The Nuclear Medicine Milestone Project

A Joint Initiative of

The Accreditation Council for Graduate Medical Education

and

The American Board of Nuclear Medicine

July 2015

Examples Included

The Nuclear Medicine Milestone Project

The milestones are designed only for use in evaluation of resident physicians 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.

Nuclear Medicine Milestones

Chair: Lorraine Fig, MD, MPH

Working Group

Laura Edgar, EdD,CAE

Joanna R. Fair, MD, PhD

Erin Grady, MD

Darlene F. Metter, MD FACR

Lynne Meyer, PhD, MPH

Janis P. O'Malley, MD

Christopher J. Palestro, MD

Henry D. Royal, MD

David K. Shelton, MD

Advisory Group

Timothy Brigham, MDiv, PhD

Dominique Delbeke, MD, PhD

Michael Graham, MD

Louis Ling, MD

George Segall, MD

Harvey Ziessman, MD

Milestone Reporting

This document presents milestones designed for programs to use in semi-annual review of resident 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 resident performance as a resident moves from entry into residency through graduation. In the initial years of implementation, the Review Committee will examine milestone performance data for each program's residents as one element in the Next Accreditation System (NAS) to determine whether residents overall are progressing.

For each period, review and reporting will involve selecting milestone levels that best describe a resident'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. These levels do not correspond with post-graduate year of education.

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

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

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

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

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

Level 5: The resident has advanced beyond performance targets set for residency 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 residents 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 residency 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.

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

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.

Answers to Frequently Asked Questions about Milestones are available on the Milestones web page: http://www.acgme.org/acgmeweb/Portals/0/MilestonesFAQ.pdf.

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 resident's performance on the milestones for each sub-competency will be indicated by:

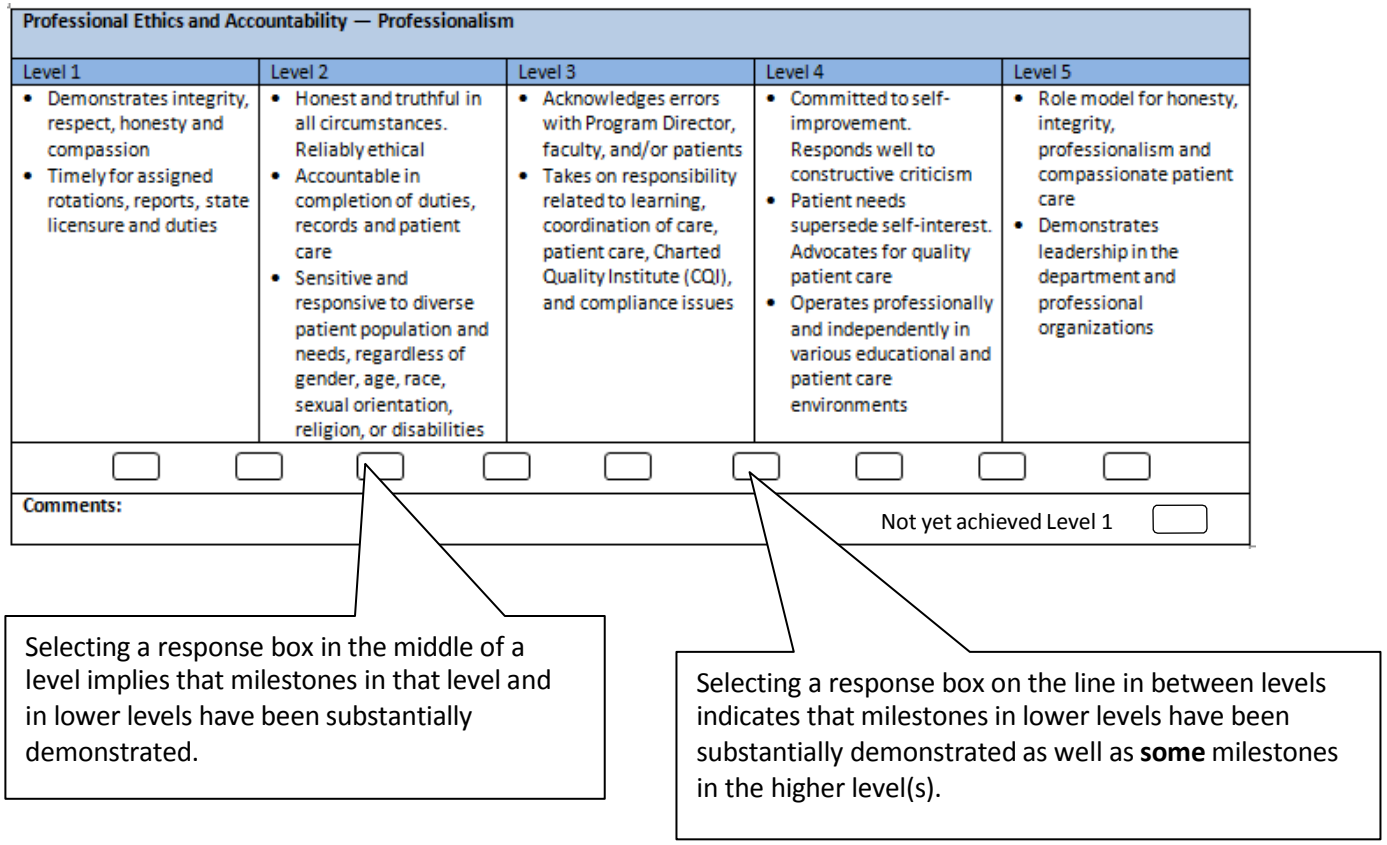
- selecting the level of milestones that best describes that resident's performance in relation to the milestones

