ACGME Program Requirements for
Graduate Medical Education
in Vascular and Interventional Radiology

ACGME approved: June 2004; effective: January 2005
ACGME approved focused revision: September 30, 2012; effective: July 1, 2013
Revised Common Program Requirements effective: July 1, 2015
ACGME Program Requirements for Graduate Medical Education in Vascular and Interventional Radiology

One-year Common Program Requirements are in Bold

Introduction

Int.A. Residency and fellowship programs are essential dimensions of the transformation of the medical student to the independent practitioner along the continuum of medical education. They are physically, emotionally, and intellectually demanding, and require longitudinally-concentrated effort on the part of the resident or fellow.

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 and fellow physician to assume personal responsibility for the care of individual patients. For the resident and fellow, 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 and fellows 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 and fellow’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. Diagnostic radiology subspecialty fellowship programs are designed to develop advanced knowledge and skills in a specific clinical area. The program design and/or structure must be approved by the Review Committee as part of the regular review process.

The unique clinical and invasive nature of practice in vascular and interventional radiology requires special training and skills.

Int.C. Vascular and interventional procedures are guided by a number of imaging modalities, including fluoroscopy, angiography, computed tomography, ultrasonography, magnetic resonance imaging, radionuclide scintigraphy, and others included within the specialty of radiology.

Int.D. The educational program in vascular and interventional radiology must be 12 months in length. *(Core)*

I. Institutions

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

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

I.A.1. The sponsoring institution must also sponsor an Accreditation Council for Graduate Medical Education (ACGME)-accredited program in diagnostic radiology. (Core)

I.B. Participating Sites

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

The PLA should:

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

I.B.1.b) specify their responsibilities for teaching, supervision, and formal evaluation of fellows, 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 fellow 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 fellows, 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 fellowship program in the subspecialties of diagnostic radiology should be accredited in institutions that either sponsor an ACGME-accredited residency program in diagnostic radiology or are integrated by formal agreement into such programs. Close cooperation between fellowship and residency program directors is required. (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.2. Qualifications of the program director must include:

II.A.2.a) requisite specialty expertise and documented educational and administrative experience acceptable to the Review Committee; (Core)

II.A.2.b) current certification in the subspecialty by the American Board of Radiology, or subspecialty qualifications that are acceptable to the Review Committee; (Core)

II.A.2.b).(1) The program director must be certified by the American Board of Radiology in Diagnostic Radiology or Radiology and have subspecialty certification (CAQ) in Vascular and Interventional Radiology from the American Board of Radiology, or possess qualifications judged to be acceptable by the RRC. (Core)

II.A.2.c) current medical licensure and appropriate medical staff appointment; and, (Core)

II.A.2.d) post-residency experience in the vascular and interventional radiology, including fellowship education. (Core)

II.A.3. The program director must administer and maintain an educational environment conducive to educating the fellows in each of the ACGME competency areas. (Core)

The program director must:

II.A.3.a) prepare and submit all information required and requested by the ACGME; (Core)

II.A.3.b) be familiar with and oversee compliance with ACGME and Review Committee policies and procedures as outlined in the ACGME Manual of Policies and Procedures; (Detail)

II.A.3.c) obtain review and approval of the sponsoring institution’s GMEC/DIO before submitting information or requests to the ACGME, including: (Core)

II.A.3.c).(1) all applications for ACGME accreditation of new programs; (Detail)

II.A.3.c).(2) changes in fellow complement; (Detail)
II.A.3.c).(3) major changes in program structure or length of
training; (Detail)

II.A.3.c).(4) progress reports requested by the Review Committee;
(Detail)

II.A.3.c).(5) requests for increases or any change to fellow duty
hours; (Detail)

II.A.3.c).(6) voluntary withdrawals of ACGME-accredited
programs; (Detail)

II.A.3.c).(7) requests for appeal of an adverse action; and, (Detail)

II.A.3.c).(8) appeal presentations to a Board of Appeal or the
ACGME. (Detail)

II.A.3.d) 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.3.d).(1) program citations, and/or, (Detail)

II.A.3.d).(2) request for changes in the program that would have
significant impact, including financial, on the program
or institution. (Detail)

II.A.4. The program director should spend at least 80% of his or her professional
time in the subspecialty, and devote sufficient time to fulfill all
responsibilities inherent to meeting the educational goals of the program.
(Detail)

