

# ACGME Program Requirements for Graduate Medical Education in Diagnostic Radiology

Common Program Requirements are in BOLD

Effective: July 1, 2008

## 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. Definition and Scope of the Specialty**

Diagnostic radiology encompasses a variety of diagnostic and image guided therapeutic techniques, including all aspects of image-based diagnosis, (radiography, nuclear radiology, diagnostic ultrasound, magnetic resonance, computed tomography, interventional procedures, and molecular imaging). The residency program in diagnostic radiology shall offer a quality graduate medical educational experience in all of these associated disciplines.

**Int.C. Duration and Scope of Education**

**Int.C.1. Resident education in diagnostic radiology must include five years of clinically oriented graduate medical education, of which four years must be in diagnostic radiology.**

**Int.C.2. Clinical Year**

**Int.C.2.a) This year must consist of training accredited by the Accreditation Council for Graduate Medical Education (ACGME), the Royal**

College of Physicians and Surgeons of Canada (RCPSC), or equivalent organization in internal medicine, pediatrics, surgery or surgical specialties, obstetrics and gynecology, neurology, family medicine, emergency medicine, or any combination of these. The clinical year may also comprise a transitional year accredited by the ACGME or equivalent organization.

- Int.C.2.b) During the clinical year, elective rotations in diagnostic radiology must occur only in radiology departments with an ACGME-accredited diagnostic radiology residency program and cannot exceed two months.
- Int.C.2.c) If the clinical year is offered by the institution of the core residency, and is not a stand alone ACGME-accredited year, the program director will be responsible for assuring the quality of the year.
- Int.C.2.d) The program director is responsible for verifying that the resident accepted into the diagnostic radiology program has successfully completed the clinical year.
- Int.C.3. Diagnostic Radiology Residency
- The residency program is four years of graduate medical education (including vacation and meeting time) in diagnostic radiology. Full time participation by the residents in clinical and didactic activities must occur at all levels of training, including the final year of residency. In the four years, the maximum period of training in any one of the nine subspecialty areas shall be 16 months. The nine subspecialty areas of diagnostic radiology are neuroradiology, musculoskeletal radiology, vascular and interventional radiology, cardiothoracic radiology, breast radiology, abdominal radiology, pediatric radiology, ultrasonography (including obstetrical and vascular ultrasound), and nuclear radiology (including PET and nuclear cardiology).
- Int.C.4. Residents entering diagnostic radiology training on July 1, 2010 or thereafter must be provided appropriate clinical rotations and formal instruction in all subspecialties of diagnostic radiology and in the core subjects pertaining to diagnostic radiology (e.g. medical physics, physiology of contrast media, etc.) before taking the American Board of Radiology (ABR) Core Examination (given after 36 months of diagnostic radiology training at the end of PGY-4). During the final year of diagnostic radiology training (PGY-5), these residents should be allowed, within program resources, to select and participate in rotations, including “general radiology,” that will reflect their desired areas of concentration as they enter practice.
- Int.C.5. Participation in on-call activities is essential for the development of radiologists, who are expected to practice independently upon completion of training, and should occur throughout the second, third and final years of diagnostic radiology residency. Program directors may exercise

discretion in granting relief from call responsibilities for short periods before the oral board exam for residents entering diagnostic radiology training before July 1, 2010 and before the “Core” board exam for residents entering diagnostic radiology training on July 1, 2010 or thereafter.

Int.C.6. The education in diagnostic radiology must occur in an environment that encourages the interchange of knowledge and experience among residents in the program and among residents in other major clinical specialties located in those institutions participating in the program.

## **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.**

**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.**

### **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.**

**The PLA should:**

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

**I.B.1.b) specify their responsibilities for teaching, supervision, and formal evaluation of residents, as specified later in this document per Sections II.B and V.A;**

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

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

**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).**

**I.B.3. The program should be based at a primary hospital. A program using**

multiple sites must ensure the provision of a unified educational experience for the residents. Each participating site must offer significant educational opportunities to the overall program. Service responsibility alone at a participating site is not a suitable educational experience.

- I.B.4. Programs should avoid affiliations with sites at such distances from the primary hospital as to make resident attendance at rounds and conferences impractical, unless there is a comparable educational experience at the site.

