ACGME Program Requirements for Graduate Medical Education in Interventional Radiology

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Common Program Requirements are in BOLD

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. Interventional radiology focuses on diagnostic and therapeutic aspects of patient care through expertise in diagnostic imaging, image-guided, minimally-invasive procedures, and the evaluation and clinical management of patients with conditions amenable to these methods. The residency program in interventional radiology offers quality medical educational experience in image-based diagnosis, as well as image-guided procedural education, and the peri- and post-procedural care of patients. Education in both the integrated and independent program formats includes resident development of mature technical skills and clinical judgment. On completion of the interventional radiology program, residents should be able to demonstrate competence in the specialty with sufficient expertise to act as independent providers of interventional procedures and care as consultants.

Int.C The educational program in interventional radiology should occur in an environment that encourages interdisciplinary care, with the interchange of knowledge and experience among residents in the program and residents in other major clinical specialty programs located in those sites participating in the program.
Int.D. Education in interventional radiology must be provided in one of the following formats, and all residents must be notified in writing of the required program length: (Core)*

Int.D.1. Independent Format: The educational program in the independent format must be two years in length. (Core)

Int.D.2. Integrated Format: The educational program in the integrated format must be five years in length. (Core)

Int.E. A sponsoring institution may sponsor both the integrated and independent program formats. (Detail)

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.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. (Detail)

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. A program using multiple sites must ensure the provision of a unified educational experience for all residents. (Core)

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

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.1.b) For integrated programs, the program director must be provided the equivalent of at least 20 percent of protected time in order to fulfill the responsibilities inherent to meeting the educational goals of the program. (Core)

II.A.1.c) For independent programs, the program director must be provided sufficient protected time in order to fulfill the responsibilities inherent to meeting the educational goals of the program. (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.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 Radiology, or specialty qualifications that are acceptable to the Review Committee; (Core)

II.A.3.b).(1) The program director must have certification by the American Board of Radiology (ABR) in interventional radiology/diagnostic radiology, or in diagnostic radiology with subspecialty certification in vascular and interventional radiology. (Core)

II.A.3.c) current medical licensure and appropriate medical staff appointment; (Core)
II.A.3.d) commitment of at least 80 percent of his or her clinical time in the specialty and to the administrative and educational activities of the interventional radiology program; (Core)

II.A.3.e) at least three years of participation as an active faculty member in an ACGME-accredited diagnostic radiology residency, interventional radiology residency, or vascular and interventional radiology fellowship program; and, (Core)

II.A.3.f) current appointment as a full-time faculty member. (Detail)

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)

The program director must:

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

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

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

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

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

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

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

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

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; (Detail)

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

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,
(Core)
and, to that end, must:

II.A.4.j).(1) distribute these policies and procedures to the
residents and faculty; (Detail)

II.A.4.j).(2) monitor resident duty hours, according to sponsoring
institutional policies, with a frequency sufficient to
ensure compliance with ACGME requirements; (Core)

II.A.4.j).(3) adjust schedules as necessary to mitigate excessive
service demands and/or fatigue; and, (Detail)

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. (Detail)

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; (Detail)

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;
(Detail)

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; (Detail)

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

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

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

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

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

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

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

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

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

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

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

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

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

II.A.4.p) ensure that records of the number and types of procedure(s) performed by each resident are entered into the ACGME Case Log System; (Core)

II.A.4.q) ensure that resident Case Logs are submitted annually in accordance with the format and due date specified by the Review Committee; and, (Core)

II.A.4.r) review resident Case Log data semiannually for accuracy; (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 Radiology, or possess qualifications judged acceptable to the Review Committee. (Core)

II.B.2.a) At least two FTE interventional radiology physician faculty members must have certification by the American Board of Radiology in interventional radiology/diagnostic radiology, or in diagnostic radiology with subspecialty certification in vascular and interventional radiology. (Core)

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

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.6. The faculty should include, in aggregate, at least two FTE interventional radiologists, including the program director. (Detail)

II.B.6.a) While the expertise of any one interventional radiology faculty member may be limited to a particular aspect of interventional radiology, the program must ensure that appropriately qualified faculty members are available to provide an experience that includes all aspects of interventional radiology. (Core)

II.B.6.b) Integrated programs with greater than four residents must maintain a ratio of no less than one interventional radiologist for every two residents in the final 24 months of residency. (Core)
II.B.6.c) Independent programs with greater than four residents must maintain a ratio of no less than one interventional radiologist for every two residents. (Core)

II.B.7. At least one interventional radiology faculty member must have hospital admitting privileges. (Core)

II.B.8. For programs not affiliated with a medical school, all physician faculty members should be members of the medical staff of at least one of the participating sites. (Detail)

II.B.9. Faculty members must always be available for back-up when residents are on night, weekend, or holiday call. (Core)

II.B.10. Faculty members must review all radiologic images and sign all resident reports within 24 hours. (Core)