II.B. Faculty

II.B.1. There must be a sufficient number of faculty with documented
qualifications to instruct and supervise all fellows. (Core)

II.B.1.a) There should be sufficient qualified professional personnel to
constitute a teaching faculty. (Core)

II.B.1.b) To ensure an adequate educational experience, as well as
adequate supervision and evaluation of a fellow’s academic
progress the faculty-to-fellow, ratio must not be less than one full-
time faculty person for every fellow. (Core)

II.B.1.c) The faculty should comprise at least two full-time vascular and
interventional radiologists, including the program director. (Core)

II.B.1.d) While the expertise of any one faculty member may be limited to a
particular aspect of vascular and interventional radiology, the
training program must provide experience that includes all aspects
of vascular and nonvascular interventional radiology, and including both the technical aspects as well as clinical patient evaluation and management. (Core)

II.B.2. The faculty must devote sufficient time to the educational program to fulfill their supervisory and teaching responsibilities and demonstrate a strong interest in the education of fellows. (Core)

II.B.2.a) The faculty must provide didactic teaching and direct supervision of fellows’ performance in clinical patient management, as well as in the procedural, interpretative, and consultative aspects of vascular and interventional radiology. (Core)

II.B.2.b) The faculty must demonstrate a commitment to the subspecialty of vascular and interventional radiology. (Core)

II.B.2.b).(1) Such commitment includes membership in professional societies in this field, publications in this field, and/or a minimum of 30 hours of CME Category I credit per year. (Core)

II.B.3. The physician faculty must have current certification in the subspecialty by the American Board of Radiology, or possess qualifications judged acceptable to the Review Committee. (Core)

II.B.4. The physician faculty must possess current medical licensure and appropriate medical staff appointment. (Core)

II.C. Other Program Personnel

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

II.C.1. Pathology and medical laboratory consultation must be regularly and conveniently available to meet the needs of patients, as determined by the medical staff. (Core)

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

II.C.3. Nursing support must be readily available. (Detail)

II.C.4. There must be a program coordinator who devotes sufficient time to support the administration and educational conduct of the program. (Core)

II.D. Resources

The institution and the program must jointly ensure the availability of adequate resources for fellow education, as defined in the specialty program requirements. (Core)
II.D.1.  Space and Equipment

II.D.1.a)  The program must have appropriate facilities and space for the education of fellows.  (Core)

II.D.1.a).(1)  There must be adequate study space, conference space, and access to computers.  (Detail)

II.D.1.b)  Modern imaging/procedure rooms and equipment in adequate space must be available to permit the performance of all vascular and interventional radiologic procedures.  (Core)

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

II.D.1.d)  Fluoroscopic equipment should be high resolution and have digital display with post-procedure image processing capability.  (Core)

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

II.D.1.f)  Suitable recovery and patient holding areas should be available.  (Core)

II.D.1.g)  Adjacent to or within procedure rooms, there should be facilities for storing catheters, guide wires, contrast materials, embolic agents, and other supplies.  (Core)

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

II.D.1.i)  Space, separate from the procedure rooms, should be available for patient consultations and non-procedural follow-up visits.  (Core)

II.D.1.i).(1)  The space should be conducive to patient privacy and the conducting of physical examinations.  (Detail)

II.D.1.j)  There must be adequate office space and support space for vascular and interventional radiology faculty or staff and fellows.  (Core)

II.D.2.  Patient Population

II.D.2.a)  The institution’s patient population must have a diversity of illnesses from which a broad experience in vascular and interventional radiology can be obtained.  (Core)
II.D.2.b) There must also be an adequate variety and number of interventional procedures for each fellow. (Core)

II.D.2.c) Clinical experience may be supplemented by training affiliations to other institutions. (Detail)

II.D.3. Support Services

II.D.3.a) Pathology and medical laboratory services must be regularly and conveniently available to meet the needs of patients, as determined by the medical staff. (Core)

II.D.3.a).(1) Services should be available 24 hours a day. (Detail)

II.D.3.b) Diagnostic laboratories for the noninvasive assessment of peripheral vascular disease also must be available. (Core)

II.D.4. Research Facilities

II.D.4.a) The institution should provide laboratory and ancillary facilities to support research projects. (Core)

II.D.4.a).(1) These laboratory facilities and research opportunities may be made available to vascular and interventional radiology fellows through cooperative arrangements with other departments or institutions. (Detail)

II.E. Medical Information Access

Fellows 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)