## **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. After approval, the program director must submit this change to the ACGME via the ADS.**
- II.A.1.a) The program director should be a full-time faculty member.
- II.A.1.b) The program director must be provided the equivalent of at least one day a week protected time in order to fulfill the responsibilities inherent in meeting the educational goals of the program.
- 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.**
- 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;**
- II.A.3.b) **current certification in the specialty by the American Board of Radiology, or specialty qualifications that are judged to be acceptable by the Review Committee; and,**
- II.A.3.c) **current medical licensure and appropriate medical staff appointment.**
- 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. The program director must:**
- II.A.4.a) **oversee and ensure the quality of didactic and clinical education in all institutions that participate in the program;**
- II.A.4.b) **approve a local director at each participating site who is**

- accountable for resident education;
- II.A.4.c) approve the selection of program faculty as appropriate;
- II.A.4.d) evaluate program faculty and approve the continued participation of program faculty based on evaluation;
- II.A.4.e) monitor resident supervision at all participating sites;
- II.A.4.f) prepare and submit all information required and requested by the ACGME, including but not limited to the program information forms and annual program resident updates to the ADS, and ensure that the information submitted is accurate and complete;
- II.A.4.g) provide each resident with documented semiannual evaluation of performance with feedback;
- II.A.4.h) ensure compliance with grievance and due process procedures as set forth in the Institutional Requirements and implemented by the sponsoring institution;
- II.A.4.i) provide verification of residency education for all residents, including those who leave the program prior to completion;
- II.A.4.j) implement policies and procedures consistent with the institutional and program requirements for resident duty hours and the working environment, including moonlighting, and, to that end, must:
- II.A.4.j).(1) distribute these policies and procedures to the residents and faculty;
- II.A.4.j).(2) monitor resident duty hours, according to sponsoring institutional policies, with a frequency sufficient to ensure compliance with ACGME requirements;
- II.A.4.j).(3) adjust schedules as necessary to mitigate excessive service demands and/or fatigue; and,
- II.A.4.j).(4) if applicable, monitor the demands of at-home call and adjust schedules as necessary to mitigate excessive service demands and/or fatigue.
- II.A.4.k) monitor the need for and ensure the provision of back up support systems when patient care responsibilities are unusually difficult or prolonged;
- II.A.4.l) 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;

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

**II.A.4.n) obtain review and approval of the sponsoring institution's GMEC/DIO before submitting to the ACGME information or requests for the following:**

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

**II.A.4.n).(2) changes in resident complement;**

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

**II.A.4.n).(4) progress reports requested by the Review Committee;**

**II.A.4.n).(5) responses to all proposed adverse actions;**

**II.A.4.n).(6) requests for increases or any change to resident duty hours;**

**II.A.4.n).(7) voluntary withdrawals of ACGME-accredited programs;**

**II.A.4.n).(8) requests for appeal of an adverse action;**

**II.A.4.n).(9) appeal presentations to a Board of Appeal or the ACGME; and,**

**II.A.4.n).(10) proposals to ACGME for approval of innovative educational approaches.**

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

**II.A.4.o).(1) program citations, and/or**

**II.A.4.o).(2) request for changes in the program that would have significant impact, including financial, on the program or institution.**

**II.A.4.p) participate in the ACGME case log system. The logs must be submitted annually to the Review Committee office in accordance with the format and the due date specified by the Review Committee. The record must be reviewed by the program director at least annually; for residents beginning training in diagnostic**

radiology on July 1, 2010 or thereafter, data must be submitted for each resident only for the years of training preceding the ABR Core Examination (at end of PGY-4);

- II.A.4.q) be responsible for ensuring that the general content is integrated into the conference schedule;
- II.A.4.r) ensure that programs have a minimum of five hours per week of conferences/lectures;
- II.A.4.s) ensure that residents have protected time to attend all scheduled lectures and conferences. Resident attendance at conferences/lectures must be documented;
- II.A.4.t) ensure that there are interactive conferences in addition to the core didactic series; and,
- II.A.4.u) ensure that there are interdepartmental conferences in which both residents and faculty participate on a regular basis.

## **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.**

**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,**
- II.B.1.b) **administer and maintain an educational environment conducive to educating residents in each of the ACGME competency areas.**
- II.B.2. **The physician faculty must have current certification in the specialty by the American Board of Radiology, or possess qualifications judged to be acceptable by the Review Committee.**
  - II.B.2.a) In programs affiliated with a medical school, all members of the faculty must have their academic appointment in the department of radiology. For programs not affiliated with a medical school, all physician faculty must be members of the medical staff of at least one of the participating sites.
  - II.B.2.b) There must be at least one FTE physician faculty in each of the nine subspecialty areas. The nine subspecialty areas are neuroradiology, musculoskeletal radiology, vascular and interventional radiology, cardiothoracic radiology, breast radiology, abdominal radiology, pediatric radiology, ultrasonography, and

nuclear radiology.

