ACGME Program Requirements for Graduate Medical Education in Nuclear Medicine

Common Program Requirements are in BOLD

Where applicable, text in italics describes the underlying philosophy of the requirements in that section. These philosophic statements are not program requirements and are therefore not citable.

Introduction

Int.A. Residency is an essential dimension of the transformation of the medical student to the independent practitioner along the continuum of medical education. It is physically, emotionally, and intellectually demanding, and requires longitudinally-concentrated effort on the part of the resident.

The specialty education of physicians to practice independently is experiential, and necessarily occurs within the context of the health care delivery system. Developing the skills, knowledge, and attitudes leading to proficiency in all the domains of clinical competency requires the resident physician to assume personal responsibility for the care of individual patients. For the resident, the essential learning activity is interaction with patients under the guidance and supervision of faculty members who give value, context, and meaning to those interactions. As residents gain experience and demonstrate growth in their ability to care for patients, they assume roles that permit them to exercise those skills with greater independence. This concept—graded and progressive responsibility—is one of the core tenets of American graduate medical education. Supervision in the setting of graduate medical education has the goals of assuring the provision of safe and effective care to the individual patient; assuring each resident’s development of the skills, knowledge, and attitudes required to enter the unsupervised practice of medicine; and establishing a foundation for continued professional growth.

Int.B. Nuclear medicine is the medical specialty that uses the Tracer Principle, most often with radiopharmaceuticals, to evaluate molecular, metabolic, physiologic and pathologic conditions of the body for the purposes of diagnosis, therapy, and research.

Int.C. The educational program in nuclear medicine must be 36 months in length. (Core)*

I. Institutions

I.A. Sponsoring Institution

One sponsoring institution must assume ultimate responsibility for the program, as described in the Institutional Requirements, and this responsibility extends to resident assignments at all participating sites. (Core)

The sponsoring institution and the program must ensure that the program
director has sufficient protected time and financial support for his or her educational and administrative responsibilities to the program. (Core)

I.A.1. The program director must be provided with no less than the equivalent of one half-day per week of protected time in order to fulfill the responsibilities inherent to carrying out the administrative activities and meeting the educational goals of the program. (Core)

I.B. Participating Sites

I.B.1. There must be a program letter of agreement (PLA) between the program and each participating site providing a required assignment. The PLA must be renewed at least every five years. (Core)

The PLA should:

I.B.1.a) identify the faculty who will assume both educational and supervisory responsibilities for residents; (Detail)

I.B.1.b) specify their responsibilities for teaching, supervision, and formal evaluation of residents, as specified later in this document; (Detail)

I.B.1.c) specify the duration and content of the educational experience; and, (Detail)

I.B.1.d) state the policies and procedures that will govern resident education during the assignment. (Detail)

I.B.2. The program director must submit any additions or deletions of participating sites routinely providing an educational experience, required for all residents, of one month full time equivalent (FTE) or more through the Accreditation Council for Graduate Medical Education (ACGME) Accreditation Data System (ADS). (Core)

I.B.3. The program must be based at the primary clinical site. (Core)

I.B.3.a) A program using multiple sites must ensure a unified educational experience for the residents. (Core)

I.B.4. Each participating site must offer significant educational opportunities to the overall program. (Core)

I.B.5. Programs should avoid affiliations with sites at such distances from the primary clinical site as to make resident attendance at rounds and conferences impractical, unless there is a comparable educational experience at a participating site. (Detail)

II. Program Personnel and Resources

II.A. Program Director
II.A.1. There must be a single program director with authority and accountability for the operation of the program. The sponsoring institution’s GMEC must approve a change in program director. (Core)

II.A.1.a) The program director must submit this change to the ACGME via the ADS. (Core)

II.A.2. The program director should continue in his or her position for a length of time adequate to maintain continuity of leadership and program stability. (Detail)

II.A.2.a) The program director should serve in this position for a minimum of five years. (Detail)

II.A.3. Qualifications of the program director must include:

II.A.3.a) requisite specialty expertise and documented educational and administrative experience acceptable to the Review Committee; (Core)

II.A.3.b) current certification in the specialty by the American Board of Nuclear Medicine, or specialty qualifications that are acceptable to the Review Committee; (Core)

II.A.3.b).(1) Other acceptable qualifications are certification by the American Board of Radiology with subspecialty certification in Nuclear Radiology. (Core)

II.A.3.b).(1).(a) The program director must be an authorized user for 10CFR 35.190, 290, and 390, including 392, 394, and 396. (Core)

II.A.3.b).(2) The program director should actively participate in Maintenance of Certification. (Core)

II.A.3.c) current medical licensure and appropriate medical staff appointment; (Core)

II.A.3.c).(1) The program director must have a full-time appointment. (Core)

II.A.3.d) broad knowledge of, experience with, and commitment to general nuclear medicine/molecular imaging; and, (Core)

II.A.3.e) having served as a nuclear medicine faculty member for at least three years in an ACGME-accredited nuclear medicine residency program preceding appointment as the program director. (Core)

II.A.4. The program director must administer and maintain an educational environment conducive to educating the residents in each of the
ACGME competency areas. (Core)

II.A.4.a) The program director must:

II.A.4.b) oversee and ensure the quality of didactic and clinical education in all sites that participate in the program; (Core)

II.A.4.c) approve a local director at each participating site who is accountable for resident education; (Core)

II.A.4.d) approve the selection of program faculty as appropriate; (Core)

II.A.4.e) evaluate program faculty; (Core)

II.A.4.f) approve the continued participation of program faculty based on evaluation; (Core)

II.A.4.g) monitor resident supervision at all participating sites; (Core)

II.A.4.h) prepare and submit all information required and requested by the ACGME. (Core)

II.A.4.h).(1) This includes but is not limited to the program application forms and annual program updates to the ADS, and ensure that the information submitted is accurate and complete. (Core)

II.A.4.i) ensure compliance with grievance and due process procedures as set forth in the Institutional Requirements and implemented by the sponsoring institution; (Detail)

II.A.4.j) provide verification of residency education for all residents, including those who leave the program prior to completion; (Detail)

II.A.4.k) implement policies and procedures consistent with the institutional and program requirements for resident duty hours and the working environment, including moonlighting. (Core)

II.A.4.k).(1) and, to that end, must:

II.A.4.k).(2) distribute these policies and procedures to the residents and faculty; (Detail)

II.A.4.k).(3) monitor resident duty hours, according to sponsoring institutional policies, with a frequency sufficient to ensure compliance with ACGME requirements; (Core)

II.A.4.k).(4) adjust schedules as necessary to mitigate excessive service demands and/or fatigue; and, (Detail)
II.A.4.k).(5) if applicable, monitor the demands of at-home call and adjust schedules as necessary to mitigate excessive service demands and/or fatigue. (Detail)

II.A.4.l) monitor the need for and ensure the provision of back up support systems when patient care responsibilities are unusually difficult or prolonged; (Detail)

II.A.4.m) comply with the sponsoring institution’s written policies and procedures, including those specified in the Institutional Requirements, for selection, evaluation and promotion of residents, disciplinary action, and supervision of residents; (Detail)

II.A.4.n) be familiar with and comply with ACGME and Review Committee policies and procedures as outlined in the ACGME Manual of Policies and Procedures; (Detail)

II.A.4.o) obtain review and approval of the sponsoring institution’s GMEC/DIO before submitting information or requests to the ACGME, including: (Core)

II.A.4.o).(1) all applications for ACGME accreditation of new programs; (Detail)

II.A.4.o).(2) changes in resident complement; (Detail)

II.A.4.o).(3) major changes in program structure or length of training; (Detail)

II.A.4.o).(4) progress reports requested by the Review Committee; (Detail)

II.A.4.o).(5) requests for increases or any change to resident duty hours; (Detail)

II.A.4.o).(6) voluntary withdrawals of ACGME-accredited programs; (Detail)

II.A.4.o).(7) requests for appeal of an adverse action; and, (Detail)

II.A.4.o).(8) appeal presentations to a Board of Appeal or the ACGME. (Detail)

II.A.4.p) obtain DIO review and co-signature on all program application forms, as well as any correspondence or document submitted to the ACGME that addresses: (Detail)

II.A.4.p).(1) program citations, and/or, (Detail)
II.A.4.p).(2) request for changes in the program that would have significant impact, including financial, on the program or institution. (Detail)