or,

- for Patient Care and Medical Knowledge milestones, selecting the option that says the resident has "Not yet rotated"

or,

- for Interpersonal and Communication Skills, Practice-based Learning and Improvement, Professionalism, and Systems-based Practice milestones, selecting the option that says the resident has "Not yet achieved Level 1"



Diagnostic: General Nuclear Medicine, Cardiovascular, and Molecular Imaging (Patient Evaluation, Procedure Selection, Monitoring, and Interpretation) — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Performs focused patient evaluation • Is familiar with routine nuclear medicine procedures, common indications, and contraindications • Recognizes normal physiologic distribution of commonly used radiopharmaceuticals	• Proposes procedure, patient preparation, and basic procedure modification based on exam request and patient information • Recognizes normal physiologic distribution of less common radiopharmaceuticals • Performs image correlation and forms a preliminary impression	• Synthesizes patient information and selects appropriate procedures for routine cases • Assesses completion of and accurately interprets procedures done for uncomplicated cases	• Synthesizes patient information and selects appropriate procedure for complex, less common cases. • Assesses completion of and accurately interprets procedures done for complex or less common cases	• Develops or modifies protocol(s) for nuclear medicine procedures • Presents or publishes nuclear medicine research in peer-reviewed media • Independently acts as a consultant in an interdisciplinary conference
Example: 34-year old diabetic male with left foot pain and ulcer. Assess for osteomyelitis.				
Performs focused patient evaluation via chart review and physical examination. Is familiar with the types and rationale of nuclear medicine procedures (e.g., 3 phase bone scan, labeled leukocyte study). Recognizes a normal study for commonly performed procedures (e.g., 3 phase bone scan).	Proposes appropriate procedure tailored to the clinical question (e.g., proposes a labeled leukocyte study). Recommends appropriate patient preparation (e.g., diet, medication). Proposes appropriate additional imaging (e.g., marrow or hybrid imaging). Recognizes a normal study for less common procedures (e.g., marrow scan).	Synthesizes and obtains relevant patient information, including prior studies. Selects appropriate procedure(s) for routine clinical situations (e.g., selects and protocols a labeled leukocyte study). Assesses study completion and produces an accurate report for uncomplicated clinical situations (e.g., 3 phase bone scan).	Synthesizes and obtains relevant patient information. Selects appropriate procedure(s) for complex, less common clinical situations (e.g., Charcot foot and selects labeled leukocyte, marrow and hybrid imaging, as appropriate). Assesses study completion and produces an accurate report for complex, less common clinical situations (e.g., osteomyelitis versus neuropathic joint).	