II.E.1. Teaching resources must include a medical library with access to a variety of textbooks and journals in radiology, vascular and interventional radiology, and related fields. (Detail)

II.E.2. There should be a coded vascular and interventional radiology learning file. (Detail)

II.E.3. Fellows should have access to computerized literature search facilities. (Detail)

III. Fellow Appointments

III.A. Eligibility Criteria

Each fellow must successfully complete an ACGME-accredited specialty program and/or meet other eligibility criteria as specified by the Review Committee. (Core)
III.A.1. The program must document that each fellow has met the eligibility criteria. (Detail)

III.A.2. Prerequisite education for entry into the program should include the satisfactory completion of a diagnostic radiology residency program accredited by the ACGME or the Royal College of Physicians and Surgeons of Canada. (Core)

III.B. Number of Fellows

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

III.B.1. The program director may not appoint more fellows than approved by the Review Committee, unless otherwise stated in the specialty-specific requirements. (Core)

III.B.2. The presence of other learners in the program, including residents from other specialties, other subspecialty fellows, PhD students, and nurse practitioners, must not interfere with the appointed fellows’ education. (Detail)

III.B.3. The fellows must not dilute or detract from the educational opportunities available to residents in the core diagnostic radiology residency. (Detail)

III.B.4. Lines of responsibilities for the diagnostic radiology residents and the subspecialty fellows must be clearly defined. (Core)

IV. Educational Program

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

IV.A.1. Skills and competencies the fellow will be able to demonstrate at the conclusion of the program. The program must distribute these skills and competencies to fellows and faculty at least annually, in either written or electronic form. (Core)

IV.A.2. ACGME Competencies

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

IV.A.2.a) Patient Care and Procedural Skills

IV.A.2.a).(1) Fellows must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Fellows: (Outcome)

IV.A.2.a).(1).(a) must provide consultation with referring physicians or services; (Outcome)
IV.A.2.a). (1). (b) should actively participate in educating diagnostic radiology residents, and if appropriate, medical students and other professional personnel in the care and management of patients; (Outcome)

IV.A.2.a). (1). (c) must follow standards of care for practicing in a safe environment, attempt to reduce errors, and improve patient outcomes; (Outcome)

IV.A.2.a). (1). (d) must perform and interpret all specified exams and/or invasive studies under close, graded responsibility and supervision; (Outcome)

IV.A.2.a). (1). (e) must be proficient in taking a history and in the performance of an appropriate physical exam. (Outcome)

IV.A.2.a). (1). (f) must know the indications for, contraindications to, and risks of vascular and interventional procedures, and understand the medical and surgical alternatives to those procedures. (Outcome)

IV.A.2.a). (1). (g) must learn and participate in appropriate follow-up care, including inpatient rounds and longitudinal management of outpatients via clinic visits. (Outcome)

IV.A.2.a). (1). (h) must competently perform all of the following under close, graded responsibility and supervision: (Outcome)

IV.A.2.a). (1). (h). (i) clinical pre-procedure evaluation of patients; (Outcome)

IV.A.2.a). (1). (h). (ii) interpretation of diagnostic studies; (Outcome)

IV.A.2.a). (1). (h). (iii) consultation with clinicians on other services; and, (Outcome)

IV.A.2.a). (1). (h). (iv) delivery of both short- and long-term follow-up care, including both inpatient rounds and scheduled outpatient clinical responsibilities. (Outcome)