II.A.4.q) ensure that all residents achieve the required competencies and outcomes by completion of the program; and, (Core)

II.A.4.r) ensure that residents log cases in the ACGME Case Log System. (Core)

II.A.4.r).(1) The logs must be submitted annually to the Review Committee in accordance with the specified format and due date. (Core)

II.A.4.r).(2) The record must be reviewed by the program director at least annually. (Core)

II.B. Faculty

II.B.1. At each participating site, there must be a sufficient number of faculty with documented qualifications to instruct and supervise all residents at that location. (Core)

The faculty must:

II.B.1.a) devote sufficient time to the educational program to fulfill their supervisory and teaching responsibilities; and to demonstrate a strong interest in the education of residents; and, (Core)

II.B.1.b) administer and maintain an educational environment conducive to educating residents in each of the ACGME competency areas. (Core)

II.B.2. The physician faculty must have current certification in the specialty by the American Board of Nuclear Medicine, or possess qualifications judged acceptable to the Review Committee. (Core)

II.B.3. The physician faculty must possess current medical licensure and appropriate medical staff appointment. (Core)

II.B.3.a) In programs affiliated with a medical school, all physician faculty members must have an academic appointment. (Detail)

II.B.4. The nonphysician faculty must have appropriate qualifications in their field and hold appropriate institutional appointments. (Core)

II.B.5. The faculty must establish and maintain an environment of inquiry and scholarship with an active research component. (Core)

II.B.5.a) The faculty must regularly participate in organized clinical
discussions, rounds, journal clubs, and conferences. (Detail)

II.B.5.b) Some members of the faculty should also demonstrate scholarship by one or more of the following:

II.B.5.b).(1) peer-reviewed funding; (Detail)

II.B.5.b).(2) publication of original research or review articles in peer-reviewed journals, or chapters in textbooks; (Detail)

II.B.5.b).(3) publication or presentation of case reports or clinical series at local, regional, or national professional and scientific society meetings; or, (Detail)

II.B.5.b).(4) participation in national committees or educational organizations. (Detail)

II.B.5.c) Faculty should encourage and support residents in scholarly activities. (Core)

II.B.5.d) When averaged over the preceding five years, each core faculty member must demonstrate participation in at least one scholarly activity annually. (Detail)

II.B.6. There must be at least one FTE physician faculty member in addition to the program director. (Core)

II.B.6.a) Programs must maintain a ratio of at least one core FTE physician faculty member per every two residents. (Core)

II.C. Other Program Personnel

The institution and the program must jointly ensure the availability of all necessary professional, technical, and clerical personnel for the effective administration of the program. (Core)

II.C.1. There must be a designated program coordinator to assist the program director in effectively fulfilling the administrative requirements of the program. (Core)

II.D. Resources

The institution and the program must jointly ensure the availability of adequate resources for resident education, as defined in the specialty program requirements. (Core)

II.D.1. There must be Internet access for resident educational use. (Detail)

II.D.2. There must be a volume and variety of patients to ensure that residents gain experience in the full range of nuclear medicine/molecular imaging procedures and interpretations. (Core)
II.E. Medical Information Access

Residents must have ready access to specialty-specific and other appropriate reference material in print or electronic format. Electronic medical literature databases with search capabilities should be available. (Detail)

III. Resident Appointments

III.A. Eligibility Criteria

The program director must comply with the criteria for resident eligibility as specified in the Institutional Requirements. (Core)

III.A.1. Eligibility Requirements – Residency Programs

III.A.1.a) All prerequisite postgraduate clinical education required for initial entry or transfer into ACGME-accredited residency programs must be completed in ACGME-accredited residency programs, or in Royal College of Physicians and Surgeons of Canada (RCPSC)-accredited or College of Family Physicians of Canada (CFPC)-accredited residency programs located in Canada. Residency programs must receive verification of each applicant’s level of competency in the required clinical field using ACGME or CanMEDS Milestones assessments from the prior training program. (Core)

III.A.1.a).(1) To be eligible for appointment to the program at the NM1 level, residents must have satisfactorily completed one year of graduate medical education in a program accredited by the ACGME or a program located in Canada and accredited by the RCPSC. (Core)

III.A.1.a).(1).(a) This year must include a minimum of nine months of direct patient care. (Core)

III.A.1.a).(2) To be eligible for appointment to the program at the NM2 level, residents must have satisfactorily completed a program accredited by the ACGME, or a program located in Canada and accredited by the RCPSC. (Core)

III.A.1.a).(2).(a) The educational program for these residents must be 24 months in length. (Core)

III.A.1.a).(3) To be eligible for appointment to the program at the NM3 level, residents must have satisfactorily completed a program in diagnostic radiology accredited by the ACGME, or a program located in Canada and accredited by the RCPSC. (Core)
III.A.1.a).(3).(a) The educational program for these residents must be 12 months in length. (Core)

III.A.1.b) A physician who has completed a residency program that was not accredited by ACGME, RCPSC, or CFPC may enter an ACGME-accredited residency program in the same specialty at the PGY-1 level and, at the discretion of the program director at the ACGME-accredited program may be advanced to the PGY-2 level based on ACGME Milestones assessments at the ACGME-accredited program. This provision applies only to entry into residency in those specialties for which an initial clinical year is not required for entry. (Core)

III.A.1.c) A Review Committee may grant the exception to the eligibility requirements specified in Section III.A.2.b) for residency programs that require completion of a prerequisite residency program prior to admission. (Core)

III.A.1.c).(1) The Review Committee for Nuclear Medicine does allow exceptions to the Eligibility Requirements. (Core)

III.A.1.d) Review Committees will grant no other exceptions to these eligibility requirements for residency education. (Core)

III.A.2. Eligibility Requirements – Fellowship Programs

All required clinical education for entry into ACGME-accredited fellowship programs must be completed in an ACGME-accredited residency program, or in an RCPSC-accredited or CFPC-accredited residency program located in Canada. (Core)

III.A.2.a) Fellowship programs must receive verification of each entering fellow’s level of competency in the required field using ACGME or CanMEDS Milestones assessments from the core residency program. (Core)

III.A.2.b) Fellow Eligibility Exception

A Review Committee may grant the following exception to the fellowship eligibility requirements:

An ACGME-accredited fellowship program may accept an exceptionally qualified applicant**, who does not satisfy the eligibility requirements listed in Sections III.A.2. and III.A.2.a), but who does meet all of the following additional qualifications and conditions: (Core)

III.A.2.b).(1) Assessment by the program director and fellowship selection committee of the applicant’s suitability to enter the program, based on prior training and review
III.A.2.b).(2) Review and approval of the applicant’s exceptional qualifications by the GMEC or a subcommittee of the GMEC; and

III.A.2.b).(3) Satisfactory completion of the United States Medical Licensing Examination (USMLE) Steps 1, 2, and, if the applicant is eligible, 3, and;

III.A.2.b).(4) For an international graduate, verification of Educational Commission for Foreign Medical Graduates (ECFMG) certification; and,

III.A.2.b).(5) Applicants accepted by this exception must complete fellowship Milestones evaluation (for the purposes of establishment of baseline performance by the Clinical Competency Committee), conducted by the receiving fellowship program within six weeks of matriculation. This evaluation may be waived for an applicant who has completed an ACGME International-accredited residency based on the applicant’s Milestones evaluation conducted at the conclusion of the residency program.

III.A.2.b).(5).(a) If the trainee does not meet the expected level of Milestones competency following entry into the fellowship program, the trainee must undergo a period of remediation, overseen by the Clinical Competency Committee and monitored by the GMEC or a subcommittee of the GMEC. This period of remediation must not count toward time in fellowship training.

** An exceptionally qualified applicant has (1) completed a non-ACGME-accredited residency program in the core specialty, and (2) demonstrated clinical excellence, in comparison to peers, throughout training. Additional evidence of exceptional qualifications is required, which may include one of the following: (a) participation in additional clinical or research training in the specialty or subspecialty; (b) demonstrated scholarship in the specialty or subspecialty; (c) demonstrated leadership during or after residency training; (d) completion of an ACGME-International-accredited residency program.