	Correlates nuclear imaging results with other imaging studies (e.g., X-rays, prior bone scan, CT or magnetic resonance imaging [MRI]) and forms a preliminary impression.		Recommends appropriate imaging follow-up.	
☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐			
Comments:			Not yet rotated ☐	

Cardiovascular Nuclear Medicine-Stress Testing: Patient Evaluation and Procedure Monitoring — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Performs targeted patient evaluation • Is familiar with the range of cardiac stress protocols	• Is familiar with electrocardiogram (EKG) interpretation and stress monitoring, and knows criteria for procedure termination • Recognizes adequate/inadequate stress and indications for procedure termination or rescheduling	• Knows common contraindications and understands when to select various forms of stress testing • Recognizes and manages common procedure complications	• Recognizes and manages less common/complex procedure complications	• Independently acts as a consultant in a cardiovascular nuclear medicine interdisciplinary conference
Example: 67-year old man with chest pain.				
Performs focused review of records and a targeted physical exam. Is familiar with cardiac stress protocols (e.g., types of exercise, stress, and the range of pharmacologic stressing methods).	Recognizes basic EKG abnormalities (e.g., atrial fibrillation). Is familiar with parameters to be monitored (e.g., heart rate). Recognizes adequate/inadequate stress and criteria for procedure termination. (e.g., falling blood pressure, severe chest pain).	Knows common medications or substances that interfere with stress testing and knows when to reschedule patients. Recognizes critical EKG contraindications to various forms of pharmacologic stress. Recognizes and manages common procedure complications (e.g., knows what/how to administer reversal agents for pharmacologic stress).	Recognizes less common or complex complications (e.g., severe hypotension) and administers pharmacologic or other interventions as necessary (e.g., intravenous [IV] fluids, Trendelenburg position).	
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: Not yet rotated ☐				

Therapy: Radioiodine for Benign Thyroid Disease- Patient Evaluation, Procedure Selection, Procedure Performance, and Follow-Up — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Familiar with patient preparation, indications, contraindications, and radiation safety precautions • Performs initial patient evaluation	• Identifies relevant patient information and confirms patient preparation • Confirms therapeutic procedure setup and technique	• Synthesizes relevant patient information, formulates therapeutic plan, performs the procedure, and recommends follow-up strategies for routine clinical situations	• Synthesizes relevant patient information, formulates therapeutic plan, performs the procedure, and recommends follow-up strategies for complicated/less common situations	• Independently acts as a consultant in an interdisciplinary conference
Example: 40 year old woman with Graves' disease presents for consideration for radioiodine therapy.				
Is familiar with indications/ contraindications for radioiodine therapy of hyperthyroidism, medication withdrawal, and need for heart rate/rhythm control. Is familiar with radiation safety precautions and restrictions (e.g., isolation). Obtains relevant patient history and labs and performs focused physical examination.	Identifies specific medications or recent contrast administration affecting treatment and recommends timelines for drug withdrawal or treatment delay. Confirms that the procedure and room set-up for radioiodine treatment are compliant with regulatory requirements.	Plans and discusses the procedure with patient and family, including alternatives, contraindications, radiation safety precautions, potential side effects/complications, outcomes, and follow-up. Recognizes need for additional studies or consultations (e.g., ophthalmology consultation for Graves' ophthalmopathy).	Formulates a comprehensive therapeutic plan and performs the procedure for complicated/less common clinical situations (e.g., a patient likely to have thyroid storm or cardiovascular complications; mentally or physically challenged patients).	
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: Not yet rotated ☐				