II.B.11. Faculty members must provide didactic teaching and direct supervision of resident performance in peri-procedural patient management, and of the procedural, interpretative, and consultative aspects of interventional radiology. (Core)

II.B.12. Faculty members must supervise all percutaneous image-guided invasive procedures. (Core)

II.B.12.a) Faculty members should determine the appropriate level of direct or indirect supervision for the following procedures: intravenous injection of contrast, diagnostic lumbar puncture, thoracentesis, paracentesis, PICC lines, port, and tunneled line removals. (Detail)

II.B.12.b) All other percutaneous image-guided invasive procedures must be directly supervised by faculty members. (Core)

II.B.13. The interventional radiology division must participate in dedicated interventional radiology outpatient clinics. (Core)

II.B.14. Integrated Programs

II.B.14.a) There must be at least one FTE physician faculty member in each of the non-interventional subspecialty areas of neuroradiology, musculoskeletal radiology, cardiothoracic radiology, breast radiology, abdominal radiology, pediatric radiology, ultrasonography, and nuclear radiology. (Core)

II.B.14.a).1) Faculty members for all other educational experiences should be active teaching faculty members in ACGME-accredited programs. (Detail)

II.B.14.b) The program must designate one physician faculty member to be responsible for the educational content of each of the non-
II.B.14.b).(1) This individual must spend at least 50 percent of his or her practice time in the subspecialty area, and must demonstrate a commitment to the subspecialty. (Core)

Such commitment should be demonstrated by any of the following:

II.B.14.b).(1).a) subspecialty certification, fellowship education, or three years of subspecialty practice; (Detail)
II.B.14.b).(1).b) membership in a subspecialty society; (Detail)
II.B.14.b).(1).c) publications and presentations in the subspecialty; (Detail)
II.B.14.b).(1).d) annual CME credits in the subspecialty; or, (Detail)
II.B.14.b).(1).e) participation in maintenance of certification with emphasis on the subspecialty area. (Detail)

II.B.14.b).(2) Faculty members must not have primary responsibility for the educational content of more than one subspecialty area. (Core)

II.B.14.c) An assistant or associate program director (APD) that is clinically active in diagnostic radiology should be appointed. (Detail)

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. The program must have a dedicated program coordinator. (Core)
II.C.1.a) The program coordinator must be provided sufficient time to fulfill the responsibilities essential to meeting the educational goals and administrative requirements of the program. (Core)

II.C.2. At least one qualified interventional radiology technologist must be on duty or available at all times. (Core)

II.C.3. Nursing support adequate to prepare, monitor, and recover patients must be available. (Core)
II.C.3.a) Nurses competent to administer moderate sedation must also be available. (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. The program must provide adequate space, equipment, and other pertinent facilities to ensure an effective educational experience for residents. *(Core)*

II.D.1.a) There should be adequate personal or shared office space, conference space, and access to computers. *(Detail)*

II.D.1.b) Modern imaging equipment and procedure rooms must be available with adequate space to permit the performance of all radiologic and interventional radiologic procedures, including vascular and non-vascular invasive imaging and image-guided interventional radiological procedures. *(Core)*

II.D.1.c) Imaging modalities must include fluoroscopy, digital subtraction angiography, computed tomography, ultrasonography, magnetic resonance imaging, and radionuclide scintigraphy. *(Core)*

II.D.1.c).(1) Fluoroscopic and digital imaging equipment should be high resolution and have digital display with post-procedure image processing capability. *(Detail)*

II.D.1.d) Rooms in which interventional procedures are performed must be equipped with physiologic monitoring and resuscitative equipment. *(Core)*

II.D.1.e) There should be facilities for storing catheters, guide wires, contrast materials, embolic agents, and other supplies adjacent to or within procedure rooms. *(Detail)*

II.D.1.f) Patient recovery and holding areas must be available. *(Core)*

II.D.1.g) There must be space and facilities for image display, image interpretation, and consultation with other clinicians. *(Core)*

II.D.1.h) An interventional radiology clinic or outpatient office, separate from the procedure rooms, must be available for patient consultations and non-procedural follow-up visits. *(Core)*

II.D.1.h).(1) This space should be conducive to patient privacy and conducting physical examinations. *(Detail)*

II.D.2. Access to a teaching file must be available. *(Core)*

II.D.3. Patient Population

II.D.3.a) The program must provide a sufficient volume and variety of
patients to ensure that residents gain experience in the full range of radiologic and interventional radiologic examinations, procedures, interpretations, outpatient clinic visits, and inpatient consultations. (Core)

II.D.3.a).(1) The number and variety of examinations and the length of rotations in each subspecialty area must be sufficient to ensure an adequate educational experience. (Core)

II.D.3.a).(2) For integrated programs, the patient volume must be no fewer than 7,000 radiologic examinations per year per resident in the first three years of residency. (Core)

II.D.3.a).(2).(a) The number of examinations in each of the subspecialty areas must be of sufficient volume to ensure an adequate educational experience. (Core)