III.B. Number of Residents

The program’s educational resources must be adequate to support the number of residents appointed to the program.
III.B.1. The program director may not appoint more residents than approved by the Review Committee, unless otherwise stated in the specialty-specific requirements. (Detail)

III.C. Resident Transfers

III.C.1. Before accepting a resident who is transferring from another program, the program director must obtain written or electronic verification of previous educational experiences and a summative competency-based performance evaluation of the transferring resident. (Detail)

III.C.2. A program director must provide timely verification of residency education and summative performance evaluations for residents who may leave the program prior to completion. (Detail)

III.D. Appointment of Fellows and Other Learners

The presence of other learners (including, but not limited to, residents from other specialties, subspecialty fellows, PhD students, and nurse practitioners) in the program must not interfere with the appointed residents’ education. (Core)

III.D.1. The program director must report the presence of other learners to the DIO and GMEC in accordance with sponsoring institution guidelines. (Detail)

III.D.2. The presence of nuclear medicine residents must not dilute or detract from the educational opportunities available to the residents in the core diagnostic radiology residency and to the fellows in the nuclear radiology fellowship if these programs are sponsored by the same institution. (Core)

IV. Educational Program

IV.A. The curriculum must contain the following educational components:

IV.A.1. Overall educational goals for the program, which the program must make available to residents and faculty; (Core)

IV.A.2. Competency-based goals and objectives for each assignment at each educational level, which the program must distribute to residents and faculty at least annually, in either written or electronic form; (Core)

IV.A.3. Regularly scheduled didactic sessions; (Core)

IV.A.3.a) There must be a formal didactic lecture schedule. (Core)

IV.A.3.a).(1) Residents must attend the regularly scheduled didactic lectures. (Detail)
IV.A.3.a).(2) This schedule should indicate the specific date and time of each lecture, the topic of each lecture, the individual presenting each lecture, and the duration of each lecture. (Detail)

IV.A.3.a).(3) The didactic curriculum should include all topics included in the Medical Knowledge outcomes (IV.A.5.b)). (Detail)

IV.A.3.b) Basic Science Educational Program

IV.A.3.b).(1) Residents must complete classroom and laboratory experience in basic radionuclide handling techniques applicable to the medical use of unsealed byproduct material and radionuclides requiring a written directive. This must include: (Core)

IV.A.3.b).(1).(a) radiation physics and instrumentation, including:

IV.A.3.b).(1).(a).(i) radiation physics: structure of matter, modes of radioactive decay, particle and photon emissions, and interactions of radiation with matter; and, (Detail)

IV.A.3.b).(1).(a).(ii) instrumentation: principles of instrumentation used in detection, measurement, and imaging of radioactivity with special emphasis on gamma cameras, including single photon emission computed tomography (SPECT), SPECT/computed tomography (CT), positron emission tomography (PET), and PET/CT systems, and associated electronic instrumentation and computers employed in image production and display. (Detail)

IV.A.3.b).(1).(a).(ii).(a) Instruction must be provided in the instrumentation principles of magnetic resonance imaging (MRI) and multi-slice CT. (Detail)

IV.A.3.b).(1).(b) radiation protection and regulations, including means of reducing radiation exposure, radiation dose limits, evaluation of patients exposed to potentially dangerous levels of radiation, assisting in the medical management of persons exposed to ionizing radiation, management and disposal of radioactive substances, and establishment of radiation safety programs in accordance with federal and state regulations. (Detail)
IV.A.3.b).(1).(c) mathematics pertaining to the use and measurement of radioactivity, including statistics and medical decision making.  

IV.A.3.b).(1).(d) chemistry of radioactive material for medical use, including: reactor, cyclotron, and generator production of radionuclides; radiochemistry; and formulation of radiopharmaceuticals; and,  

IV.A.3.b).(1).(e) radiation biology, including biological effects of ionizing radiation and calculation of radiation dose.  

IV.A.3.c) All residents and faculty members must participate in regularly scheduled clinical nuclear medicine seminars, journal clubs, and interdisciplinary conferences.  

IV.A.3.c).(1) Participation in regularly scheduled seminars, conferences, and journal clubs should be documented with attendance logs.  

IV.A.4. Delineation of resident responsibilities for patient care, progressive responsibility for patient management, and supervision of residents over the continuum of the program; and,  

IV.A.5. ACGME Competencies  

The program must integrate the following ACGME competencies into the curriculum:  

IV.A.5.a) Patient Care and Procedural Skills  

IV.A.5.a).(1) Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Residents:  

IV.A.5.a).(1).(a) must demonstrate competence in:  

IV.A.5.a).(1).(a).(i) patient evaluation to include: pertinent patient information relevant to the requested procedure using patient interview; chart and computer data base review; the performance of a focused physical examination as indicated; and communication with the referring physician;  

IV.A.5.a).(1).(a).(ii) selection, performance, and interpretation of appropriate:
musculoskeletal studies, including bone mineral density measurements, for malignant and benign disease; (Outcome)

myocardial perfusion imaging with treadmill and pharmacologic stress, including patient monitoring, with emphasis on electrocardiographic interpretation; (Outcome)

electrocardiogram (ECG)-gated ventriculography for evaluation of ventricular performance; (Outcome)

endocrinologic studies, including studies of the thyroid and parathyroid; (Outcome)

When appropriate, thyroid studies must include measurement of iodine uptake and dosimetry calculations for radio-iodine therapy. (Outcome)

gastrointestinal studies, including transit studies, and studies of the liver and hepatobiliary system, of bleeding, and of Meckel’s diverticulum; (Outcome)

infection studies, including studies of gallium, of labeled leukocytes, and of bone marrow; (Outcome)

neurologic studies, including studies of cerebral perfusion, cerebral metabolism, and cerebrospinal fluid, including studies of dementia, epilepsy, and brain death; (Outcome)

oncologic studies, including studies of sentinel node localization, fluorodeoxyglucose (FDG), Meta-lodo-Benzyl-Guanidine (MIBG), somatostatin-receptor imaging, and other agents as they become available; (Outcome)
IV.A.5.a).(1).(a).(ii).(i) pulmonary studies, including studies of perfusion and ventilation for pulmonary embolus, right-to-left shunts, and quantitative assessment of perfusion and ventilation; (Outcome)

IV.A.5.a).(1).(a).(ii).(j) urinary tract studies, including studies of renal perfusion, function and cortical imaging, and renal scintigraphy with pharmacologic interventions and, (Outcome)

IV.A.5.a).(1).(a).(ii).(k) PET, PET/CT, and other hybrid molecular imaging studies for both oncologic and non-oncologic indications; (Outcome)

IV.A.5.a).(1).(a).(ii).(l) cross-sectional imaging of the brain, head and neck, thorax, abdomen, and pelvis with CT in the context of SPECT/CT and PET/CT; (Outcome)

IV.A.5.a).(1).(a).(ii).(m) therapeutic administration of radioiodine for both malignant and benign thyroid disease, including: patient selection; evaluating risks and benefits; determining the administered activity; patient identity verification; obtaining informed consent; documenting pregnancy status; using administrative controls to prevent a medical event; complying with federal and state regulations regarding medical use of radiopharmaceuticals; counseling patients and their families about radiation safety issues; and scheduling and performing post-therapy follow-up; (Outcome)

IV.A.5.a).(1).(a).(ii).(n) therapeutic administration of other unsealed radiopharmaceuticals for malignant and benign diseases, including: patient selection; evaluating risks and benefits; determining the administered activity; patient identity verification; obtaining informed consent; documenting pregnancy status; using administrative controls to prevent a medical event; complying
with federal and state regulations regarding the medical use of radiopharmaceuticals; counseling patients and their families about radiation safety issues; and scheduling and performing post-therapy follow-up; (Outcome)

IV.A.5.a).(1).(a).(ii).(o) selection of the appropriate single photon or positron emitting radiopharmaceutical, administered activity, imaging technique, data analysis, and image presentation; and, (Outcome)

IV.A.5.a).(1).(a).(ii).(p) supervisory skills. (Outcome)

IV.A.5.a).(1).(b) must demonstrate compliance with radiation safety rules and regulations, including Nuclear Regulatory Commission (NRC) or agreement state rules, local regulations, and the ALARA (as low as reasonably achievable) principle for radiation protection; and, (Outcome)

IV.A.5.a).(1).(c) must have certification in both basic and advanced cardiac life support. (Outcome)