- II.B.2.c) The program must designate one physician faculty member to be responsible for the educational content of each of the nine subspecialty areas. This individual must practice at least 50% of his or her time in the subspecialty area, and must demonstrate a commitment to the subspecialty. Such commitment may be demonstrated by any of the following:
- II.B.2.c).(1) subspecialty certification (CAQ), fellowship training or three years of subspecialty practice;
  - II.B.2.c).(2) membership in a subspecialty society;
  - II.B.2.c).(3) publications and presentations in the subspecialty;
  - II.B.2.c).(4) annual CME credits in the subspecialty; or,
  - II.B.2.c).(5) participation in maintenance of certification with emphasis on the subspecialty area.
- II.B.2.d) No faculty member may have primary responsibility for the educational content of more than one subspecialty area, although faculty may have clinical responsibility and/or teaching responsibilities in several subspecialty areas. A pediatric radiologist may have a primary appointment at another site and still be the designated faculty member supervising pediatric radiologic education.
- II.B.3. The physician faculty must possess current medical licensure and appropriate medical staff appointment.**
- II.B.4. The nonphysician faculty must have appropriate qualifications in their field and hold appropriate institutional appointments.**
- II.B.5. The faculty must establish and maintain an environment of inquiry and scholarship with an active research component.**
- II.B.5.a) The faculty must regularly participate in organized clinical discussions, rounds, journal clubs, and conferences.**
  - 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;**
    - II.B.5.b).(2) publication of original research or review articles in peer-reviewed journals, or chapters in textbooks;**
    - 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,**

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

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

**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.**

**II.C.1.** Programs must have a dedicated radiology residency program coordinator. This person must have sufficient time to fulfill the responsibilities essential in meeting the educational goals and administrative requirements of the program.

**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.**

**II.D.1.** The program must provide adequate space, equipment, and other pertinent facilities to ensure an effective educational experience for residents in diagnostic radiology. The program must also provide the modern facilities and equipment required in all of the subspecialty rotations.

**II.D.2.** There must be secure on-site call facilities for residents at locations where in-house call is required.

**II.D.3.** The ACR teaching file or its equivalent must be available to residents.

**II.D.4.** The program must provide a sufficient volume and variety of patients to ensure that residents gain experience in the full range of radiologic examinations, procedures, and interpretations. The number and variety of examinations and the length of rotations in each subspecialty area must be sufficient to ensure an adequate training experience. The program's volume must be no fewer than 7,000 radiologic examinations per year per resident. The number of examinations in each of the nine subspecialty areas must be of sufficient volume to ensure adequate training experience.

**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.**

### **III. Resident Appointments**

#### **III.A. Eligibility Criteria**

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

#### **III.B. Number of Residents**

**The program director may not appoint more residents than approved by the Review Committee, unless otherwise stated in the specialty-specific requirements. The program's educational resources must be adequate to support the number of residents appointed to the program.**

**III.B.1. The program must have a minimum of eight residents.**

**III.B.2. Prior approval by the Review Committee is required for a change in the approved resident complement.**

#### **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.**

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

#### **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. The program director must report the presence of other learners to the DIO and GMEC in accordance with sponsoring institution guidelines.**

### **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 distribute to residents and faculty annually;**

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

**These should be reviewed by the resident at the start of each rotation;**

**IV.A.3. Regularly scheduled didactic sessions; and,**

**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.**

**IV.A.5. ACGME Competencies**

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

**IV.A.5.a) Patient Care**

**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) should provide patient care through safe, efficient, appropriately utilized, quality-controlled diagnostic and/or interventional radiology techniques. The resident must communicate effectively and in a timely manner the results of procedures, studies, and examinations to the referring physician and/or other appropriate individuals;

IV.A.5.a).(2) must have a minimum of 700 hours (approximately four months) of training and experience in clinical nuclear medicine, which may include the required 80 hours of classroom and laboratory instruction (Section IV.A.5.b.1.a.iii);

IV.A.5.a).(2).(a) Each resident must participate with preceptors in at least three therapies involving oral administration of I-131 in quantities less than or equal to 33 millicuries (mCi) and at least three therapies in quantities greater than 33mCi. Documentation of the resident's participation must include the date, diagnosis, and dose of each I-131 therapy.

IV.A.5.a).(3) must have a minimum of 12 weeks of clinical rotations in breast imaging. Each resident must have documentation of the interpretation/multi-reading of at least 240 mammograms within a six-month period during their last two years of the residency program;

IV.A.5.a).(4) must have documented supervised experience in interventional procedures. This includes image-guided biopsies, drainage procedures, angioplasty, embolization and infusion procedures, and other percutaneous -

interventional procedures;

IV.A.5.a).(4).(a) the residents must document the performance, interpretation, and complications of vascular, interventional, and invasive procedures;

IV.A.5.a).(5) must have training and clinical experience in the acquisition and interpretation of conventional radiography, computed tomography, magnetic resonance imaging, angiography, and nuclear radiology examinations of the cardiovascular system (heart and great vessels). This training must include studies performed on both adults and children; and,

IV.A.5.a).(6) must maintain current basic life-support (BLS) certification. Advanced cardiac life-support (ACLS) training is recommended.