II.D.3.b) The patient population must provide a diversity of illnesses from which a broad experience in interventional radiology can be obtained. (Core)

II.D.3.b).(1) This must include patients with, arterial diseases, cancer, gastrointestinal diseases, gynecologic disorders, hepatobiliary disease, endocrine diseases, musculoskeletal diseases, pulmonary disease, venous diseases, and urologic disorders. (Core)

II.D.4. Support Services

II.D.4.a) Pathology and medical laboratory services must be regularly and conveniently available to meet the needs of patients. (Core)

II.D.4.a).(1) Laboratory services must be available 24 hours a day. (Core)

II.D.4.b) Diagnostic laboratories for the non-invasive assessment of peripheral vascular disease must be available. (Core)

II.D.4.c) The sponsoring institution and program should provide laboratory and ancillary facilities to support research projects. (Detail)

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. All prerequisite residency education must be completed within programs accredited by the ACGME, the Royal College of Physicians and Surgeons of Canada (RCPSC), or the College of Family Physicians of Canada (CFPC). (Core)

III.A.2. Independent Programs

III.A.2.a) Prior to appointment in the independent program, residents must complete an ACGME- or RCPSC-accredited diagnostic radiology program. (Core)

III.A.2.b) All entering residents must be eligible to take the ABR Core Examination. (Core)

III.A.2.c) To be eligible for appointment in the second year of education in an independent program, residents must have graduated from a diagnostic radiology program that has prior approval from the Review Committee for participation in the Early Specialization in Interventional Radiology (ESIR) program. (Core)

III.A.2.c).(1) Residents must have completed 12 interventional radiology or interventional radiology-related rotations and at least 500 image-guided procedures within the domain of interventional radiology during their diagnostic radiology residency (a rotation is defined as an experience of at least four-weeks or one month in duration). (Core)

III.A.2.c).(2) A Milestones assessment of resident competency must be completed by the program director after the first three months of the educational program. (Core)

III.A.3. Integrated Programs

III.A.3.a) Prior to appointment in the integrated program, residents must complete a clinical year. (Core)

III.A.3.a).(1) The clinical year must be completed in an ACGME-, RCPSC-, or CFPC-accredited program. (Core)

III.A.3.a).(2) The clinical year must include a minimum of 9 rotations in direct patient care. (Core)

III.A.3.a).(3) During the clinical year, elective rotations in nuclear medicine and interventional or diagnostic radiology must occur only in radiology departments with an ACGME- or RCPSC-accredited diagnostic radiology or interventional radiology residency program. (Core)
III.A.3.a.(3).(a) These electives must be limited to a maximum of two rotations. (Core)

III.B. Number of Residents

The program’s educational resources must be adequate to support the number of residents appointed to the program. (Core)

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. (Core)

III.B.2. Prior approval by the Review Committee must be obtained for changes in the approved resident complement. (Core)

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.C.3. Integrated Programs

Resident transfers from an ACGME- or RCPSC-accredited diagnostic radiology program into an interventional radiology program must be limited to transfers from within the same sponsoring institution and must meet the qualifications for transfer as specified below: (Core)

III.C.3.a) Resident transfers into the PGY-3 and PGY-4 levels must be from the equivalent level in the diagnostic radiology program. (Core)

III.C.3.b) For resident transfers at the PGY-5 level, residents must be eligible to take the ABR Core Examination, and must have successfully completed at least three rotations in interventional radiology. (Core)

III.C.3.b).(1) The program director must conduct a Milestones assessment of the transfer resident’s clinical competence in both interventional and diagnostic radiology. (Core)

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
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 educational program for interventional radiology residents must not dilute or detract from the educational opportunities available to residents in the diagnostic radiology residency. (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) The core didactic curriculum must be documented. (Core)

IV.A.3.b) The core didactic curriculum must include the following core content areas of interventional radiology:

IV.A.3.b).(1) focused history and physical examination; (Core)

IV.A.3.b).(2) health care team coordination; (Core)

IV.A.3.b).(3) informed consent for interventional radiology procedures; (Core)

IV.A.3.b).(4) inpatient care; (Core)

IV.A.3.b).(5) interventional radiology clinic; (Core)

IV.A.3.b).(6) medical conditions relevant to interventional radiology procedures; (Core)

IV.A.3.b).(7) pharmacology relevant to interventional radiology; (Core)

IV.A.3.b).(8) procedural sedation for interventional radiology procedures; and, (Core)

IV.A.3.b).(9) recognition and initial management of intra- and peri-procedural emergencies. (Core)
IV.A.3.c) The didactic curriculum should include interactive conferences in addition to the core didactic series. (Detail)

IV.A.3.d) The didactic curriculum should include interdepartmental conferences in which both residents and faculty members participate on a regular basis. (Detail)

IV.A.3.e) Conferences should provide for progressive resident participation. (Detail)