IV.A.5.a).(2) Residents must be able to competently perform all medical, diagnostic, and surgical procedures considered essential for the area of practice. Residents: (Outcome)

must demonstrate competence in:

IV.A.5.a).(2).(a) performing nuclear medicine procedures as well as the review and interpretation of the resulting images; (Outcome)

IV.A.5.a).(2).(b) preparing radiopharmaceuticals, including preparing patient administered activity and performing quality control measures; (Outcome)

IV.A.5.a).(2).(c) recommending, planning, conducting, supervising, interpreting, and reporting diagnostic and therapeutic nuclear medicine procedures appropriate for the clinical problem or condition; and, (Outcome)

IV.A.5.a).(2).(d) correlating the nuclear medicine procedure with clinical information, laboratory, and other procedural or imaging studies. (Outcome)
IV.A.5.b) Medical Knowledge

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents: (Outcome)

must demonstrate knowledge of:

IV.A.5.b).(1) radiation safety; (Outcome)

IV.A.5.b).(2) nuclear medicine instrumentation, including quality control; (Outcome)

IV.A.5.b).(3) nuclear medicine procedures, including:

IV.A.5.b).(3).(a) cardiovascular; (Outcome)

IV.A.5.b).(3).(b) endocrine; (Outcome)

IV.A.5.b).(3).(c) gastrointestinal; (Outcome)

IV.A.5.b).(3).(d) infection; (Outcome)

IV.A.5.b).(3).(e) musculoskeletal; (Outcome)

IV.A.5.b).(3).(f) neurologic; (Outcome)

IV.A.5.b).(3).(g) oncologic; (Outcome)

IV.A.5.b).(3).(h) pulmonary; (Outcome)

IV.A.5.b).(3).(i) urinary tract; (Outcome)

IV.A.5.b).(3).(j) PET and PET/CT for oncologic and non-oncologic indications; and, (Outcome)

IV.A.5.b).(3).(k) cross-sectional imaging of the brain, head and neck, thorax, abdomen, and pelvis with CT in the context of SPECT/CT and PET/CT. (Outcome)

IV.A.5.b).(4) diagnostic use of radiopharmaceuticals: clinical indications, technical performance, and interpretation of in-vivo imaging of the body organs and systems; using external detectors and scintillation cameras, including SPECT, SPECT/CT, PET, and PET/CT; and correlation of nuclear medicine procedures with other pertinent imaging modalities; (Outcome)

IV.A.5.b).(5) exercise and pharmacologic stress testing, including the
pharmacology of cardioactive drugs and physiologic gating techniques; (Outcome)

IV.A.5.b).(6)  non-imaging studies; (Outcome)

IV.A.5.b).(7)  radiiodine therapy for malignant and benign thyroid disease; (Outcome)

IV.A.5.b).(8)  therapeutic uses of other unsealed radiopharmaceuticals in the treatment of malignant and benign diseases; and, (Outcome)

IV.A.5.b).(9)  fundamentals of imaging molecular targets, processes and events, and existing and emerging molecular imaging techniques, particularly as they relate to current clinical practice. (Outcome)

IV.A.5.c)  Practice-based Learning and Improvement

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning. (Outcome)

Residents are expected to develop skills and habits to be able to meet the following goals:

IV.A.5.c).(1)  identify strengths, deficiencies, and limits in one’s knowledge and expertise; (Outcome)

IV.A.5.c).(2)  set learning and improvement goals; (Outcome)

IV.A.5.c).(3)  identify and perform appropriate learning activities; (Outcome)

IV.A.5.c).(4)  systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement; (Outcome)

IV.A.5.c).(5)  incorporate formative evaluation feedback into daily practice; (Outcome)

IV.A.5.c).(6)  locate, appraise, and assimilate evidence from scientific studies related to their patients’ health problems; (Outcome)

IV.A.5.c).(7)  use information technology to optimize learning; (Outcome)

IV.A.5.c).(8)  participate in the education of patients, families,
students, residents and other health professionals;

(Outcome)

IV.A.5.c).(9) regularly obtain follow-up information, and correlate the clinical findings with their study interpretation; and, (Outcome)

IV.A.5.c).(10) evaluate their personal practice utilizing scientific evidence, best practices, and/or self-assessment programs or modules for practice improvement. (Outcome)

IV.A.5.d) Interpersonal and Communication Skills

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals. (Outcome)

Residents are expected to:

IV.A.5.d).(1) communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds; (Outcome)

IV.A.5.d).(2) communicate effectively with physicians, other health professionals, and health related agencies; (Outcome)

IV.A.5.d).(3) work effectively as a member or leader of a health care team or other professional group; (Outcome)

IV.A.5.d).(4) act in a consultative role to other physicians and health professionals; (Outcome)

IV.A.5.d).(5) maintain comprehensive, timely, and legible medical records, if applicable; (Outcome)

IV.A.5.d).(6) prepare a complete and concise nuclear medicine procedure interpretation report;

IV.A.5.d).(7) communicate the final procedure interpretation, an appropriate differential diagnosis, and any clinical, diagnostic, or therapeutic recommendations promptly and clearly to the referring health care provider; (Outcome)

IV.A.5.d).(8) provide effective contributions to interdisciplinary and clinical didactic conferences; (Outcome)

IV.A.5.d).(9) educate patients and their families about diagnostic and therapeutic nuclear medicine procedures; and,

IV.A.5.d).(10) supervise and teach junior residents, residents from other services, and students on rotations in nuclear medicine.
IV.A.5.e) Professionalism

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. (Outcome)

Residents are expected to demonstrate:

IV.A.5.e).(1) compassion, integrity, and respect for others; (Outcome)
IV.A.5.e).(2) responsiveness to patient needs that supersedes self-interest; (Outcome)
IV.A.5.e).(3) respect for patient privacy and autonomy; (Outcome)
IV.A.5.e).(4) accountability to patients, society and the profession; and, (Outcome)
IV.A.5.e).(5) sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation. (Outcome)

IV.A.5.f) Systems-based Practice

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. (Outcome)

Residents are expected to:

IV.A.5.f).(1) work effectively in various health care delivery settings and systems relevant to their clinical specialty; (Outcome)
IV.A.5.f).(2) coordinate patient care within the health care system relevant to their clinical specialty; (Outcome)
IV.A.5.f).(3) incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate; (Outcome)
IV.A.5.f).(4) advocate for quality patient care and optimal patient care systems; (Outcome)
IV.A.5.f).(5) work in interprofessional teams to enhance patient safety and improve patient care quality; (Outcome)
IV.A.5.f).(6) participate in identifying system errors and implementing potential systems solutions; (Outcome)

IV.A.5.f).(7) demonstrate an understanding of how the components of the local and national health care system function interdependently, and how changes to improve the system involve group and individual efforts; and, (Outcome)

IV.A.5.f).(7).(a) Residents must function as consultants for other health care professionals, and act as resources for information regarding the appropriate use of imaging resources, and efforts. (Outcome)

IV.A.5.f).(8) identify existing systems problems that compromise patient care, systematically analyze the problems, develop solutions, and evaluate the effectiveness of interventions at the departmental, institutional, local, or national levels. (Outcome)

IV.A.6. Curriculum Organization and Resident Experiences

IV.A.6.a) Residents entering the program at any level must:

IV.A.6.a).(1) participate in a radiopharmacy rotation; (Core)

IV.A.6.a).(1).(a) This experience must include:

IV.A.6.a).(1).(a).(i) ordering, receiving, and unpacking radioactive materials safely, and performing the related radiation surveys; (Detail)

IV.A.6.a).(1).(a).(ii) performing quality control procedures on instruments used to determine the activity of dosages, and performing checks for proper operation of survey meters; (Detail)

IV.A.6.a).(1).(a).(iii) calculating, measuring, and safely preparing patient or human research subject dosages; (Detail)

IV.A.6.a).(1).(a).(iv) using administrative controls to prevent a medical event involving the use of unsealed byproduct material; (Detail)

IV.A.6.a).(1).(a).(v) using procedures to safely contain spilled radioactive material and using proper decontamination procedures; and, (Detail)

IV.A.6.a).(1).(a).(vi) administering dosages of radioactive drugs to patients or human research subjects.
participate, with appropriate supervision, in the performance of nuclear medicine imaging and non-imaging procedures to include instrumentation quality control; (Detail)

participate in basic radiation safety and survey procedures; (Detail)

maintain a Resident Learning Portfolio, which must be reviewed with the program director as part of the semiannual evaluation, and must include: (Core)