**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:**

IV.A.5.b).(1) must repeat, at least every two years, the core didactic curriculum. This curriculum must be documented, and should consist of subspecialty clinical content and general content.

IV.A.5.b).(1).(a) Subspecialty Didactic Content

IV.A.5.b).(1).(a).(i) There must be a didactic component for each of the nine subspecialty areas, including the heart and coronary arteries. The content should include the following in all age groups: anatomy, physiology, disease processes, and imaging.

IV.A.5.b).(1).(a).(ii) Each of the nine designated subspecialty chiefs must organize a series of intradepartmental lectures that cover these topics in their respective subspecialty area. These lectures may be supplemented with other educational materials.

IV.A.5.b).(1).(a).(iii) There must be at least 80 hours of didactic (classroom and laboratory training) training under the direction of an authorized user (AU). This training must include the following subjects as they relate to nuclear

medicine:

- IV.A.5.b).(1).(a).(iii).(a) diagnostic radiologic physics, instrumentation, and radiation biology;
- IV.A.5.b).(1).(a).(iii).(b) patient and medical personnel safety (i.e., radiation protection);
- IV.A.5.b).(1).(a).(iii).(c) the chemistry of by-product material for medical use;
- IV.A.5.b).(1).(a).(iii).(d) biologic and pharmacologic actions of materials administered in diagnostic and therapeutic procedures; and,
- IV.A.5.b).(1).(a).(iii).(e) topics in safe handling, administration, and quality control of radionuclide doses used in clinical medicine.
- IV.A.5.b).(1).(a).(iv) The didactic instruction (or work experience) must include ordering, receiving, and unpacking radioactive material safely, and performing the related radiation surveys; the safe elution and quality control (QC) of radionuclide generator systems; calculating, measuring, and safely preparing patient dosages; calibration and QC of survey meters and dose calibrators; safe handling and administration of therapeutic doses of unsealed radionuclide sources (i.e., I-131); written directives; response to radiation spills and accidents (containment and decontamination procedures); radiation signage and related materials; using administrative controls to prevent medical events involving the use of unsealed byproduct material. Residents must demonstrate hands-on work experience when they perform the supervised work experience requirements. Observation alone is not sufficient.
- IV.A.5.b).(1).(b) General Didactic Content
- IV.A.5.b).(1).(b).(i) There must be didactic components that address the following subjects:
- IV.A.5.b).(1).(b).(i).(a) diagnostic radiologic physics and

	radiation biology;
IV.A.5.b).(1).(b).(i).(b)	patient and medical personnel safety (i.e., radiation protection, MRI safety);
IV.A.5.b).(1).(b).(i).(c)	appropriate imaging utilization (proper sequencing; cost-benefit analysis);
IV.A.5.b).(1).(b).(i).(d)	radiologic/pathologic correlation; (This requirement may be satisfied by resident participation in a formal course on radiologic-pathologic correlation.)
IV.A.5.b).(1).(b).(i).(e)	fundamentals of molecular imaging;
IV.A.5.b).(1).(b).(i).(f)	biologic and pharmacologic actions of materials administered in diagnostic or therapeutic procedures;
IV.A.5.b).(1).(b).(i).(g)	use of needles, catheters, and other devices employed in invasive image-based diagnostic and therapeutic procedures;
IV.A.5.b).(1).(b).(i).(h)	socioeconomics of radiologic practice; and,
IV.A.5.b).(1).(b).(i).(i)	professionalism and ethics.

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

<b>IV.A.5.c).(1)</b>	<b>identify strengths, deficiencies, and limits in one's knowledge and expertise;</b>
<b>IV.A.5.c).(2)</b>	<b>set learning and improvement goals;</b>
<b>IV.A.5.c).(3)</b>	<b>identify and perform appropriate learning activities;</b>
<b>IV.A.5.c).(4)</b>	<b>systematically analyze practice using quality improvement methods, and implement changes with</b>

- the goal of practice improvement;**
- IV.A.5.c).(5) incorporate formative evaluation feedback into daily practice;**
- IV.A.5.c).(6) locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems;**
- IV.A.5.c).(7) use information technology to optimize learning; and,**
- IV.A.5.c).(8) participate in the education of patients, families, students, residents and other health professionals.**
- IV.A.5.c).(9) evaluate their personal practice, utilizing scientific evidence, "best practices", and self-assessment programs with the intent of practice improvement. Evidence of this reflective process must result in the annual documentation of an individual learning plan. These learning plans must be part of the residents' learning portfolio;**
- IV.A.5.c).(10) demonstrate a skill set that allows them to access, interpret, and apply best scientific evidence to the care of patients (evidence based medicine); and,**
- IV.A.5.c).(11) demonstrate on an ongoing basis an awareness of radiation exposure, protection, and safety, as well as the application of these principles in imaging.**