IV.A.3.f) Didactic conferences must be resident-level-specific, and must provide formal review of the topics in the curriculum. (Core)

IV.A.3.g) Residents must participate in scheduled conferences on a regular basis. (Core)

IV.A.3.g).(1) Residents must be provided protected time to attend all scheduled lectures and conferences. (Core)

IV.A.3.g).(2) Residents should be provided with:

IV.A.3.g).(2).(a) five hours of conferences/lectures per week during the PGY-2 through PGY-4 of an integrated program; and, (Detail)

IV.A.3.g).(2).(b) two hours of conferences/lectures per week during the PGY-5 and PGY-6 of an integrated program, and in all years of the independent program. (Detail)

IV.A.3.g).(3) Resident attendance at conferences/lectures should be documented. (Detail)

IV.A.3.g).(4) Residents’ teaching experience should include active participation in educating diagnostic radiology residents, and if appropriate, medical students and other professional personnel in the care and management of patients. (Detail)

IV.A.3.h) Interventional Radiology Didactic Content

IV.A.3.h).(1) Morbidity and mortality (M&M) related to the performance of interventional procedures must be reviewed regularly and documented. (Core)

IV.A.3.h).(1).(a) Residents must participate actively in this review during the PGY-5 and PGY-6 of an integrated program, and during all years of an independent program. (Core)

IV.A.3.h).(1).(b) M&M reviews should be conducted at least monthly during the PGY-5 and PGY-6 of an integrated program, and during all years of an independent program.
IV.A.3.h).(2) Residents should participate in local or national vascular and interventional radiology societies. (Detail)

IV.A.3.h).(3) Residents should prepare and present clinically- or pathologically-proven cases at departmental conferences. (Outcome)

IV.A.3.i) Integrated Programs - Diagnostic Radiology Subspecialty Didactic Content

IV.A.3.i).(1) There must be a didactic component for each of the non-interventional subspecialty areas. (Core)

IV.A.3.i).(1).(a) The content should include anatomy, physiology, disease processes, and imaging in all age groups. (Detail)

IV.A.3.i).(2) Each of the designated subspecialty chiefs must organize a series of intradepartmental lectures that cover topics in his or her respective subspecialty area. (Core)

IV.A.3.i).(2).(a) These lectures may be supplemented with other educational materials. (Detail)

IV.A.3.i).(3) Didactic instruction must include the following subjects as they relate to nuclear medicine: (Core)

IV.A.3.i).(3).(a) diagnostic radiologic physics, instrumentation, and radiation biology; (Core)

IV.A.3.i).(3).(b) patient and medical personnel safety (i.e., radiation protection); (Core)

IV.A.3.i).(3).(c) the chemistry of byproduct material for medical use; (Core)

IV.A.3.i).(3).(d) biologic and pharmacologic actions of materials administered in diagnostic and therapeutic procedures; and, (Core)

IV.A.3.i).(3).(e) topics in safe handling, administration, and quality control of radionuclide doses used in clinical medicine. (Core)

IV.A.3.i).(4) Didactic instruction or work experience in nuclear medicine 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; and using administrative controls to prevent medical events involving the use of unsealed byproduct material. (Core)

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, (Core)

IV.A.5. ACGME Competencies

The program must integrate the following ACGME competencies into the curriculum: (Core)

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: (Outcome)

IV.A.5.a).(1).(a) must competently perform the following under close, graded responsibility and supervision:

IV.A.5.a).(1).(a).(i) provide patient care through safe, efficient, appropriately utilized, quality-controlled diagnostic and/or interventional radiology techniques; (Outcome)

IV.A.5.a).(1).(a).(ii) practice using standards of care in a safe environment, attempt to reduce errors, and improve patient outcomes; (Outcome)

IV.A.5.a).(1).(a).(iii) take a patient history and perform an appropriate physical exam; (Outcome)

IV.A.5.a).(1).(a).(iv) communicate indications for, contraindications for, and risks of radiologic and interventional procedures, and understand the medical and surgical alternatives to those procedures; (Outcome)

IV.A.5.a).(1).(a).(v) provide appropriate pre-procedural and follow-up care related to interventional radiology, including inpatient rounds and post-procedure follow-up management of
IV.A.5.a).(1).(a).(vi) participate in the multidisciplinary approach to continuity of procedure-related care; (Outcome)

IV.A.5.a).(1).(a).(vii) apply radiation safety principles in performing interventional procedures; (Outcome)

IV.A.5.a).(1).(a).(viii) administer pharmacologic agents, including sedatives, analgesics, antibiotics, and other drugs commonly employed in conjunction with endovascular, invasive, and non-vascular procedures; (Outcome)

IV.A.5.a).(1).(a).(ix) consult with patients and referring physicians regarding the indications for, and risks, expected outcomes, and appropriateness of interventional radiology procedures; (Outcome)