Patient Care

documentation, in the ACGME Case Log System, of participation in the following required nuclear medicine procedures:

a minimum of 30 cases of oral administration of sodium iodide I-131, for which a written directive is required; (Detail)

At least 10 of these cases must be for malignant disease, and at least 10 cases must be for benign disease. (Detail)

At least three of these cases must be less than or equal to 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131, and at least three cases must be greater than 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131. (Detail)

a minimum of five cases of parenteral administration of any alpha emitter, beta emitter, or a photon-emitting radionuclide with a photon energy less than 150 keV, for which a written directive is required, and/or parenteral administration of any other radionuclide, for which a written directive is required; and, (Detail)
IV.A.6.a).(4).(a).(i).(c) a minimum of 100 cardiovascular pharmacologic and/or exercise stress studies. (Detail)

IV.A.6.a).(4).(a).(ii) documentation, in the ACGME Case Log System, of participation in therapeutic procedures, including date, diagnosis, and administered activity of each therapy; (Detail)

IV.A.6.a).(4).(a).(iii) documentation, in the ACGME Case Log System, of participation in stress myocardial studies, including date, radiopharmaceutical, and type of stress (exercise or pharmacologic); (Detail)

IV.A.6.a).(4).(a).(iv) documentation, in the ACGME Case Log System, of the completion of a minimum of 100 pediatric nuclear medicine procedures over the course of the educational program; and, (Detail)

IV.A.6.a).(4).(a).(v) documentation of basic cardiac life support (BCLS) and advanced cardiac life support (ACLS) certification. (Detail)

IV.A.6.a).(4).(b) Medical Knowledge

IV.A.6.a).(4).(b).(i) documentation of conference presentations, external courses and meetings attended, and self-assessment modules completed; (Detail)

IV.A.6.a).(4).(b).(ii) documentation of compliance with regulatory-based training requirements; and, (Detail)

IV.A.6.a).(4).(b).(iii) documentation of performance on the annual in-training examination. (Detail)

IV.A.6.a).(4).(c) Practice-based Learning and Improvement

IV.A.6.a).(4).(c).(i) completion of an annual resident self-assessment and learning plan. (Detail)

IV.A.6.a).(4).(c).(i).(a) Residents’ evaluations of their personal practice must be part of individual learning plans in the Resident Learning Portfolios (as described in IV.A.6.a).(4)). (Detail)

IV.A.6.a).(4).(d) Interpersonal and Communication Skills
IV.A.6.a).(4).(d).(i)  formal faculty member evaluation of report quality. (Detail)

IV.A.6.a).(4).(e)  Professionalism

IV.A.6.a).(4).(e).(i)  documentation of compliance with institutional and departmental policies; and, (Detail)

IV.A.6.a).(4).(e).(ii)  status of medical license. (Detail)

IV.A.6.a).(4).(f)  Systems-based Practice

IV.A.6.a).(4).(f).(i)  documentation of participation in identifying and implementing potential systems solutions. (Detail)

IV.A.6.a).(4).(g)  Scholarly Activities

IV.A.6.a).(4).(g).(i)  documentation of scholarly activity, such as publications or announcement of presentations; (Detail)

IV.A.6.a).(4).(g).(ii)  any additional materials requested by the program director; and, (Detail)

IV.A.6.a).(4).(g).(iii)  submission of a scholarly activity project to the program director for evaluation by the completion of the program. (Detail)

IV.A.6.b)  Residents entering the program at the NM1 level must:

IV.A.6.b).(1)  participate in a minimum of six months of CT experience; and, (Detail)

IV.A.6.b).(1).(a)  A minimum of four months must be obtained on a diagnostic radiology CT service. (Detail)

IV.A.6.b).(1).(b)  The remaining two months may be continued on the diagnostic CT service and/or may be combined with a rotation that includes PET/CT or SPECT/CT. (Detail)

IV.A.6.b).(1).(c)  This experience must be supervised by qualified faculty members. (Detail)

IV.A.6.b).(2)  have no more than six total months of elective rotations and/or dedicated research time during the program. (Detail)

IV.A.6.c)  Residents entering the program at the NM2 level must:
IV.A.6.c).(1) participate in a minimum of six months of CT experience; and, (Detail)

IV.A.6.c).(1).(a) A minimum of four months must be obtained on a diagnostic radiology CT service. (Detail)

IV.A.6.c).(1).(b) The remaining two months may be continued on the diagnostic radiology CT service and/or may be combined with a rotation that includes PET/CT or SPECT/CT. (Detail)

IV.A.6.c).(1).(c) This experience must be supervised by qualified faculty members. (Detail)

IV.A.6.c).(2) have no more than four total months of elective rotations and/or dedicated research time during the program. (Detail)

IV.A.6.d) Residents entering the program at the NM3 level must:

IV.A.6.d).(1) have no more than two total months of elective rotations and/or dedicated research time during the program. (Detail)

IV.A.6.d).(2) Residents who have satisfactorily completed a diagnostic radiology program accredited by the ACGME, or a diagnostic radiology program located in Canada and accredited by the RCPSC are exempt from the six-month CT experience requirement. (Detail)

IV.B. Residents’ Scholarly Activities

IV.B.1. The curriculum must advance residents’ knowledge of the basic principles of research, including how research is conducted, evaluated, explained to patients, and applied to patient care. (Core)

IV.B.2. Residents should participate in scholarly activity. (Core)

IV.B.2.a) All residents must participate in a scholarly project under faculty member supervision. (Core)

IV.B.2.a).(1) The scholarly project should take the form of laboratory research, clinical research, or the analysis of disease processes, imaging techniques, or practice management issues. (Detail)

IV.B.2.a).(2) The results must be published or presented at institutional, local, regional, or national meetings, and included in the Resident Learning Portfolio. (Outcome)

IV.B.2.a).(3) The program must specify how each project will be evaluated. (Detail)
IV.B.3. The sponsoring institution and program should allocate adequate educational resources to facilitate resident involvement in scholarly activities. *(Detail)*

V. Evaluation

V.A. Resident Evaluation

V.A.1. The program director must appoint the Clinical Competency Committee. *(Core)*

V.A.1.a) At a minimum the Clinical Competency Committee must be composed of three members of the program faculty. *(Core)*

V.A.1.a).(1) The program director may appoint additional members of the Clinical Competency Committee.

V.A.1.a).(1).(a) These additional members must be physician faculty members from the same program or other programs, or other health professionals who have extensive contact and experience with the program’s residents in patient care and other health care settings. *(Core)*

V.A.1.a).(1).(b) Chief residents who have completed core residency programs in their specialty and are eligible for specialty board certification may be members of the Clinical Competency Committee. *(Core)*

V.A.1.b) There must be a written description of the responsibilities of the Clinical Competency Committee. *(Core)*

V.A.1.b).(1) The Clinical Competency Committee should:

V.A.1.b).(1).(a) review all resident evaluations semi-annually; *(Core)*

V.A.1.b).(1).(b) prepare and ensure the reporting of Milestones evaluations of each resident semi-annually to ACGME; and, *(Core)*

V.A.1.b).(1).(c) advise the program director regarding resident progress, including promotion, remediation, and dismissal. *(Detail)*

V.A.2. Formative Evaluation

V.A.2.a) The faculty must evaluate resident performance in a timely manner during each rotation or similar educational
assignment, and document this evaluation at completion of the assignment. (Core)

V.A.2.b) The program must:

V.A.2.b).(1) provide objective assessments of competence in patient care and procedural skills, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice based on the specialty-specific Milestones; (Core)

V.A.2.b).(2) use multiple evaluators (e.g., faculty, peers, patients, self, and other professional staff); (Detail)

V.A.2.b).(3) document progressive resident performance improvement appropriate to educational level; and, (Core)

V.A.2.b).(4) provide each resident with documented semiannual evaluation of performance with feedback. (Core)

V.A.2.c) The evaluations of resident performance must be accessible for review by the resident, in accordance with institutional policy. (Detail)

V.A.2.d) Residents must participate in the annual In-Training Examination. (Core)

V.A.2.d).(1) The results of this examination must be used only to identify deficiencies in knowledge and to assist in developing a remediation plan. (Core)

V.A.3. Summative Evaluation

The specialty-specific Milestones must be used as one of the tools to ensure residents are able to practice core professional activities without supervision upon completion of the program. (Core)

V.A.3.a) The program director must provide a summative evaluation for each resident upon completion of the program. (Core)

This evaluation must:

V.A.3.a).(1) become part of the resident's permanent record maintained by the institution, and must be accessible for review by the resident in accordance with institutional policy; (Detail)

V.A.3.a).(2) document the resident's performance during the final
verify that the resident has demonstrated sufficient competence to enter practice without direct supervision.