**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. 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;**
- IV.A.5.d).(2) communicate effectively with physicians, other health professionals, and health related agencies;**
- IV.A.5.d).(3) work effectively as a member or leader of a health care team or other professional group;**
- IV.A.5.d).(4) act in a consultative role to other physicians and health professionals; and,**
- IV.A.5.d).(5) maintain comprehensive, timely, and legible medical records, if applicable.**

IV.A.5.d).(6) communicate effectively with patients, colleagues, referring physicians, and other members of the health care team concerning imaging appropriateness, informed consent, safety issues, and the results of imaging tests or procedures. Competence in oral communication must be judged through direct observation. Competence in written communication must be judged on the basis of the quality and timeliness of dictated reports, and

IV.A.5.d).(7) when they are senior residents, to have experience supervising or acting as consultants to and teaching medical students and residents.

**IV.A.5.e) Professionalism**

**Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:**

**IV.A.5.e).(1) compassion, integrity, and respect for others;**

**IV.A.5.e).(2) responsiveness to patient needs that supersedes self-interest;**

**IV.A.5.e).(3) respect for patient privacy and autonomy;**

**IV.A.5.e).(4) accountability to patients, society and the profession; and,**

**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.**

**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. Residents are expected to:**

**IV.A.5.f).(1) work effectively in various health care delivery settings and systems relevant to their clinical specialty;**

**IV.A.5.f).(2) coordinate patient care within the health care system relevant to their clinical specialty;**

**IV.A.5.f).(3) incorporate considerations of cost awareness and**

**risk-benefit analysis in patient and/or population-based care as appropriate;**

**IV.A.5.f).(4) advocate for quality patient care and optimal patient care systems;**

**IV.A.5.f).(5) work in interprofessional teams to enhance patient safety and improve patient care quality; and,**

**IV.A.5.f).(6) participate in identifying system errors and implementing potential systems solutions.**

IV.A.5.f).(7) demonstrate an understanding of how the components of the local and national healthcare system function interdependently, and how changes to improve the system involve group and individual efforts. The residents must function as consultants for other health care professionals, and act as a resource for information regarding the most appropriate use of imaging resources, and

IV.A.5.f).(8) be trained to identify existing systems problems that compromise their ability to provide the most efficient and effective patient care. They must be trained to analyze systematically the problems, develop solutions, implement solutions, and evaluate the effectiveness of the intervention. Systems-based problems can be identified at the departmental, institutional, local, or national level. Evidence of participation in identifying system errors and implementing potential systems solutions must be documented in the resident's learning portfolio.

#### **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.**

**IV.B.2. Residents should participate in scholarly activity.**

IV.B.2.a) Residents must have training in critical thinking skills and research design (e.g., lectures, journal club, etc.).

IV.B.2.b) During their training, all residents must engage in a scholarly project under faculty supervision. This may take the form of laboratory research, or clinical research, or the analysis of disease processes, imaging techniques, or practice management issues. The results of such projects must be published or presented at institutional, local, regional, or national meetings, and included in the resident's learning portfolio. The program must specify how each project will be evaluated.

**IV.B.3. The sponsoring institution and program should allocate adequate educational resources to facilitate resident involvement in scholarly activities.**

**V. Evaluation**

**V.A. Resident Evaluation**

**V.A.1. Formative Evaluation**

**V.A.1.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.**

**V.A.1.b) The program must:**

**V.A.1.b).(1) provide objective assessments of competence in patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice;**

**V.A.1.b).(2) use multiple evaluators (e.g., faculty, peers, patients, self, and other professional staff);**

**V.A.1.b).(3) document progressive resident performance improvement appropriate to educational level; and,**

**V.A.1.b).(4) provide each resident with documented semiannual evaluation of performance with feedback.**

**V.A.1.b).(5) ensure that assessment includes the following:**

**V.A.1.b).(5).(a) Global faculty evaluation (all competencies)**

**V.A.1.b).(5).(b) 360 Evaluation (for interpersonal skills/communication and professionalism)**

**V.A.1.b).(5).(c) Resident Learning Portfolio: This portfolio, maintained by each resident, must include, at a minimum, documentation of the following:**