IV.A.5.a).(1).(a).(x) formulate a treatment plan, including appropriate additional work-up, consultations, and procedural recommendations, to include risk assessment, consideration of other treatments, and delivery of care in a collaborative model, when appropriate; (Outcome)

IV.A.5.a).(1).(a).(xi) provide follow-up communications with referring physicians; and, (Outcome)

IV.A.5.a).(1).(a).(xii) recognize and treat or refer for treatment of complications of interventional radiology procedures, including contrast reactions. (Outcome)

IV.A.5.a).(1).(b) must demonstrate the ability to interpret imaging appropriate for their educational level, including demonstration of competence in: (Outcome)

IV.A.5.a).(1).(b).(i) planning, executing, and assessing the adequacy of interventions based on independent review of plain film, ultrasound, computed tomography (CT), magnetic resonance (MR), and nuclear medicine studies; (Outcome)

IV.A.5.a).(1).(b).(ii) interpreting images obtained during the
performance of interventional procedures, and skillfully integrating the imaging findings into the procedure; and, (Outcome)

IV.A.5.a).(1).(b).(iii) modifying and directing the intervention based on these interpretations, and demonstrating their use in aiding the determination of procedural endpoints. (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)

IV.A.5.a).(2).(a) must maintain current certification in advanced cardiac life-support (ACLS); (Outcome)

IV.A.5.a).(2).(b) must competently apply low-dose radiation techniques for both adults and children; (Outcome)

IV.A.5.a).(2).(c) must demonstrate competence in the use of needles, catheters, guide wires, balloons, stents, stent-grafts, vascular filters, embolic agents, biopsy devices, ablative technologies, and other interventional devices; (Outcome)

IV.A.5.a).(2).(d) must demonstrate the clinical judgment and technical ability to perform complex vascular and non-vascular image-guided interventions on a sufficient variety of patients and pathological conditions to allow for competent post-graduate practice; (Outcome)

IV.A.5.a).(2).(d).(i) Residents must participate in a minimum of 1000 invasive imaging and image-guided vascular and non-vascular interventional procedures (Core)

IV.A.5.a).(2).(d).(i).(a) This should include both adult and pediatric interventional procedures. (Detail)

IV.A.5.a).(2).(d).(i).(b) Vascular procedures must include at least: arteriography; venography; arterial and venous angioplasty; arterial and venous stenting; arterial and venous percutaneous revascularization procedures; percutaneous embolization; transcatheter infusion therapy;
intravascular foreign body removal; percutaneous placement of endovascular prostheses such as stent grafts and vena cava filters; transvascular biopsy; and insertion and removal of vascular access devices. (Core)

IV.A.5.a).(2).(d).(i).(b).(i) Vascular procedures may also include neurovascular interventions. (Detail)

IV.A.5.a).(2).(d).(i).(c) Non-vascular procedures must include at least: percutaneous imaging-guided biopsy; percutaneous gastrointestinal access and interventions; percutaneous urinary tract access and interventions; percutaneous biliary access and interventions; percutaneous drainage for diagnosis and treatment of infections and other fluid collections; and percutaneous imaging-guided ablative procedures such as ablation of neoplasms. (Core)

IV.A.5.a).(2).(d).(i).(c).(i) Non-vascular procedures may also include musculoskeletal, spine, and pain management interventions. (Detail)

IV.A.5.a).(2).(e) must demonstrate procedural competence in:

IV.A.5.a).(2).(e).(i) invasive diagnostic venous and arterial imaging; (Outcome)

IV.A.5.a).(2).(e).(ii) endovascular revascularization procedures, to include: angioplasty; stent placement; endograft placement; pharmacologic and/or mechanical thrombolysis and/or thrombectomy; and intravascular foreign body retrieval; (Outcome)

IV.A.5.a).(2).(e).(iii) endovascular embolization therapy; (Outcome)

IV.A.5.a).(2).(e).(iv) invasive diagnostic imaging and interventions in the hepatobiliary and urinary systems; and, (Outcome)

IV.A.5.a).(2).(e).(v) non-vascular interventions, to include: solid
and hollow organ access; non-vascular angioplasty/stent/stent graft placement; biopsy; drainage; and tissue ablation.  
(Outcome)

Integrated Programs

IV.A.5.a).(2).(f) must competently perform, under preceptor supervision, 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;  
(Outcome)

IV.A.5.a).(2).(f).(i) Residents must participate in patient selection, obtaining informed consent, understanding and calculating the administered dose, counseling of patients and their families on radiation safety issues, and patient follow-up.  
(Outcome)

IV.A.5.a).(2).(g) must competently perform interpretation/multi-reading of the minimum number of mammograms within the specified time period as designated by the U.S. Food and Drug Administration’s (FDA) Mammography Quality Standards Act (MQSA); and,  
(Outcome)

IV.A.5.a).(2).(h) must competently acquire and interpret conventional radiography, CT, magnetic resonance imaging (MRI), and nuclear radiology examinations of the cardiovascular system (heart and great vessels), including studies performed on both adults and children.  
(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)