**V.B. Faculty Evaluation**

**V.B.1.** At least annually, the program must evaluate faculty performance as it relates to the educational program. (Core)

**V.B.2.** These evaluations should include a review of the faculty’s clinical teaching abilities, commitment to the educational program, clinical knowledge, professionalism, and scholarly activities. (Detail)

**V.B.3.** This evaluation must include at least annual written confidential evaluations by the residents. (Detail)

**V.B.3.a)** Faculty members must receive annual feedback from these resident evaluations. (Detail)

**V.C. Program Evaluation and Improvement**

**V.C.1.** The program director must appoint the Program Evaluation Committee (PEC). (Core)

**V.C.1.a)** The Program Evaluation Committee:

**V.C.1.a).(1)** must be composed of at least two program faculty members and should include at least one resident; (Core)

**V.C.1.a).(2)** must have a written description of its responsibilities; and, (Core)

**V.C.1.a).(3)** should participate actively in:

**V.C.1.a).(3).(a)** planning, developing, implementing, and evaluating educational activities of the program; (Detail)

**V.C.1.a).(3).(b)** reviewing and making recommendations for revision of competency-based curriculum goals and objectives; (Detail)

**V.C.1.a).(3).(c)** addressing areas of non-compliance with ACGME standards; and, (Detail)

**V.C.1.a).(3).(d)** reviewing the program annually using evaluations of faculty, residents, and others, as specified below. (Detail)
V.C.2. The program, through the PEC, must document formal, systematic evaluation of the curriculum at least annually, and is responsible for rendering a written, annual program evaluation. (Core)

The program must monitor and track each of the following areas:

V.C.2.a) resident performance; (Core)

V.C.2.a).(1) This must include results from the In-Training Examination. (Core)

V.C.2.b) faculty development; (Core)

V.C.2.c) graduate performance, including performance of program graduates on the certification examination; (Core)

V.C.2.c).(1) When averaged over the preceding five years:

V.C.2.c).(1).(a) at least 70 percent of residents who enter a program should graduate; (Outcome)

V.C.2.c).(1).(b) at least 75 percent of a program’s graduates should take the American Board of Nuclear Medicine (ABNM) certifying examination within three years of graduation; and, (Outcome)

V.C.2.c).(1).(c) at least 75 percent of a program’s graduates taking the ABNM certifying examination for the first time should pass. (Outcome)

V.C.2.d) program quality; and, (Core)

V.C.2.d).(1) Residents and faculty must have the opportunity to evaluate the program confidentially and in writing at least annually, and (Detail)

V.C.2.d).(2) The program must use the results of residents’ and faculty members’ assessments of the program together with other program evaluation results to improve the program. (Detail)

V.C.2.e) progress on the previous year’s action plan(s). (Core)

V.C.3. The PEC must prepare a written plan of action to document initiatives to improve performance in one or more of the areas listed in section V.C.2., as well as delineate how they will be measured and monitored. (Core)

V.C.3.a) The action plan should be reviewed and approved by the teaching faculty and documented in meeting minutes. (Detail)
VI. The Learning and Working Environment

Residency education must occur in the context of a learning and working environment that emphasizes the following principles:

- Excellence in the safety and quality of care rendered to patients by residents today
- Excellence in the safety and quality of care rendered to patients by today’s residents in their future practice
- Excellence in professionalism through faculty modeling of:
  - the effacement of self-interest in a humanistic environment that supports the professional development of physicians
  - the joy of curiosity, problem-solving, intellectual rigor, and discovery
- Commitment to the well-being of the students, residents, faculty members, and all members of the health care team

VI.A. Patient Safety, Quality Improvement, Supervision, and Accountability

VI.A.1. Patient Safety and Quality Improvement

All physicians share responsibility for promoting patient safety and enhancing quality of patient care. Graduate medical education must prepare residents to provide the highest level of clinical care with continuous focus on the safety, individual needs, and humanity of their patients. It is the right of each patient to be cared for by residents who are appropriately supervised; possess the requisite knowledge, skills, and abilities; understand the limits of their knowledge and experience; and seek assistance as required to provide optimal patient care.

Residents must demonstrate the ability to analyze the care they provide, understand their roles within health care teams, and play an active role in system improvement processes. Graduating residents will apply these skills to critique their future unsupervised practice and effect quality improvement measures.

It is necessary for residents and faculty members to consistently work in a well-coordinated manner with other health care professionals to achieve organizational patient safety goals.

VI.A.1.a) Patient Safety

VI.A.1.a).(1) Culture of Safety
A culture of safety requires continuous identification of vulnerabilities and a willingness to transparently deal with them. An effective organization has formal mechanisms to assess the knowledge, skills, and attitudes of its personnel toward safety in order to identify areas for improvement.

### VI.A.1.a).(1).(a)

The program, its faculty, residents, and fellows must actively participate in patient safety systems and contribute to a culture of safety. (Core)

### VI.A.1.a).(1).(b)

The program must have a structure that promotes safe, interprofessional, team-based care. (Core)

### VI.A.1.a).(2)

**Education on Patient Safety**

Programs must provide formal educational activities that promote patient safety-related goals, tools, and techniques. (Core)

### VI.A.1.a).(3)

**Patient Safety Events**

Reporting, investigation, and follow-up of adverse events, near misses, and unsafe conditions are pivotal mechanisms for improving patient safety, and are essential for the success of any patient safety program. Feedback and experiential learning are essential to developing true competence in the ability to identify causes and institute sustainable systems-based changes to ameliorate patient safety vulnerabilities.

#### VI.A.1.a).(3).(a)

Residents, fellows, faculty members, and other clinical staff members must:

- **VI.A.1.a).(3).(a).(i)** know their responsibilities in reporting patient safety events at the clinical site; (Core)

- **VI.A.1.a).(3).(a).(ii)** know how to report patient safety events, including near misses, at the clinical site; and, (Core)

- **VI.A.1.a).(3).(a).(iii)** be provided with summary information of their institution’s patient safety reports. (Core)

#### VI.A.1.a).(3).(b)

Residents must participate as team members in real and/or simulated interprofessional clinical
patient safety activities, such as root cause analyses or other activities that include analysis, as well as formulation and implementation of actions. (Core)

VI.A.1.a).(4) Resident Education and Experience in Disclosure of Adverse Events

*Patient-centered care requires patients, and when appropriate families, to be apprised of clinical situations that affect them, including adverse events. This is an important skill for faculty physicians to model, and for residents to develop and apply.*

VI.A.1.a).(4).(a) All residents must receive training in how to disclose adverse events to patients and families. (Core)

VI.A.1.a).(4).(b) Residents should have the opportunity to participate in the disclosure of patient safety events, real or simulated. (Detail)

VI.A.1.b) Quality Improvement

VI.A.1.b).(1) Education in Quality Improvement

*A cohesive model of health care includes quality-related goals, tools, and techniques that are necessary in order for health care professionals to achieve quality improvement goals.*

VI.A.1.b).(1).(a) Residents must receive training and experience in quality improvement processes, including an understanding of health care disparities. (Core)

VI.A.1.b).(2) Quality Metrics

*Access to data is essential to prioritizing activities for care improvement and evaluating success of improvement efforts.*

VI.A.1.b).(2).(a) Residents and faculty members must receive data on quality metrics and benchmarks related to their patient populations. (Core)

VI.A.1.b).(3) Engagement in Quality Improvement Activities

*Experiential learning is essential to developing the ability to identify and institute sustainable systems-based changes to improve patient care.*
VI.A.1.b).(3).(a) Residents must have the opportunity to participate in interprofessional quality improvement activities. (Core)

VI.A.1.b).(3).(a).(i) This should include activities aimed at reducing health care disparities. (Detail)

VI.A.2. Supervision and Accountability

VI.A.2.a) Although the attending physician is ultimately responsible for the care of the patient, every physician shares in the responsibility and accountability for their efforts in the provision of care. Effective programs, in partnership with their Sponsoring Institutions, define, widely communicate, and monitor a structured chain of responsibility and accountability as it relates to the supervision of all patient care.