**V.A.1.b).(5).(c).(i) Patient Care**

**V.A.1.b).(5).(c).(i).(a) Case/procedure log;**

**V.A.1.b).(5).(c).(ii) Medical Knowledge**

**V.A.1.b).(5).(c).(ii).(a) documentation of conferences attended, courses/meetings**

	attended, self-assessment modules completed, etc.;
V.A.1.b).(5).(c).(ii).(b)	documentation of compliance with regulatory-based training requirements in nuclear medicine and breast imaging; and,
V.A.1.b).(5).(c).(ii).(c)	documentation of performance on yearly objective examination;
V.A.1.b).(5).(c).(iii)	Practice-based Learning and Improvement
V.A.1.b).(5).(c).(iii).(a)	Annual resident self-assessment and learning plan;
V.A.1.b).(5).(c).(iv)	Interpersonal and Communication Skills
V.A.1.b).(5).(c).(iv).(a)	Formal evaluation of quality of dictated Reports;
V.A.1.b).(5).(c).(v)	Professionalism
V.A.1.b).(5).(c).(v).(a)	documentation of compliance with institutional and departmental policies (e.g., HIPAA, JCAHO, patient safety, infection control, dress code, etc.);
V.A.1.b).(5).(c).(v).(b)	status of medical license, if appropriate;
V.A.1.b).(5).(c).(vi)	Systems-Based Practice
V.A.1.b).(5).(c).(vi).(a)	Documentation of a learning activity that involves deriving a solution to a system problem at the departmental, institutional, local or national level;
V.A.1.b).(5).(c).(vii)	Scholarly Activities
V.A.1.b).(5).(c).(vii).(a)	Documentation of scholarly activity, such as publications, announcement of presentations, etc.; and,
V.A.1.b).(5).(c).(viii)	Other
V.A.1.b).(5).(c).(viii).(a)	Any materials pertinent to the educational experience of residency training.

**V.A.1.c) The evaluations of resident performance must be accessible for review by the resident, in accordance with institutional**

**policy.**

V.A.1.d) Residents should be advanced to positions of higher responsibility only on the basis of their satisfactory progressive professional growth and scholarship. More frequent reviews of performance for residents experiencing difficulties or receiving unfavorable evaluations are required. When a resident fails to progress satisfactorily, a written plan identifying the problems and addressing how they can be corrected must be discussed with and signed by the resident and placed in his or her individual file.

**V.A.2. Summative Evaluation**

**The program director must provide a summative evaluation for each resident upon completion of the program. This evaluation must 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. This evaluation must:**

V.A.2.a) **document the resident's performance during the final period of education, and**

V.A.2.b) **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.**

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.**

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

V.B.4. The chair should ensure that confidential faculty evaluations by residents occur annually. Faculty must receive annual feedback from these resident evaluations.

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

V.C.1. **The program must document formal, systematic evaluation of the curriculum at least annually. The program must monitor and track each of the following areas:**

V.C.1.a) **resident performance;**

V.C.1.b) **faculty development;**

- V.C.1.c) graduate performance, including performance of program graduates on the certification examination; and,**
- V.C.1.d) program quality. Specifically;**
- V.C.1.d).(1) Residents and faculty must have the opportunity to evaluate the program confidentially and in writing at least annually; and,**
- V.C.1.d).(2) The program must use the results of residents' assessments of the program together with other program evaluation results to improve the program.**
- V.C.2. If deficiencies are found, the program should prepare a written plan of action to document initiatives to improve performance in the areas listed in section V.C.1. The action plan should be reviewed and approved by the teaching faculty and documented in meeting minutes.**
- V.C.3. For residents entering diagnostic radiology training before July 1, 2010, at least 50% of a program's graduates should pass the oral examination either on the first attempt or, if only one section is failed, should pass that section at the first opportunity. For residents entering diagnostic radiology training on July 1, 2010 or thereafter, during the most recent five year period, at least 50% of a program's graduates should pass the ABR Core Examination either on the first attempt, or if only one section is failed, should pass that section at the first opportunity.**

## **VI. Resident Duty Hours in the Learning and Working Environment**

### **VI.A. Professionalism, Personal Responsibility, and Patient Safety**

- VI.A.1. Programs and sponsoring institutions must educate residents and faculty members concerning the professional responsibilities of physicians to appear for duty appropriately rested and fit to provide the services required by their patients.**
- VI.A.2. The program must be committed to and responsible for promoting patient safety and resident well-being in a supportive educational environment.**
- VI.A.3. The program director must ensure that residents are integrated and actively participate in interdisciplinary clinical quality improvement and patient safety programs.**
- VI.A.4. The learning objectives of the program must:**
- VI.A.4.a) be accomplished through an appropriate blend of supervised patient care responsibilities, clinical teaching, and didactic educational events; and,**