IV.A.5.b).(1) must demonstrate competence in their knowledge of the interventional radiology clinical and general didactic content;  
(Outcome)

IV.A.5.b).(2) must demonstrate competence in their knowledge of the clinical and basic sciences related to interventional radiology, including:  
(Outcome)

IV.A.5.b).(2).(a) anatomy;  
(Outcome)
IV.A.5.b).(2).(b) physiology; (Outcome)

IV.A.5.b).(2).(c) pathophysiology of the hematological, circulatory, respiratory, gastrointestinal, genitourinary, musculoskeletal, and neurologic systems; (Outcome)

IV.A.5.b).(2).(d) relevant pharmacology; (Outcome)

IV.A.5.b).(2).(e) patient evaluation; (Outcome)

IV.A.5.b).(2).(f) management skills; and, (Outcome)

IV.A.5.b).(2).(g) diagnostic techniques. (Outcome)

Integrated Programs – Diagnostic Radiology

IV.A.5.b).(3) must demonstrate competence in their knowledge of:

IV.A.5.b).(3).(a) diagnostic radiologic physics and radiation biology; (Outcome)

IV.A.5.b).(3).(b) patient and medical personnel safety (i.e., radiation protection, MRI safety); (Outcome)

IV.A.5.b).(3).(c) appropriate imaging utilization (proper sequencing, cost-benefit analysis); (Outcome)

IV.A.5.b).(3).(d) radiologic/pathologic correlation; (Outcome)

IV.A.5.b).(3).(e) fundamentals of molecular imaging; (Outcome)

IV.A.5.b).(3).(f) biologic and pharmacologic actions of materials administered in diagnostic or therapeutic procedures; (Outcome)

IV.A.5.b).(3).(g) use of needles, catheters, and other devices employed in invasive, image-based diagnostic and therapeutic procedures; and, (Outcome)

IV.A.5.b).(3).(h) socioeconomics of radiologic 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) evaluate their personal practice, utilizing scientific evidence, best practices, and self-assessment programs with the intent of practice improvement; (Outcome)

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, (Outcome)

IV.A.5.c).(11) demonstrate, on an ongoing basis, an awareness of radiation exposure, protection, and safety, as well as of the application of these principles in imaging. (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; and, (Outcome)

IV.A.5.d).(6) competently demonstrate, under close, graded responsibility and supervision with progressive responsibility, the generation of formal consultation reports and procedural reports. (Outcome)

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; (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; and, (Outcome)

IV.A.5.e).(6) compliance with institutional and departmental policies, including HIPAA, the Joint Commission, patient safety, and infection control. (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.
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).(6).(a) Residents must systematically analyze problems, develop solutions, implement solutions, and evaluate the effectiveness of the intervention at the departmental, institutional, local, or national levels. (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. (Outcome)

IV.A.5.f).(8) function as consultants for other health care professionals, and act as a resource for information regarding the most appropriate use of imaging resources, and efforts; and, (Outcome)

IV.A.5.f).(9) follow standards of care for practicing in a safe environment, attempting to reduce errors, and improving patient outcomes. (Outcome)

IV.A.6. Curriculum Organization and Resident Experiences

IV.A.6.a) Full-time participation by residents in clinical and didactic activities must occur at all levels of education, including the final year of the program. (Core)

IV.A.6.b) Resident participation in on-call activities must occur throughout
IV.A.6.b).(1) Programs should exercise discretion in granting resident relief from call responsibilities for short periods before the ABR Core Examination.

IV.A.6.c) By the completion of the program, residents should have completed 24 interventional radiology or interventional radiology-related rotations.

IV.A.6.c).(1) Residents must complete one rotation in critical care medicine.

IV.A.6.c).(2) For integrated programs, the critical care experience should occur during the PGY-5 or PGY-6.

IV.A.6.c).(3) The critical care experience must be completed on a continuous full-time basis in a critical care setting under the supervision of a critical care specialist.

IV.A.6.d) Residents must be provided with education and specific clinical time dedicated to the performance and interpretation of non-invasive vascular testing, including vascular ultrasound studies, physiologic vascular tests, MR angiograms, and CT angiograms.

IV.A.6.d).(1) These studies must be documented in the residents’ Case Logs.

IV.A.6.e) Residents should be instructed in proper use and interpretation of laboratory tests and methods that are adjunctive to vascular and interventional procedures, including the use of physiologic monitoring devices, non-invasive vascular testing, and non-invasive vascular imaging.

IV.A.6.f) Residents must have supervised progressive responsibility in a dedicated interventional radiology clinic, the admission and routine procedure-related inpatient care of interventional radiology patients, discharge planning, and procedure-related follow-up.

IV.A.6.g) Residents’ patient care experience must be of sufficient duration to provide continuity of care that enables residents to attain competency in the peri-procedural management of patients.