*Supervision in the setting of graduate medical education provides safe and effective care to patients; ensures each resident’s development of the skills, knowledge, and attitudes required to enter the unsupervised practice of medicine; and establishes a foundation for continued professional growth.*

VI.A.2.a).(1) Each patient must have an identifiable and appropriately-credentialed and privileged attending physician (or licensed independent practitioner as specified by the applicable Review Committee) who is responsible and accountable for the patient’s care. (Core)

*Only licensed physicians who are credentialed to perform nuclear medicine procedures may have primary responsibility for the nuclear medicine aspects of patient care.* (Detail)

VI.A.2.a).(1).(a) This information must be available to residents, faculty members, other members of the health care team, and patients. (Core)

VI.A.2.a).(1).(b) Residents and faculty members must inform each patient of their respective roles in that patient’s care when providing direct patient care. (Core)

VI.A.2.b) *Supervision may be exercised through a variety of methods.* For many aspects of patient care, the supervising physician may be a more advanced resident or fellow. Other portions of care provided by the resident can be adequately supervised by the immediate availability of the supervising faculty member, fellow, or senior resident physician, either on site or
by means of telephonic and/or electronic modalities. Some activities require the physical presence of the supervising faculty member. In some circumstances, supervision may include post-hoc review of resident-delivered care with feedback.

VI.A.2.b).(1) The program must demonstrate that the appropriate level of supervision in place for all residents is based on each resident’s level of training and ability, as well as patient complexity and acuity. Supervision may be exercised through a variety of methods, as appropriate to the situation. (Core)

VI.A.2.c) Levels of Supervision

To promote oversight of resident supervision while providing for graded authority and responsibility, the program must use the following classification of supervision: (Core)

VI.A.2.c).(1) Direct Supervision – the supervising physician is physically present with the resident and patient. (Core)

VI.A.2.c).(2) Indirect Supervision:

VI.A.2.c).(2).(a) with Direct Supervision immediately available – the supervising physician is physically within the hospital or other site of patient care, and is immediately available to provide Direct Supervision. (Core)

VI.A.2.c).(2).(b) with Direct Supervision available – the supervising physician is not physically present within the hospital or other site of patient care, but is immediately available by means of telephonic and/or electronic modalities, and is available to provide Direct Supervision. (Core)

VI.A.2.c).(3) Oversight – the supervising physician is available to provide review of procedures/encounters with feedback provided after care is delivered. (Core)

VI.A.2.d) The privilege of progressive authority and responsibility, conditional independence, and a supervisory role in patient care delegated to each resident must be assigned by the program director and faculty members. (Core)

VI.A.2.d).(1) The program director must evaluate each resident’s abilities based on specific criteria, guided by the Milestones. (Core)

VI.A.2.d).(2) Faculty members functioning as supervising
physicians must delegate portions of care to residents based on the needs of the patient and the skills of each resident. (Core)

VI.A.2.d).(3) Senior residents or fellows should serve in a supervisory role to junior residents in recognition of their progress toward independence, based on the needs of each patient and the skills of the individual resident or fellow. (Detail)

VI.A.2.e) Programs must set guidelines for circumstances and events in which residents must communicate with the supervising faculty member(s). (Core)

VI.A.2.e).(1) Each resident must know the limits of their scope of authority, and the circumstances under which the resident is permitted to act with conditional independence. (Outcome)

VI.A.2.e).(1).(a) Initially, PGY-1 residents must be supervised either directly, or indirectly with direct supervision immediately available. (Core)

VI.A.2.f) Faculty supervision assignments must be of sufficient duration to assess the knowledge and skills of each resident and to delegate to the resident the appropriate level of patient care authority and responsibility. (Core)

VI.B. Professionalism

VI.B.1. Programs, in partnership with their Sponsoring Institutions, must educate residents and faculty members concerning the professional responsibilities of physicians, including their obligation to be appropriately rested and fit to provide the care required by their patients. (Core)

VI.B.2. The learning objectives of the program must:

VI.B.2.a) be accomplished through an appropriate blend of supervised patient care responsibilities, clinical teaching, and didactic educational events; (Core)

VI.B.2.b) be accomplished without excessive reliance on residents to fulfill non-physician obligations; and, (Core)

VI.B.2.c) ensure manageable patient care responsibilities. (Core)

VI.B.3. The program director, in partnership with the Sponsoring Institution, must provide a culture of professionalism that supports patient safety and personal responsibility. (Core)
VI.B.4. Residents and faculty members must demonstrate an understanding of their personal role in the:

VI.B.4.a) provision of patient- and family-centered care; (Outcome)

VI.B.4.b) safety and welfare of patients entrusted to their care, including the ability to report unsafe conditions and adverse events; (Outcome)

VI.B.4.c) assurance of their fitness for work, including: (Outcome)

VI.B.4.c).(1) management of their time before, during, and after clinical assignments; and, (Outcome)

VI.B.4.c).(2) recognition of impairment, including from illness, fatigue, and substance use, in themselves, their peers, and other members of the health care team. (Outcome)

VI.B.4.d) commitment to lifelong learning; (Outcome)

VI.B.4.e) monitoring of their patient care performance improvement indicators; and, (Outcome)

VI.B.4.f) accurate reporting of clinical and educational work hours, patient outcomes, and clinical experience data. (Outcome)

VI.B.5. All residents and faculty members must demonstrate responsiveness to patient needs that supersedes self-interest. This includes the recognition that under certain circumstances, the best interests of the patient may be served by transitioning that patient’s care to another qualified and rested provider. (Outcome)

VI.B.6. Programs must provide a professional, respectful, and civil environment that is free from mistreatment, abuse, or coercion of students, residents, faculty, and staff. Programs, in partnership with their Sponsoring Institutions, should have a process for education of residents and faculty regarding unprofessional behavior and a confidential process for reporting, investigating, and addressing such concerns. (Core)

VI.C. Well-Being

In the current health care environment, residents and faculty members are at increased risk for burnout and depression. Psychological, emotional, and physical well-being are critical in the development of the competent, caring, and resilient physician. Self-care is an important component of professionalism; it is also a skill that must be learned and nurtured in the context of other aspects of residency training. Programs, in partnership with their Sponsoring Institutions, have the same responsibility to address well-being as they do to evaluate other aspects of resident competence.
VI.C.1. This responsibility must include:

VI.C.1.a) efforts to enhance the meaning that each resident finds in the experience of being a physician, including protecting time with patients, minimizing non-physician obligations, providing administrative support, promoting progressive autonomy and flexibility, and enhancing professional relationships; (Core)

VI.C.1.b) attention to scheduling, work intensity, and work compression that impacts resident well-being; (Core)

VI.C.1.c) evaluating workplace safety data and addressing the safety of residents and faculty members; (Core)

VI.C.1.d) policies and programs that encourage optimal resident and faculty member well-being; and, (Core)

VI.C.1.d).(1) Residents must be given the opportunity to attend medical, mental health, and dental care appointments, including those scheduled during their working hours. (Core)

VI.C.1.e) attention to resident and faculty member burnout, depression, and substance abuse. The program, in partnership with its Sponsoring Institution, must educate faculty members and residents in identification of the symptoms of burnout, depression, and substance abuse, including means to assist those who experience these conditions. Residents and faculty members must also be educated to recognize those symptoms in themselves and how to seek appropriate care. The program, in partnership with its Sponsoring Institution, must; (Core)

VI.C.1.e).(1) encourage residents and faculty members to alert the program director or other designated personnel or programs when they are concerned that another resident, fellow, or faculty member may be displaying signs of burnout, depression, substance abuse, suicidal ideation, or potential for violence; (Core)

VI.C.1.e).(2) provide access to appropriate tools for self-screening; and, (Core)

VI.C.1.e).(3) provide access to confidential, affordable mental health assessment, counseling, and treatment, including access to urgent and emergent care 24 hours a day, seven days a week. (Core)