Therapy: Radioiodine for Thyroid Malignancy – Patient Evaluation, Procedure Selection, Procedure Performance, and Follow-Up — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
Is familiar with patient preparation, indications, contraindications, and radiation safety precautions Performs initial patient evaluation	Confirms patient preparation and requests additional studies/consultations as needed	Synthesizes relevant patient information, formulates therapeutic plan, performs the procedure, and recommends follow-up strategies for routine clinical situations	Synthesizes relevant patient information, formulates therapeutic plan, performs the procedure, and recommends follow-up strategies for complicated/less common situations	Independently acts as a consultant in an interdisciplinary conference
Example: 68-year old woman with total thyroidectomy six weeks ago for follicular thyroid carcinoma presents for consideration for radioiodine therapy.				
Is familiar with indications and contraindications for radioiodine therapy of thyroid cancer, low-iodine diet and medication withdrawal, and radiation safety precautions. Obtains relevant patient history and labs and performs a focused physical examination.	Reviews surgical and pathology reports and imaging studies, including whole-body radioiodine imaging; identifies need for additional consultations. Confirms low-iodine diet and thyroid hormone withdrawal or exogenous thyroid-stimulating hormone (TSH) stimulation.	Plans and discusses the procedure with the patient and family for routine clinical situations, including alternatives, contraindications, timing of therapy, administered activity, radiation safety precautions, potential side effects/complications, and follow-up care.	Formulates a comprehensive therapeutic plan, including radioiodine dosage and dosimetry as needed.	
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments:				Not yet rotated ☐

Therapy: Parenteral – Patient Evaluation, Procedure Selection, Procedure Performance, and Follow-up — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Is familiar with patient preparation, indications, contraindications, and radiation safety precautions • Performs initial patient evaluation	• Confirms procedure set-up, regulatory compliance, and technique for therapy administration • Confirms patient preparation and requests additional studies/consultations as needed	• Synthesizes relevant patient information, formulates therapeutic plan, performs the procedure, and recommends follow-up strategies for uncomplicated clinical situations	• Synthesizes relevant patient information; formulates therapeutic plan, performs the procedure, and recommends follow-up strategies for complicated/less common clinical situations	• Independently acts as a consultant at an interdisciplinary conference
Example: 60-year old man with non-Hodgkin's lymphoma presents for consideration of tositumomab administration following failed chemotherapy.				
Obtains relevant patient history and labs and performs a focused physical examination. Understands types of lymphoma amenable to radioimmunotherapy, contraindications (e.g., low blood counts), and radiation safety precautions relating to radioiodine.	Reviews pathology reports and imaging studies, including whole-body distribution (dosimetric) imaging. Confirms patient preparation such as thyroid blocking medications.	Plans and discusses the procedure with the patient and family for routine clinical situations, including preparation, timing of therapy, administered activity, contraindications, alternatives, radiation safety precautions, and potential complications.	Formulates a comprehensive therapeutic plan, including contraindications, dosage, complications, contraindications, and follow-up.	
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: Not yet rotated ☐				

Physiology and Pathophysiology— Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Knows basic physiology and pathophysiology of common diseases	• Understands physiologic basis for patient preparation • Explains imaging findings of common diseases based on knowledge of physiology and pathophysiology	• Understands physiologic basis for pharmacologic interventions	• Explains imaging findings of complex and less common diseases based on knowledge of physiology and pathophysiology	• Presents or publishes nuclear medicine research in peer-reviewed media
Example:				
Knows the pathophysiology of renovascular hypertension.	Understands the reasons for patient preparation (e.g., Nil Per Os [NPO] and exercise restrictions for 2-Deoxy-2 [FDG] positron emission tomography-computed tomography [PET-CT]). Understands that prostate cancer metastases commonly spread to axial skeleton and are likely to be positive on bone scan rather than renal cell cancer metastases.	Understands the action of furosemide in diuretic renal studies. Understands the actions of pharmacologic cardiac stress agents.	Knows the varying appearance of complex regional pain syndrome in adults vs. children. Knows situations that may result in a false-positive or false-negative study (e.g., decreased uptake of 99mTc-methylene diphosphonate [MDP] in femoral head osteomyelitis).	
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: Not yet rotated ☐				

