancer biology	Applies concepts of radiation/cancer biology to common clinical situations	Applies radiation/cancer biology concepts to complex clinical situations	Demonstrates exemplary knowledge of radiation/cancer biology concepts in the clinic
Comments: Not Yet Completed Level 1 Not Yet Assessable				

Medical Knowledge 2: Evidence-Based Foundations of Radiation Oncology				
Level 1	Level 2	Level 3	Level 4	Level 5
Recognizes the importance of evidence-based medicine in radiation oncology	Summarizes evidence- based data supporting treatment management of common patient presentations	Summarizes evidence- based data supporting treatment management of uncommon patient presentations	Compares/contrasts and critiques evidence- based data supporting treatment management	
Summarizes a published study	Evaluates a basic published study and applies trial data to common clinical situations	Evaluates complex published studies and applies trial data to less common clinical situations	Evaluates complex published studies and applies trial data to rare clinical situations	Demonstrates exemplary evaluation of published studies
Comments: Not Yet Completed Level 1 Not Yet Assessable				

Systems-Based Practice 1: Patient Safety and Quality Improvement				
Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of common patient safety events (physical, mental, and financial)	Identifies system factors that lead to patient safety events (physical, mental, and financial)	Participates in analysis of patient safety events (simulated or actual)	Conducts analysis of patient safety events and offers error prevention strategies (simulated or actual)	Actively engages teams and processes to modify systems to prevent patient safety events
Demonstrates knowledge of how to report patient safety events (physical, mental, and financial)	Reports patient safety events through institutional reporting systems (simulated or actual) (physical, mental, and financial)	Participates in disclosure of patient safety events to patients and families (simulated or actual)	Discloses patient safety events to patients and families (simulated or actual)	Role models or mentors others in the disclosure of patient safety events
Demonstrates knowledge of basic quality improvement methodologies and metrics	Describes local quality improvement initiatives	Participates in local quality improvement initiatives	Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project	Creates, implements, and assesses quality improvement initiatives at the institutional or community level
Comments:	Comments: Not Yet Completed Level 1			

Systems-Based Practice	2: System Navigation for F	Patient Centered Care			
Level 1	Level 2	Level 3	Level 4	Level 5	
Demonstrates knowledge of care coordination	Coordinates care of patients in routine clinical situations effectively using the roles of the interprofessional teams	Coordinates care of patients in complex clinical situations effectively using the roles of their interprofessional teams	Role models effective coordination of patient- centered care among different disciplines and specialties	Analyzes the process of care coordination and leads in the design and implementation of improvements	
Identifies key elements for safe and effective transitions of care and hand-offs	Performs safe and effective transitions of care/hand-offs in routine clinical situations	Performs safe and effective transitions of care/hand-offs in complex clinical situations	Role models and advocates for safe and effective transitions of care/hand-offs within and across health care delivery systems	Improves quality of transitions of care within and across health care delivery systems to optimize patient outcomes	
Demonstrates knowledge of population and community health needs and disparities	Identifies specific population and community health needs and inequities for their local population	Uses local resources effectively to meet the needs of a patient population and community	Participates in changing and adapting practice to provide for the needs of specific populations	Leads innovations and advocates for populations and communities with health care inequities	
Comments:	Comments: Not Yet Completed Level 1				

Systems-Based Practice	3: Physician Role in Health	n Care Systems			
Level 1	Level 2	Level 3	Level 4	Level 5	
Identifies key components of the complex health care system (e.g., hospital, skilled nursing facility, finance, personnel, technology)	Describes how components of a complex health care system are inter-related, and how this impacts patient care	Discusses how individual practice affects the broader system (e.g., length of stay, readmission rates, clinical efficiency)	Manages various components of the complex health care system to provide efficient and effective patient care and transition of care	Advocates for or leads systems change that enhances high-value, efficient, and effective patient care and transition of care	
Describes basic health payment systems (e.g., government, private, public, uninsured care) and practice models	Delivers care with consideration of each patient's payment constraints (e.g., insurance type)	Engages with patients in shared decision making, informed by each patient's payment constraints	Advocates for patient care needs (e.g., community resources, patient assistance resources) with consideration of the limitations of each patient's payment constraints	Participates in health policy advocacy activities	
Identifies basic knowledge domains for effective transition to practice (e.g., information technology, legal, billing and coding, financial, personnel)	Describes core administrative knowledge needed for transition to practice (e.g., contract negotiations, malpractice insurance, government regulation, compliance)	Demonstrates use of information technology required for medical practice (e.g., electronic health record, documentation required for billing and coding)	Analyzes individual practice patterns and professional requirements in preparation for practice	Educates others to prepare them for transition to practice	
Comments:	Comments: Not Yet Completed Level 1				