IV.A.6.h) Residents must maintain a Resident Learning Portfolio which must include, at a minimum, documentation of the following:

Patient Care

IV.A.6.h).(1) 12 rotations in diagnostic radiology prior to assuming
Case/Procedure Logs – integrated programs

IV.A.6.h).(2) resident participation in therapies involving oral administration of I-131, which must include the date, diagnosis, and dose of each I-131 therapy; (Core)

IV.A.6.h).(3) resident interpretation/multi-reading of the number of mammograms; (Core)

Case/Procedure Logs - all programs

IV.A.6.h).(4) resident experience in the performance, interpretation, and complications of vascular, interventional, and invasive procedures, including image-guided biopsies, drainage procedures, angioplasty, embolization and infusion procedures, and other percutaneous interventional procedures; (Core)

Medical Knowledge

IV.A.6.h).(5) conferences attended, courses/meetings attended, and self-assessment modules completed; (Core)

IV.A.6.h).(6) compliance with regulatory-based requirements in nuclear medicine and breast imaging; (Core)

IV.A.6.h).(7) performance on the yearly objective examination; (Core)

Practice-based Learning and Improvement

IV.A.6.h).(8) evidence of a reflective process that must result in the annual documentation of an individual learning plan and self-assessment; (Core)

Interpersonal and Communication Skills

IV.A.6.h).(9) formal assessment of oral and written communication; (Core)

IV.A.6.h).(9).(a) 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, (Core)

Professionalism

IV.A.6.h).(10) compliance with institutional and departmental policies (e.g., HIPAA, JCAHO, patient safety, infection control, dress code, etc.); (Core)
IV.A.6.h).(10).(a) status of medical license, if appropriate; (Core)

Systems-based Practice

IV.A.6.h).(11) a learning activity that involves deriving a solution to a system problem at the departmental, institutional, local, or national level; (Core)

Scholarly Activities

IV.A.6.h).(12) demonstration of scholarly activity, such as publications, announcement of presentations, etc.; and, (Core)

Other

IV.A.6.h).(13) any other materials pertinent to the educational experience of residency. (Detail)

IV.A.6.i) Independent Programs

The independent program curriculum must consist of two years of interventional radiology education under the direction of the program director. (Core)

IV.A.6.i).(1) While the independent program curriculum does not need to include diagnostic radiology educational content, any diagnostic radiology content in the independent program should be limited to a maximum of four rotations. (Detail)

IV.A.6.j) Integrated Programs

The integrated curriculum must consist of five years of diagnostic and interventional radiology education under the direction of the program director. (Core)

IV.A.6.j).(1) Of the five years, three years must be concentrated in diagnostic radiology education, including three rotations in interventional radiology. (Core)

IV.A.6.j).(2) The final two years of the program should be focused primarily on interventional radiology training and education. (Detail)

IV.A.6.j).(2).(a) Diagnostic radiology educational content during the final two years should be limited to a maximum of four rotations. (Detail)

IV.A.6.j).(3) Residents must have a minimum of 12 rotations in diagnostic radiology prior to assuming independent, in-house, on-call responsibilities. (Core)
IV.A.6.j).(4) During the PGY-2-4, residents must have three rotations in interventional radiology. (Core)

IV.A.6.j).(5) The program must provide at least 80 hours of didactic (classroom and laboratory) education in nuclear medicine under the direction of an authorized user (AU). (Core)

IV.A.6.j).(6) Residents must have a minimum of 700 hours (approximately four months) of experience in clinical nuclear medicine, which may include the required 80 hours of classroom and laboratory instruction. (Core)

IV.A.6.j).(7) Residents must have a minimum of three clinical rotations in breast imaging. (Core)

IV.A.6.j).(8) Residents must have clinical rotations and formal instruction in each of the subspecialty areas of diagnostic radiology, including: neuroradiology, musculoskeletal radiology, cardiothoracic radiology, breast radiology, abdominal radiology, pediatric radiology, ultrasonography (to include obstetrical and vascular ultrasound), and nuclear radiology (to include positron emission tomography (PET) and nuclear cardiology), in addition to interventional radiology prior to taking the ABR Core Examination. (Core)

IV.A.6.j).(9) Residents must be provided education in the core subjects pertaining to diagnostic radiology (e.g., medical physics, physiology of contrast media, etc.) prior to taking the ABR Core Examination. (Core)

IV.A.6.j).(10) PGY-2-4 residents on interventional radiology rotations must:

IV.A.6.j).(10).(a) fully participate in all of the clinical and educational activities, including non-procedural patient care; and, (Core)

IV.A.6.j).(10).(b) be provided responsibilities and supervision commensurate with their level of education and experience. (Core)

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) Residents must have education in critical thinking and research design using methods such as lectures and journal club. (Core)
IV.B.2.b) Residents must engage in a scholarly project under faculty member supervision. (Core)

IV.B.2.b).(1) Resident scholarly projects should include one of the following: laboratory research, clinical research, case reports, or evidence-based analysis of disease processes, imaging techniques, or practice management issues. (Detail)