- VI.A.4.b) not be compromised by excessive reliance on residents to fulfill non-physician service obligations.**
- VI.A.5. The program director and institution must ensure a culture of professionalism that supports patient safety and personal responsibility. Residents and faculty members must demonstrate an understanding and acceptance of their personal role in the following:**
- VI.A.5.a) assurance of the safety and welfare of patients entrusted to their care;**
- VI.A.5.b) provision of patient- and family-centered care;**
- VI.A.5.c) assurance of their fitness for duty;**
- VI.A.5.d) management of their time before, during, and after clinical assignments;**
- VI.A.5.e) recognition of impairment, including illness and fatigue, in themselves and in their peers;**
- VI.A.5.f) attention to lifelong learning;**
- VI.A.5.g) the monitoring of their patient care performance improvement indicators; and,**
- VI.A.5.h) honest and accurate reporting of duty hours, patient outcomes, and clinical experience data.**
- VI.A.6. All residents and faculty members must demonstrate responsiveness to patient needs that supersedes self-interest. Physicians must recognize 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.**
- VI.B. Transitions of Care**
- VI.B.1. Programs must design clinical assignments to minimize the number of transitions in patient care.**
- VI.B.2. Sponsoring institutions and programs must ensure and monitor effective, structured hand-over processes to facilitate both continuity of care and patient safety.**
- VI.B.3. Programs must ensure that residents are competent in communicating with team members in the hand-over process.**
- VI.B.4. The sponsoring institution must ensure the availability of schedules that inform all members of the health care team of attending physicians and residents currently responsible for each patient's**

care.

**VI.C. Alertness Management/Fatigue Mitigation**

**VI.C.1. The program must:**

- VI.C.1.a) educate all faculty members and residents to recognize the signs of fatigue and sleep deprivation;**
- VI.C.1.b) educate all faculty members and residents in alertness management and fatigue mitigation processes; and,**
- VI.C.1.c) adopt fatigue mitigation processes to manage the potential negative effects of fatigue on patient care and learning, such as naps or back-up call schedules.**

**VI.C.2. Each program must have a process to ensure continuity of patient care in the event that a resident may be unable to perform his/her patient care duties.**

**VI.C.3. The sponsoring institution must provide adequate sleep facilities and/or safe transportation options for residents who may be too fatigued to safely return home.**

**VI.D. Supervision of Residents**

**VI.D.1. In the clinical learning environment, each patient must have an identifiable, appropriately-credentialed and privileged attending physician (or licensed independent practitioner as approved by each Review Committee) who is ultimately responsible for that patient's care.**

**VI.D.1.a) This information should be available to residents, faculty members, and patients.**

**VI.D.1.b) Residents and faculty members should inform patients of their respective roles in each patient's care.**

**VI.D.2. The program must demonstrate that the appropriate level of supervision is in place for all residents who care for patients.**

**Supervision may be exercised through a variety of methods. Some activities require the physical presence of the supervising faculty member. 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 or resident physician, either in the institution, or by means of telephonic and/or electronic modalities. In some circumstances, supervision may include post-hoc review of resident-delivered care with feedback as to the appropriateness of that care.**

**VI.D.3. Levels of Supervision**

To ensure oversight of resident supervision and graded authority and responsibility, the program must use the following classification of supervision:

- VI.D.3.a) Direct Supervision – the supervising physician is physically present with the resident and patient.**
- VI.D.3.b) Indirect Supervision:**
  - VI.D.3.b).(1) 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.**
  - VI.D.3.b).(2) 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.**
- VI.D.3.c) Oversight – the supervising physician is available to provide review of procedures/encounters with feedback provided after care is delivered.**
- VI.D.4. 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.**
  - VI.D.4.a) The program director must evaluate each resident’s abilities based on specific criteria. When available, evaluation should be guided by specific national standards-based criteria.**
  - VI.D.4.b) Faculty members functioning as supervising physicians should delegate portions of care to residents, based on the needs of the patient and the skills of the residents.**
  - VI.D.4.c) Senior residents or fellows should serve in a supervisory role of 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.**
- VI.D.5. Programs must set guidelines for circumstances and events in which residents must communicate with appropriate supervising faculty members, such as the transfer of a patient to an intensive care unit, or end-of-life decisions.**

- VI.D.5.a)** Each resident must know the limits of his/her scope of authority, and the circumstances under which he/she is permitted to act with conditional independence.
- VI.D.5.a).(1)** In particular, PGY-1 residents should be supervised either directly or indirectly with direct supervision immediately available.
- VI.D.6.** Faculty supervision assignments should be of sufficient duration to assess the knowledge and skills of each resident and delegate to him/her the appropriate level of patient care authority and responsibility.
- VI.E. Clinical Responsibilities**
- The clinical responsibilities for each resident must be based on PGY-level, patient safety, resident education, severity and complexity of patient illness/condition and available support services.
- VI.F. Teamwork**
- Residents must care for patients in an environment that maximizes effective 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.
- VI.G. Resident Duty Hours**
- VI.G.1. Maximum Hours of Work per Week**
- Duty hours must be limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities and all moonlighting.
- VI.G.1.a) Duty Hour Exceptions**
- A Review Committee may grant exceptions for up to 10% or a maximum of 88 hours to individual programs based on a sound educational rationale.
- The Review Committee for Diagnostic Radiology will not consider requests for exceptions to the 80-hour limit to the residents' work week.
- VI.G.1.a).(1)** In preparing a request for an exception the program director must follow the duty hour exception policy from the ACGME Manual on Policies and Procedures.
- VI.G.1.a).(2)** Prior to submitting the request to the Review Committee, the program director must obtain approval of the institution's GMEC and DIO.