Practice-Based Learning and Improvement 1: Evidence Based and Informed Practice					
Level 1	Level 2	Level 3	Level 4	Level 5	
Demonstrates how to access and use available evidence, and incorporate patient preferences and values to take care of a routine patient	Articulates clinical questions and elicits patient preferences and values to guide evidence-based care	Locates and applies the best available evidence, integrated with patient preference, to the care of complex patients	Critically appraises and applies evidence even in the face of uncertainty and conflicting evidence to guide care, tailored to the individual patient	Coaches others to critically appraise and apply evidence for complex patients	
Comments:			Not Yet C	Completed Level 1	

Level 1	Level 2	Level 3	Level 4	Level 5
Accepts responsibility for personal and professional development by establishing goals	Demonstrates openness to performance data (feedback and other input) to inform goals	Seeks performance data episodically, with adaptability, and humility	Intentionally seeks performance data consistently with adaptability, and humility	Role models consistently seeking performance data with adaptability and humility
Identifies the factors which contribute to gap(s) between expectations and actual performance	Analyzes and reflects on the factors which contribute to gap(s) between expectations and actual performance	Analyzes, reflects on, and institutes behavioral change(s) to narrow the gap(s) between expectations and actual performance	Challenges assumptions and considers alternatives in narrowing the gap(s) between expectations and actual performance	Coaches others on reflective practice
Actively seeks opportunities to improve	Designs and implements a learning plan, with prompting	Independently creates and implements a learning plan	Uses performance data to measure the effectiveness of the learning plan and when necessary, improves it	Facilitates the design and implementation of learning plans for others

Professionalism 1: Profe	ssional Behavior and Ethic	cal Principles		
Level 1	Level 2	Level 3	Level 4	Level 5
Identifies and describes potential triggers for professionalism lapses	Demonstrates professional behavior in routine situations	Demonstrates professional behavior in complex or stressful situations	Recognizes situations that may trigger professionalism lapses and intervenes to prevent lapses in self and others	Coaches others when their behavior fails to meet professional expectations
Describes when and how to appropriately report professionalism lapses, including strategies for addressing common barriers	Takes responsibility for own professionalism lapses	Recognizes need to seek help in managing and resolving complex ethical situations	Recognizes and uses appropriate resources for managing and resolving ethical dilemmas as needed. (e.g., ethics consultations, literature review, risk	Identifies and seeks to address system-level factors that induce or exacerbate ethical problems or impede their resolution through structured quality
Demonstrates knowledge of the ethical principles underlying informed consent, surrogate decision making, advance directives, confidentiality, error disclosure, stewardship of limited resources, and related topics	Analyzes straightforward situations using ethical principles	Analyzes complex situations using ethical principles	management/legal consultation)	improvement
Comments:	_	_	Not Yet C	ompleted Level 1

Professionalism 2: Accountability/Conscientiousness					
Level 1	Level 2	Level 3	Level 4	Level 5	
Takes responsibility for failure to complete tasks and responsibilities, identifies potential contributing factors, and describes strategies for ensuring timely task completion in the future	Performs tasks and responsibilities in a timely manner with appropriate attention to detail in routine situations	Performs tasks and responsibilities in a timely manner with appropriate attention to detail in complex or stressful situations	Recognizes situations that may impact others' ability to complete tasks and responsibilities in a timely manner	Takes ownership of system outcomes	
Comments:			Not Yet C	ompleted Level 1	