Anatomic Imaging — Medical Knowledge				
Level 2	Level 2	Level 3	Level 4	Level 5
• Knows basic normal anatomy for imaging	• Knows normal cross sectional anatomy, common anatomic variants, and commonly encountered abnormalities	• Applies knowledge of anatomy to correlative, functional, and hybrid imaging	• Knows less common anatomic variants, less common abnormalities, and critical findings	• Teaches anatomic imaging to junior residents, medical students, and technologists
Example:				
Applies knowledge to planar imaging.	Recognizes normal structures and common abnormalities (e.g., lung nodules, lymphadenopathy) on cross sectional imaging.	Applies knowledge of combined functional and anatomic imaging to diagnose abnormalities (e.g., accurately localizes a lung nodule by lung segment and suggests the most likely diagnosis).	Recognizes less common anatomic variants, complex, less commonly encountered abnormalities, as well as critical findings (e.g., pulmonary embolism, aortic aneurysm, and pneumothorax) on cross sectional imaging.	
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments:				Not yet rotated ☐

Instrumentation — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Has basic knowledge of instrumentation	• Understands basic image acquisition and image processing, and recognizes common imaging artifacts and technical problems	• Demonstrates knowledge of instrument quality control and image reconstruction	• Works with technologist to optimize image acquisition and processing	• Presents or publishes instrumentation research in peer-reviewed media
Example:				
Is familiar with the basic components and functions of ionization chambers, well counters, survey meters, NaI probes, and gamma cameras.	Understands the impact of image acquisition and processing on image quality. Is able to process simple nuclear medicine studies (e.g., renal scan).	Is familiar with routine quality control procedures for imaging and non-imaging equipment. Understands basic image reconstruction.	Is able to assist with troubleshooting imaging artifacts and other technical problems.	
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: Not yet rotated ☐				

Radiopharmaceuticals and molecular agents — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Is familiar with routine radiopharmaceuticals and the Tracer principle	• Recognizes abnormal radiopharmaceutical distribution for routine procedures	• Is familiar with basic radiopharmacy operations and routine quality control	• Recognizes abnormal radiopharmaceutical distribution for less common procedures • Is aware of emerging radiopharmaceuticals that are near Food and Drug Administration (FDA) approval	• Demonstrates current knowledge of emerging radiopharmaceuticals and other molecular agents
Example:				
Knows the names, properties, and common indications for commonly used radiopharmaceuticals. Has a basic understanding of the Tracer principle.	Identifies abnormal radiopharmaceutical distributions for common agents.	Can receive packages, and performs ambient surveys and basic radiopharmaceutical quality control.	Identifies abnormal radiopharmaceutical distributions for less common agents.	Presents a review or didactic presentation on emerging radiopharmaceuticals Understands the pros and cons of non-radioactive molecular imaging agents.
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments:				Not yet rotated ☐

Medical physics, mathematics, and radiation biology — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Knows basic physics for nuclear medicine	• Understands basic medical physics, mathematics and radiobiology in nuclear medicine	• Knows basic medical physics and radiobiology for correlative imaging	• Knows radiation dose optimization to include dose reduction strategies	• Calculates radiation dose using the Medical Internal Radiation Dose (MIRD) approach and International Commission of Radiological Protection (ICRP) tables
Example:				
Knows the electromagnetic spectrum and types of radiation. Understands basic statistics.	Understands radiation exposure in nuclear medicine to the patient and staff.	Understands the risks and benefits of ionizing radiation in medical imaging.	Is familiar with and employs dose optimization techniques in practice.	
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: Not yet rotated ☐				