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

IV.A.2.a). (2). (a) must apply low dose radiation techniques for both adults and children; (Outcome)
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<tr>
<th>Paragraph</th>
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<td>IV.A.2.a).(2).(b)</td>
<td>must document their direct participation in a minimum of 500 vascular and interventional procedures that cover the entire range of the specialty. (Outcome)</td>
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<td>IV.A.2.a).(2).(c)</td>
<td>must become skilled in the technical aspects of percutaneous procedures. (Outcome)</td>
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<td>IV.A.2.a).(2).(d)</td>
<td>must competently perform vascular and interventional procedures under close, graded responsibility and supervision. (Outcome)</td>
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<td>IV.A.2.a).(2).(e)</td>
<td>must have advanced cardiac life support training and certification. (Outcome)</td>
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<td>IV.A.2.b)</td>
<td><strong>Medical Knowledge</strong></td>
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<td>Fellows 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. Fellows: (Outcome)</td>
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<td>IV.A.2.b).(1)</td>
<td>must demonstrate an understanding of the signs and symptoms, as well as the pathophysiology and natural history of the disorders; (Outcome)</td>
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<td>IV.A.2.b).(2)</td>
<td>must demonstrate a thorough understanding of the clinical indications, risks, interpretation, and limitations of vascular and interventional procedures is essential to the practice of vascular and interventional radiology; (Outcome)</td>
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<td>IV.A.2.b).(3)</td>
<td>must have a complete understanding of imaging methods used to guide percutaneous procedures; (Outcome)</td>
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<td>IV.A.2.b).(4)</td>
<td>must demonstrate thorough familiarity with all aspects of administering and monitoring sedation of the conscious patient. (Outcome)</td>
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<td>IV.A.2.b).(5)</td>
<td>must demonstrate knowledge of low-dose radiation techniques for both adults and children; (Outcome)</td>
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<td>IV.A.2.b).(6)</td>
<td>must demonstrate knowledge of prevention and/or treatment of complications of contrast administration; and, (Outcome)</td>
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<td>IV.A.2.b).(7)</td>
<td>should develop skills in preparing and presenting educational material for medical students, graduate medical staff, and allied health personnel. (Outcome)</td>
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<td>IV.A.2.c)</td>
<td><strong>Practice-based Learning and Improvement</strong></td>
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Fellows are expected to develop skills and habits to be able to meet the following goals:

**IV.A.2.c)(1)** systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement; *(Outcome)*

**IV.A.2.c)(2)** locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems; *(Outcome)*

**IV.A.2.c)(3)** assist and train diagnostic radiology residents in the performance and interpretation of procedures; and, *(Outcome)*

**IV.A.2.c)(4)** if appropriate, educate medical students and other professional personnel in the care and management of patients. *(Outcome)*

**IV.A.2.d)** **Interpersonal and Communication Skills**

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

**IV.A.2.d)(1)** Fellows must competently demonstrate, under close, graded responsibility and supervision: *(Outcome)*

**IV.A.2.d)(1).a** generation of formal consultation reports; *(Outcome)*

**IV.A.2.d)(1).b** procedural reports; and, *(Outcome)*

**IV.A.2.d)(1).c** follow-up communications with referring physicians. *(Outcome)*

**IV.A.2.d)(2)** Fellows must communicate effectively with patients, colleagues, referring physicians, and other members of the health care team concerning imaging and procedure appropriateness, informed consent, safety issues, and the results of imaging tests or procedures. *(Outcome)*

**IV.A.2.d)(2).a** Competence in oral communication must be judged through direct observation. *(Outcome)*

**IV.A.2.d)(2).b** Competence in written communication must be judged on the basis of the quality and timeliness of dictated reports. *(Outcome)*

**IV.A.2.d)(3)** Fellows must communicate, consult, and coordinate care with the referring clinical staff, and clinical services must be maintained and documented with appropriate notes in the
IV.A.2.d).(4) Fellows must maintain appropriate standards of care and concern for patient welfare. (Outcome)

IV.A.2.d).(5) Fellows must generate reports that reflect accuracy of content, grammar, style, and level of confidence. (Outcome)

IV.A.2.e) Professionalism

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

Fellows must demonstrate: (Outcome)

IV.A.2.e).(1) compassion, integrity, and respect for others; (Outcome)

IV.A.2.e).(2) responsiveness to patient needs; (Outcome)

IV.A.2.e).(3) respect for patient privacy and autonomy; (Outcome)

IV.A.2.e).(4) accountability to patients, society and the profession; (Outcome)

IV.A.2.e).(5) sensitivity and responsiveness to a diverse patient population, including diversity in gender, age, culture, race, religion, disabilities, and sexual orientation; and (Outcome)

IV.A.2.e).(6) compliance with institutional and departmental policies, including HIPAA, the Joint Commission, patient safety, and infection control. (Outcome)

IV.A.2.f) Systems-based Practice

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

IV.A.2.f).(1) Fellows must work in interprofessional teams to enhance patient safety and improve patient care quality. (Outcome)

IV.A.2.f).(2) Fellows must participate in identifying system errors and implementing potential system solutions. (Outcome)

IV.A.2.f).(3) Fellows must follow standards of care for practicing in a safe environment, attempt to reduce errors, and improve patient outcomes. (Outcome)
IV.A.3. Curriculum Organization and Fellow Experiences

IV.A.3.a) The program shall offer 1 year of graduate medical education in vascular and interventional radiology.  