VI.C.2. There are circumstances in which residents may be unable to attend work, including but not limited to fatigue, illness, and family
emergency situations. Each program must have policies and procedures in place that ensure coverage of patient care in the event that a resident may be unable to perform their patient care responsibilities. These policies must be implemented without fear of negative consequences for the resident who is unable to provide the clinical work. (Core)

**VI.D. Fatigue Mitigation**

**VI.D.1. Programs must:**

**VI.D.1.a)** educate all faculty members and residents to recognize the signs of fatigue and sleep deprivation; (Core)

**VI.D.1.b)** educate all faculty members and residents in alertness management and fatigue mitigation processes; and, (Core)

**VI.D.1.c)** encourage residents to use fatigue mitigation processes to manage the potential negative effects of fatigue on patient care and learning. (Detail)

**VI.D.2.** Each program must ensure continuity of patient care, consistent with the program’s policies and procedures referenced in VI.C.2, in the event that a resident may be unable to perform their patient care responsibilities due to excessive fatigue. (Core)

**VI.D.3.** The program, in partnership with its Sponsoring Institution, must ensure adequate sleep facilities and safe transportation options for residents who may be too fatigued to safely return home. (Core)

**VI.E. Clinical Responsibilities, Teamwork, and Transitions of Care**

**VI.E.1. Clinical Responsibilities**

The clinical responsibilities for each resident must be based on PGY level, patient safety, resident ability, severity and complexity of patient illness/condition, and available support services. (Core)

**VI.E.1.a)** Optimal clinical workload must maximize the resident learning experience without compromising patient care. (Detail)

**VI.E.1.b)** The number and distribution of cases should vary with the responsibility appropriate to an individual resident’s demonstrated competence over the course of his or her education. (Detail)

**VI.E.1.c)** Program directors must determine minimum and maximum patient loads by including faculty member and resident input into an assessment of the learning environment. (Detail)

**VI.E.1.d)** Insufficient patient experiences and excessive patient loads must not jeopardize the quality of resident education. (Detail)
VI.E.2. Teamwork

Residents must care for patients in an environment that maximizes communication. This must include the opportunity to work as a member of effective interprofessional teams that are appropriate to the delivery of care in the specialty and larger health system. (Core)

VI.E.2.a) The nuclear medicine patient care team should include ancillary personnel, attending nuclear physicians, nuclear medicine residents, nuclear medicine technologists, and radiation safety personnel, and also may include medical physicists, other imaging specialists, radiopharmacists, and individuals from referring services. (Detail)

VI.E.3. Transitions of Care

VI.E.3.a) Programs must design clinical assignments to optimize transitions in patient care, including their safety, frequency, and structure. (Core)

VI.E.3.b) Programs, in partnership with their Sponsoring Institutions, must ensure and monitor effective, structured hand-over processes to facilitate both continuity of care and patient safety. (Core)

VI.E.3.c) Programs must ensure that residents are competent in communicating with team members in the hand-over process. (Outcome)

VI.E.3.d) Programs and clinical sites must maintain and communicate schedules of attending physicians and residents currently responsible for care. (Core)

VI.E.3.e) Each program must ensure continuity of patient care, consistent with the program’s policies and procedures referenced in VI.C.2, in the event that a resident may be unable to perform their patient care responsibilities due to excessive fatigue or illness, or family emergency. (Core)

VI.F. Clinical Experience and Education

Programs, in partnership with their Sponsoring Institutions, must design an effective program structure that is configured to provide residents with educational and clinical experience opportunities, as well as reasonable opportunities for rest and personal activities.

VI.F.1. Maximum Hours of Clinical and Educational Work per Week

Clinical and educational work hours must be limited to no more than 80 hours per week, averaged over a four-week period, inclusive of all
in-house clinical and educational activities, clinical work done from home, and all moonlighting. (Core)

**VI.F.2. Mandatory Time Free of Clinical Work and Education**

**VI.F.2.a)** The program must design an effective program structure that is configured to provide residents with educational opportunities, as well as reasonable opportunities for rest and personal well-being. (Core)

**VI.F.2.b)** Residents should have eight hours off between scheduled clinical work and education periods. (Detail)

**VI.F.2.b).(1) There may be circumstances when residents choose to stay to care for their patients or return to the hospital with fewer than eight hours free of clinical experience and education. This must occur within the context of the 80-hour and the one-day-off-in-seven requirements. (Detail)**

**VI.F.2.c)** Residents must have at least 14 hours free of clinical work and education after 24 hours of in-house call. (Core)

**VI.F.2.d)** Residents must be scheduled for a minimum of one day in seven free of clinical work and required education (when averaged over four weeks). At-home call cannot be assigned on these free days. (Core)

**VI.F.3. Maximum Clinical Work and Education Period Length**

**VI.F.3.a)** Clinical and educational work periods for residents must not exceed 24 hours of continuous scheduled clinical assignments. (Core)

**VI.F.3.a).(1) Up to four hours of additional time may be used for activities related to patient safety, such as providing effective transitions of care, and/or resident education. (Core)**

**VI.F.3.a).(1).(a) Additional patient care responsibilities must not be assigned to a resident during this time. (Core)**

**VI.F.4. Clinical and Educational Work Hour Exceptions**

**VI.F.4.a)** In rare circumstances, after handing off all other responsibilities, a resident, on their own initiative, may elect to remain or return to the clinical site in the following circumstances:

**VI.F.4.a).(1) to continue to provide care to a single severely ill or unstable patient; (Detail)**
VI.F.4.a).(2) humanistic attention to the needs of a patient or family; or,  

VI.F.4.a).(3) to attend unique educational events.  

VI.F.4.b) These additional hours of care or education will be counted toward the 80-hour weekly limit.  

VI.F.4.c) A Review Committee may grant rotation-specific exceptions for up to 10 percent or a maximum of 88 clinical and educational work hours to individual programs based on a sound educational rationale.  

The Review Committee for Nuclear Medicine will not consider requests for exceptions to the 80-hour limit to the residents’ work week.  

VI.F.4.c).(1) In preparing a request for an exception, the program director must follow the clinical and educational work hour exception policy from the ACGME Manual of Policies and Procedures.  

VI.F.4.c).(2) Prior to submitting the request to the Review Committee, the program director must obtain approval from the Sponsoring Institution’s GMEC and DIO.  

VI.F.5. Moonlighting  

VI.F.5.a) Moonlighting must not interfere with the ability of the resident to achieve the goals and objectives of the educational program, and must not interfere with the resident’s fitness for work nor compromise patient safety.  

VI.F.5.b) Time spent by residents in internal and external moonlighting (as defined in the ACGME Glossary of Terms) must be counted toward the 80-hour maximum weekly limit.  

VI.F.5.c) PGY-1 residents are not permitted to moonlight.  

VI.F.6. In-House Night Float  

Night float must occur within the context of the 80-hour and one-day-off-in-seven requirements.  

VI.F.7. Maximum In-House On-Call Frequency  

Residents must be scheduled for in-house call no more frequently than every third night (when averaged over a four-week period).  

VI.F.8. At-Home Call
VI.F.8.a)  Time spent on patient care activities by residents on at-home call must count toward the 80-hour maximum weekly limit. The frequency of at-home call is not subject to the every-third-night limitation, but must satisfy the requirement for one day in seven free of clinical work and education, when averaged over four weeks. *(Core)*

VI.F.8.a).(1)  At-home call must not be so frequent or taxing as to preclude rest or reasonable personal time for each resident. *(Core)*

VI.F.8.b)  Residents are permitted to return to the hospital while on at-home call to provide direct care for new or established patients. These hours of inpatient patient care must be included in the 80-hour maximum weekly limit. *(Detail)*

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*Core Requirements:* Statements that define structure, resource, or process elements essential to every graduate medical educational program.

*Detail Requirements:* Statements that describe a specific structure, resource, or process, for achieving compliance with a Core Requirement. Programs and sponsoring institutions in substantial compliance with the Outcome Requirements may utilize alternative or innovative approaches to meet Core Requirements.

*Outcome Requirements:* Statements that specify expected measurable or observable attributes (knowledge, abilities, skills, or attitudes) of residents or fellows at key stages of their graduate medical education.

**Osteopathic Recognition**

For programs seeking Osteopathic Recognition for the entire program, or for a track within the program, the Osteopathic Recognition Requirements are also applicable. *(http://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/Osteopathic_Recognition_Requirements.pdf)*