Regulatory Requirements — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Is familiar with regulatory agencies	• Knows laws and regulations regarding the medical use of radioactive materials	• Understands and applies laws and regulations regarding the medical use of radioactive materials • Understands the composition and function of the Radiation Safety Committee and the responsibilities of the Radiation Safety Officer	• Understands the purpose and functions of a radiation safety program • Understands the process for reportable or recordable incidents • Is familiar with The Joint Commission, NRC, and state radiation safety inspection processes	• Is capable of participating with a regulatory committee, such as the Radiation Use Committee (RUC) or Radiation Safety Committee (RSC)
Example:				
Demonstrates awareness of the Nuclear Regulatory Commission (NRC), pertinent state-specific agency(ies), methods of accreditation, Center for Medicare and Medicaid Services (CMS), etc.	Knows the basic pertinent NRC regulations, state-specific laws, definition of Authorized User, components of a written directive, etc.	Understands how laws and regulations apply to daily clinical scenarios in the nuclear medicine clinic/lab, and employs these in daily practice.	Knows the purpose and functions of a nuclear medicine radiation safety program and how to disclose reportable or recordable incidents.	Knows how to interact with a regulatory committee (e.g., RUC or RSC) and/or is ready to serve on such a committee.
☐	☐	☐	☐	☐ ☐ ☐ ☐
Comments:				Not yet rotated ☐

Radiation Protection, Patient Safety, and Procedural Safety — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Knows basic radiation protection concepts and basic procedural safety in nuclear medicine • Understands universal precautions, including hand washing and sterile injection technique • Aware of the importance of fall prevention	• Understands radiation protection concepts in nuclear medicine and correlative imaging • Understands appropriate use of "time-out" procedure • Knows how to ensure that the right patient has the right study at the right time in the right setting	• Uniformly practices ALARA principles for patients, family, staff, and public • Knows more complex concepts of procedural safety and contraindications	• Understands prevention of procedural complications for nuclear medicine and correlative imaging studies • Knows how to manage procedural complications	• Demonstrates excellent understanding of radiation protection and/or procedural safety • Implements new safety procedures and quality control measures impacting patient care
Example:				
Knows basic radiation protection concepts (e.g., As Low As Reasonable Achievable [ALARA] principle and reducing exposure with time, distance, and shielding). Knows the basic considerations for imaging women of childbearing age, and pregnant/breast feeding women.	Understands how radiation dose impacts potential risk to patients in nuclear medicine and correlative imaging procedures.	Knows and practices ALARA principles. Balances radiation risks against study benefits and can implement strategies for imaging pregnant or breast-feeding women. Knows concepts of procedural safety (e.g., decreasing Tc-99m macroaggregated albumin [MAA] particles in pulmonary hypertension and right-to-left shunt).	Knows contraindications and treatment of complications for radiolabeled antibodies. Knows magnetic resonance (MR) and computed tomography (CT) safety precautions (e.g., magnetic fields, CT dose delivery, intravenous contrast reactions, gadolinium) and contraindications for their use. Is capable of managing procedural complications (e.g., hypersensitivity to agents, extravasation, iodinated contrast reactions, hypotension from captopril, etc.).	Studies the literature and proposes changes within the department to lower radiation dose to patients or technologists. Participates in a radiation safety audit or root cause analysis. Designs new protocol to maximize procedural safety.
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments:				Not yet rotated ☐

Computer Systems —Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
• Accesses clinical computer systems; is familiar with word processing and spreadsheet programs	• Retrieves basic patient information from the electronic medical record; is able to use the basic functions of picture archiving and communication system (PACs) and voice recognition systems • Understands Health Insurance Portability and Accountability Act (HIPAA) policies and appropriate use concepts	• Retrieves complex patient information from the electronic medical record; is able to use the advanced functions of PACs and voice recognition systems	• Is familiar with the basic functions of the billing systems	• Recommends changes to computer systems/records to provide additional useful functionality
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments: Not yet achieved level 1				