Professionalism 3: Self-Awareness and Help-Seeking					
Level 1	Level 2	Level 3	Level 4	Level 5	
Identifies elements of wellness and describes risk factors for burnout and signs and symptoms of burnout and depression in self or peers	With assistance, recognizes status of well- being and risk factors for maladaptation in self or peers	Independently recognizes status of well-being in self or peers and reports concerns to appropriate personnel	Develops and implements a plan to improve well-being of self or peers, including utilization of institutional or external resources	Recommends and facilitates system changes to promote wellness in a practice or institution	
Comments:			Not Yet C	ompleted Level 1	

This subcompetency is not intended to evaluate a resident's well-being. Rather, the intent is to ensure that each resident has the fundamental knowledge of factors that affect well-being, the mechanisms by which those factors affect well-being, and available resources and tools to improve well-being.

Interpersonal and Communication Skills 1: Patient- and Family-Centered Communication					
Level 1	Level 2	Level 3	Level 4	Level 5	
Uses language and nonverbal behavior to demonstrate respect and establish rapport	Establishes a therapeutic relationship in straightforward encounters using active listening and clear language	Establishes a therapeutic relationship in challenging patient encounters	Easily establishes therapeutic relationships, with attention to patient/family concerns and context, regardless of complexity	Mentors others in situational awareness and critical self-reflection to consistently develop positive therapeutic relationships	
Identifies common barriers to effective communication (e.g., language, disability) while accurately communicating own role within the health care system	Identifies complex barriers to effective communication (e.g. health literacy, cultural)	When prompted, reflects on personal biases while attempting to minimize communication barriers	Independently recognizes personal biases while attempting to proactively minimize communication barriers	Role models self- awareness while identifying a contextual approach to minimize communication barriers	
Identifies the need to adjust communication strategies based on assessment of patient/family expectations and understanding of their health status and treatment options	Organizes and initiates communication with patient/family by introducing stakeholders, setting the agenda, clarifying expectations, and verifying understanding of the clinical situation	With guidance, sensitively and compassionately delivers medical information, elicits patient/family values, goals and preferences, and acknowledges uncertainty and conflict	Independently, uses shared decision making to align patient/family values, goals, and preferences with treatment options to make a personalized care plan	Role models shared decision making in patient/family communication including those with a high degree of uncertainty/conflict	
Comments:	Comments: Not Yet Completed Level 1				

Level 1	Level 2	Level 3	Level 4	Level 5
Respectfully requests a consultation	Clearly and concisely requests a consultation	Checks own understanding of consultant recommendations	Coordinates recommendations from different members of the health care team to optimize patient care	Role models flexible communication strategies that value input from all health care team members, resolving conflict when needed
Uses language that values all members of the health care team	Communicates information effectively with all health care team members	Uses active listening to adapt communication style to fit team needs	Consistently demonstrates effective team communication based upon summative feedback	Develops strategies for and/or leads interdisciplinary team communication training
Participates in structured feedback	Solicits feedback on performance as a member of the health care team	Communicates concerns and provides feedback to peers and learners	Communicates feedback and constructive criticism to superiors	Facilitates regular healthcare team-based feedback in complex situations or new technologies

Level 1	Level 2	Level 3	Level 4	Level 5
Accurately records information in the patient record	Demonstrates organized diagnostic and therapeutic reasoning through notes in the patient record	Concisely reports diagnostic and therapeutic reasoning in the patient record	Communicates clearly, concisely, timely, and in an organized written form, including anticipatory guidance	Models feedback to improve others' written communication
Safeguards patient personal health information	Documents required data in a timely manner, in formats specified by institutional policy	Appropriately selects direct (e.g. telephone, inperson) and indirect (e.g. progress notes, text messages) forms of communication based on context	Achieves written or verbal communication (e.g., patient notes, email) that serves as an example for others to follow	Guides departmental or institutional communication around policies and procedures
Communicates through appropriate channels as required by institutional policy (e.g. patient safety reports, cell phone/pager usage)	Respectfully communicates concerns about the system	Uses appropriate channels to offer clear and constructive suggestions to improve the system	Initiates difficult conversations with appropriate stakeholders to improve the system data integrity and friendliness	Facilitates dialogue regarding systems issues among larger community stakeholders (institution, health care system, field)