**VI.G.2. Moonlighting**

**VI.G.2.a) Moonlighting must not interfere with the ability of the resident to achieve the goals and objectives of the educational program.**

**VI.G.2.b) Time spent by residents in Internal and External Moonlighting (as defined in the ACGME Glossary of Terms) must be counted towards the 80-hour Maximum Weekly Hour Limit.**

**VI.G.2.c) PGY-1 residents are not permitted to moonlight.**

**VI.G.3. Mandatory Time Free of Duty**

**Residents must be scheduled for a minimum of one day free of duty every week (when averaged over four weeks). At-home call cannot be assigned on these free days.**

**VI.G.4. Maximum Duty Period Length**

**VI.G.4.a) Duty periods of PGY-1 residents must not exceed 16 hours in duration.**

**VI.G.4.b) Duty periods of PGY-2 residents and above may be scheduled to a maximum of 24 hours of continuous duty in the hospital. Programs must encourage residents to use alertness management strategies in the context of patient care responsibilities. Strategic napping, especially after 16 hours of continuous duty and between the hours of 10:00 p.m. and 8:00 a.m., is strongly suggested.**

**VI.G.4.b).(1) It is essential for patient safety and resident education that effective transitions in care occur. Residents may be allowed to remain on-site in order to accomplish these tasks; however, this period of time must be no longer than an additional four hours.**

**VI.G.4.b).(2) Residents must not be assigned additional clinical responsibilities after 24 hours of continuous in-house duty.**

**VI.G.4.b).(3) In unusual circumstances, residents, on their own initiative, may remain beyond their scheduled period of duty to continue to provide care to a single patient. Justifications for such extensions of duty are limited to reasons of required continuity for a severely ill or unstable patient, academic importance of the events transpiring, or humanistic attention to the needs of a patient or family.**

**VI.G.4.b).(3).(a)** Under those circumstances, the resident must:

**VI.G.4.b).(3).(a).(i)** appropriately hand over the care of all other patients to the team responsible for their continuing care; and,

**VI.G.4.b).(3).(a).(ii)** document the reasons for remaining to care for the patient in question and submit that documentation in every circumstance to the program director.

**VI.G.4.b).(3).(b)** The program director must review each submission of additional service, and track both individual resident and program-wide episodes of additional duty.

**VI.G.5.** **Minimum Time Off between Scheduled Duty Periods**

**VI.G.5.a)** PGY-1 residents should have 10 hours, and must have eight hours, free of duty between scheduled duty periods.

**VI.G.5.b)** Intermediate-level residents should have 10 hours free of duty, and must have eight hours between scheduled duty periods. They must have at least 14 hours free of duty after 24 hours of in-house duty.

R1, R2, and R3 residents are considered to be at the intermediate level.

**VI.G.5.c)** Residents in the final years of education must be prepared to enter the unsupervised practice of medicine and care for patients over irregular or extended periods.

R4 residents are considered to be in the final years of education.

**VI.G.5.c).(1)** This preparation must occur within the context of the 80-hour, maximum duty period length, and one-day-off-in-seven standards. While it is desirable that residents in their final years of education have eight hours free of duty between scheduled duty periods, there may be circumstances when these residents must stay on duty to care for their patients or return to the hospital with fewer than eight hours free of duty.

**VI.G.5.c).(1).(a)** Circumstances of return-to-hospital activities with fewer than eight hours away from the hospital by residents in their final years of education must be monitored by the program director.

**VI.G.6.** **Maximum Frequency of In-House Night Float**

**Residents must not be scheduled for more than six consecutive nights of night float.**

**VI.G.7. Maximum In-House On-Call Frequency**

**PGY-2 residents and above must be scheduled for in-house call no more frequently than every-third-night (when averaged over a four-week period).**

**VI.G.8. At-Home Call**

**VI.G.8.a) Time spent in the hospital by residents on at-home call must count towards the 80-hour maximum weekly hour 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 duty, when averaged over four weeks.**

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

**VI.G.8.b) Residents are permitted to return to the hospital while on at-home call to care for new or established patients. Each episode of this type of care, while it must be included in the 80-hour weekly maximum, will not initiate a new “off-duty period”.**

**VII. Innovative Projects**

**Requests for innovative projects that may deviate from the institutional, common and/or specialty specific program requirements must be approved in advance by the Review Committee. In preparing requests, the program director must follow Procedures for Approving Proposals for Innovative Projects located in the ACGME Manual on Policies and Procedures. Once a Review Committee approves a project, the sponsoring institution and program are jointly responsible for the quality of education offered to residents for the duration of such a project.**

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