IV.A.3.b) The educational program in the subspecialty of vascular and interventional radiology must be organized to provide comprehensive, full-time training and a supervised experience in the evaluation and management of patients potentially requiring diagnostic vascular imaging guided interventional procedures.  

IV.A.3.c) The training must include a supervised experience in performance of imaging-guided diagnostic and interventional procedures used to treat a variety of disorders.  

IV.A.3.d) The training program must be structured to enhance substantially the subspecialty fellows' knowledge of the application of all forms of imaging to the performance and interpretation of vascular and interventional procedures.  

IV.A.3.e) The program in vascular and interventional radiology must be structured to enhance the subspecialty fellows' knowledge of the signs and symptoms of disorders amenable to diagnosis and/or treatment by percutaneous techniques.  

IV.A.3.f) The fundamentals of radiation physics, radiation biology, and radiation protection should all be reviewed during the vascular and interventional training experience.  

IV.A.3.g) The training program curriculum must include didactic and clinical experiences that encompass the full clinical spectrum of vascular and interventional radiology.  

IV.A.3.g).(1) The continuity of care must be of sufficient duration to enable fellows to obtain appropriate comment regarding the management of patients under their care.  

IV.A.3.h) Both vascular and nonvascular interventional procedures must be included in the training program.  

IV.A.3.h).(1) Examples of vascular procedures include but are not limited to:  

IV.A.3.h).(1).(a) arteriography;  
IV.A.3.h).(1).(b) venography;  
IV.A.3.h).(1).(c) lymphography;  
IV.A.3.h).(1).(d) angioplasty;
IV.A.3.h).(1).(e) vascular stenting; (Detail)

IV.A.3.h).(1).(f) percutaneous revascularization procedures; (Detail)

IV.A.3.h).(1).(g) embolotherapy; (Detail)

IV.A.3.h).(1).(h) transcatheter infusion therapy; (Detail)

IV.A.3.h).(1).(i) intravascular foreign body removal; and, (Detail)

IV.A.3.h).(1).(j) percutaneous placement of endovascular prostheses such as stent grafts and inferior vena cava filters and insertion of vascular access catheters. (Detail)

IV.A.3.h).(2) Examples of nonvascular procedures include, but are not limited to: (Detail)

IV.A.3.h).(2).(a) percutaneous imaging-guided biopsy; (Detail)

IV.A.3.h).(2).(b) percutaneous gastrostomy; (Detail)

IV.A.3.h).(2).(c) percutaneous nephrostomy; (Detail)

IV.A.3.h).(2).(d) ureteral stenting and other transcatheter genitourinary procedures for diagnosis and for treatment of lithiasis, obstruction, and fistula; (Detail)

IV.A.3.h).(2).(e) percutaneous transhepatic and transcholecystic biliary procedures; (Detail)

IV.A.3.h).(2).(f) percutaneous drainage for diagnosis and treatment of infections and other fluid collections; and, (Detail)

IV.A.3.h).(2).(g) percutaneous imaging-guided procedures such as ablation of neoplasms and cysts. (Detail)

IV.A.3.h).(3) Fellows must have specific clinical time dedicated to the performance and interpretation of vascular ultrasound studies, magnetic resonance angiograms, and CT angiograms. (Core)

IV.A.3.h).(4) These vascular and interventional procedures should be recorded in a personal case log. (Core)

IV.A.3.i) The responsibility or independence given to fellows must depend on an assessment of their knowledge, manual skill, and experience. (Core)

In supervising fellows during vascular and interventional procedures: (Core)
IV.A.3.i).(1) Faculty members should reinforce the understanding gained during fellowship training of x-ray generators, image intensifiers, film processing, ultrasonography, computed tomography, and other imaging modalities. (Core)

IV.A.3.i).(2) Fellows must be provided with instruction in the use of needles, catheters, guide wires, balloons, stents, and other interventional devices, and must be directly supervised and given graduated responsibility in the performance of procedures as competence increases. (Core)

IV.A.3.i).(3) Fellows must be instructed in clinical indications, risks, interpretation, and limitations of vascular and interventional procedures that are essential to the practice of vascular and interventional radiology. (Core)

IV.A.3.i).(4) Fellows should also be instructed in proper use and interpretation of laboratory tests and in methods that are adjunctive to vascular and interventional procedures. (Core)