Economics —Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
• Has a basic understanding of the advantages and disadvantages of different payment systems	• Has a basic understanding of the economics of inpatient vs. outpatient care, and the impact of quality improvement incentives • Develops understanding of relative cost per procedure	• Has a basic practical understanding of the pre-certification process, radiology benefits managers, structured computer-based order entry systems, and Medicare/Medicaid procedure and report requirements	• Has an advanced practical understanding of the pre-certification process, radiology benefits managers, structured computer-based order entry systems, and Medicare/Medicaid procedure and report requirements	• Has a basic understanding of current state and national health care policies and their implications
☐	☐	☐	☐	☐ ☐ ☐ ☐
Comments:				Not yet achieved level 1 ☐

Self-Directed Learning and Understanding Scientific Studies — Practice-based Learning and Improvement				
Level 1	Level 2	Level 3	Level 4	Level 5
• Acknowledges gaps in personal knowledge and asks for feedback • Uses information technology to optimize learning • Describes basic concepts in clinical epidemiology and biostatistics	• Assesses performance and develops a learning plan with some external assistance • Uses published review articles or guidelines to review common practice topics • Evaluates study design by level of evidence and identifies sources of bias	• Selects appropriate evidence-based information to answer specific questions while providing care • Critically evaluates scientific literature	• Performs mostly self-directed learning without external guidance • Cites evidence supporting common diagnostic and therapeutic algorithms and strategies	• Incorporates practice change based upon new evidence • Independently teaches and assesses evidence-based medicine techniques
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments:				Not yet achieved level 1 ☐

Implements Quality Improvement Project —Practice-based Learning and Improvement				
Level 1	Level 2	Level 3	Level 4	Level 5
• Identifies problems in health care delivery	• Begins working on a quality improvement project either as an individual or team member	• Continues to develop a quality improvement project, employing methods to measure and analyze the data	• Completes a quality improvement project and displays effective teamwork skills	• Develops and leads complex quality improvement projects and is able to lead a root cause analysis
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments:				Not yet achieved level 1 ☐

Professional Ethics and Accountability — Professionalism				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates integrity, respect, honesty, and compassion • Is timely for assigned rotations, reports, state licensure, and duties	• Is honest and truthful in all circumstances; is reliably ethical • Is accountable in completion of duties, records, and patient care • Is sensitive and responsive to diverse patient population and needs, regardless of gender, age, race, sexual orientation, religion, or disabilities	• Acknowledges errors with program director, faculty members, and/or patients • Takes on responsibility related to learning, coordination of care, patient care, Charted Quality Institute (CQI), and compliance issues	• Is committed to self-improvement; responds well to constructive criticism • Patient needs supersede self-interest; advocates for quality patient care • Operates professionally and independently in various educational and patient care environments	• Role models honesty, integrity, professionalism, and compassionate patient care • Demonstrates leadership in the department and professional organizations
☐	☐	☐	☐	☐ ☐ ☐ ☐
Comments:				Not yet achieved level 1 ☐

Patient Communications — Interpersonal and Communications Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
• Creates an ethically sound relationship with patients and families • Learns to obtain informed consent	• Learns to perform effective interviews and to educate patients and their families • Obtains informed consent	• Performs effective interviews with patients and families • Educates patients and families, including explaining procedure(s) in an understandable and compassionate manner	• Teaches junior residents how to obtain informed consent, communicate effectively, perform effective interviews with patients, and educate patients' families	• Role models effective patient and family communications
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments:				Not yet achieved level 1 ☐

Health care Team — Interpersonal and Communications Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
• Communicates clearly and effectively and works well with all members of the health care team	• Communicates results of routinely performed nuclear medicine procedures in a clear and concise fashion, both verbally and in the written procedure report	• Discusses and advises the referring health care provider(s) about the appropriateness of a procedure in routine clinical situations • Communicates results of complex, less common nuclear medicine procedures in a clear and concise fashion, both verbally and in the written procedure report	• Discusses and advises the referring health care provider(s) about the appropriateness of a procedure in complex, less common situations	• Independently acts as a consultant during interdisciplinary conferences
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments:				Not yet achieved level 1 ☐