IV.B.2.b).(2) The results of such projects must be published or presented at departmental, institutional, local, regional, or national meetings, and must be included in residents’ Learning Portfolios. (Outcome)

IV.B.2.b).(3) The program must specify how each project will be evaluated. (Core)

IV.B.2.c) The program should provide opportunities for research in new technologies. (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) Others eligible for appointment to the committee include faculty from other programs and non-physician members of the health care team. (Detail)

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; (Core)

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

V.A.2.b).(5) ensure that assessment for resident responsibility or independence is based upon knowledge, technical skills and experience; and, (Core)

V.A.2.b).(6) ensure that the semi-annual evaluation includes a review of:

V.A.2.b).(6).(a) global faculty evaluations (all competencies); (Core)

V.A.2.b).(6).(b) multi-source evaluations (for interpersonal skills/communication and professionalism); (Core)

V.A.2.b).(6).(c) resident ability to take independent call; and, (Core)

V.A.2.b).(6).(d) the Resident Learning Portfolio. (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.3. Summative Evaluation

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

This evaluation must:

V.A.3.b).(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.b).(2) document the resident’s performance during the final period of education; and, (Detail)

V.A.3.b).(3) verify that the resident has demonstrated sufficient competence to enter practice without direct supervision. (Detail)

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 resident evaluations. (Core)

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 and 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.b) faculty development; (Core)

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

V.C.2.d) program quality. (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)

V.C.4. Independent Programs
During the most recent five-year period, at least 50 percent of a program’s graduates taking the ABR Interventional Radiology certification examination for the first time should pass. (Outcome)

V.C.5. Integrated Programs

During the most recent five-year period, at least 50 percent of a program’s graduates taking the ABR Core Examination and the Interventional Radiology certification examinations for the first time should pass. (Outcome)

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. (Core)

VI.A.2. The program must be committed to and responsible for promoting patient safety and resident well-being in a supportive educational environment. (Core)

VI.A.3. The program director must ensure that residents are integrated and actively participate in interdisciplinary clinical quality improvement and patient safety programs. (Core)

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, (Core)

VI.A.4.b) not be compromised by excessive reliance on residents to fulfill non-physician service obligations. (Core)

VI.A.5. The program director and institution must ensure a culture of professionalism that supports patient safety and personal responsibility. (Core)

VI.A.6. Residents and faculty members must demonstrate an understanding and acceptance of their personal role in the following:

VI.A.6.a) assurance of the safety and welfare of patients entrusted to their care; (Outcome)

VI.A.6.b) provision of patient- and family-centered care; (Outcome)

VI.A.6.c) assurance of their fitness for duty; (Outcome)
VI.A.6.d) management of their time before, during, and after clinical assignments; (Outcome)

VI.A.6.e) recognition of impairment, including illness and fatigue, in themselves and in their peers; (Outcome)

VI.A.6.f) attention to lifelong learning; (Outcome)

VI.A.6.g) the monitoring of their patient care performance improvement indicators; and, (Outcome)

VI.A.6.h) honest and accurate reporting of duty hours, patient outcomes, and clinical experience data. (Outcome)

VI.A.7. All residents and faculty members must demonstrate responsiveness to patient needs that supersedes self-interest. They 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. (Outcome)

VI.B. Transitions of Care

VI.B.1. Programs must design clinical assignments to minimize the number of transitions in patient care. (Core)

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. (Core)

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

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. (Detail)

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; (Core)

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

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. (Detail)

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. (Core)

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. (Core)

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. (Core)

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

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

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

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. (Detail)

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: (Core)

VI.D.3.a) Direct Supervision – the supervising physician is physically present with the resident and patient. (Core)

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. (Core)

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. (Core)

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

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. (Core)

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. (Core)

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. (Detail)

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. (Detail)

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. (Core)

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. (Outcome)

VI.D.5.a).(1) In particular, PGY-1 residents should be supervised either directly or indirectly with direct supervision immediately available. (Core)

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. (Detail)

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. (Core)

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. (Core)

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. (Core)

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. (Detail)

The Review Committee 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. (Detail)

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. (Detail)

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. (Core)

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. (Core)

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

VI.G.4. Maximum Duty Period Length

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

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. (Core)

VI.G.4.b).(1) 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. (Detail)

VI.G.4.b).(2) 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. (Core)

VI.G.4.b).(3) Residents must not be assigned additional clinical responsibilities after 24 hours of continuous in-house duty. (Core)

VI.G.4.b).(4) 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. (Detail)

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

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

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

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. (Core)

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. (Core)

PGY-2, PGY-3, and PGY-4 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. (Outcome)

PGY-5, PGY-6 and PGY-7 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. (Detail)

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. (Detail)

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

Residents must not be scheduled for more than six consecutive nights of night float. (Core)

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-
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. (Core)

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. (Core)

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”. (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 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.