IV.A.3.i).(4).(a) Examples include use of physiologic monitoring devices, noninvasive vascular testing, and noninvasive vascular imaging. (Detail)

IV.A.3.i).(5) There shall be specific instruction in the clinical aspects of patient assessment, patient treatment, planning, and patient management related to vascular and interventional radiology in both inpatient and outpatient settings. (Core)

IV.A.3.i).(6) There also should be instruction in the use of analgesics, antibiotics, and other drugs commonly employed in conjunction with these procedures. (Core)

IV.A.3.j) Fellows must be given graded responsibility with respect to longitudinal inpatient and outpatient care for disease processes diagnosed and treated by interventional radiology. (Core)

IV.A.3.k) Didactic Components

IV.A.3.k).(1) Fellows must participate in scheduled conferences on a regular basis. (Core)

IV.A.3.k).(1).(a) Conferences must provide for progressive fellow participation. (Detail)

I.A.1.a).(1).(a) Didactic conferences must be directed to the educational level of the fellow and must provide formal review of the topics in the subspecialty curriculum. (Core)
These conferences should include peer-review case conferences and/or morbidity and mortality conferences.  

These conferences should include intradepartmental conferences.  

These should include one or more specific weekly departmental conferences at which attendance is required.  

These conferences should include conferences with related clinical departments in which fellows participate on a regular basis.  

These conferences should include at least one interdisciplinary conference per week.  

In particular, interdepartmental conferences with the surgical specialties should be an important teaching component.  

These conferences should include departmental grand rounds.  

Scheduled presentations by fellows during these conferences should be encouraged.  

The fellows’ teaching experience should include conferences with medical students, graduate medical staff, and allied health personnel.  

Clinical and basic sciences as they relate to radiology and vascular and interventional radiology should be part of the didactic program.  

This should include but not be limited to the anatomy, physiology, and pathophysiology of the hematological, circulatory, respiratory, gastrointestinal, genitourinary, and musculoskeletal systems.  

Relevant pharmacology, patient evaluation and management skills, and diagnostic techniques also should be addressed.  

There must be documented regular review of all mortality and morbidity related to the performance of interventional procedures.
IV.A.3.k).(3).(a) Fellows must participate actively in this review, which should be held not less frequently than monthly. (Outcome)

IV.A.3.k).(3).(b) Fellows should attend and participate in local extramural conferences and to attend at least one national meeting or postgraduate course in interventional radiology during the program. Reasonable expenses should be reimbursed. (Detail)

IV.A.3.k).(3).(c) Participation in local or national vascular and interventional radiology societies should be encouraged. (Detail)

IV.A.3.k).(3).(d) Fellows should be encouraged to present the radiologic aspects of cases that are discussed in multi-disciplinary conferences. (Detail)

IV.A.3.k).(3).(e) Fellows should prepare clinically or pathologically proven cases for inclusion in the learning file. (Outcome)

IV.B. Fellows’ Scholarly Activities

IV.B.1. The program should provide instruction in the fundamentals of experimental design, performance, and interpretation of results. (Core)

IV.B.2. All fellows must engage in a scholarly project. (Core)

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

IV.B.2.b) The results of such projects must be submitted for publication or presented at departmental, institutional, local, regional, national or international meetings. (Detail)

IV.B.3. The opportunity must be provided for fellows to develop their competence in critical assessment of new imaging modalities and of new procedures in vascular and interventional radiology. (Detail)

IV.B.4. Training should provide opportunities for research in new technologies. (Detail)

IV.B.5. Fellows should be able to evaluate clinical outcomes of interventional radiology. (Outcome)

IV.B.6. Fellows should participate in clinical, basic biomedical or health services research projects. (Core)

IV.B.6.a) Fellows should be encouraged to undertake at least one project
as principal investigator. (Detail)

IV.B.7. Fellows should submit at least one scientific paper or exhibit to a regional or national meeting. (Outcome)

V. Evaluation

V.A. Fellow Evaluation

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

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

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

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

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

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

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

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

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

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

V.A.2. Formative Evaluation

V.A.2.a) The faculty must evaluate fellow performance in a timely manner. (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); and, (Detail)

V.A.2.b).(3) provide each fellow with documented semiannual evaluation of performance with feedback. (Core)

V.A.2.b).(3).(a) The program must ensure that there is at least a quarterly review: (Core)

V.A.2.b).(3).(b) Quarterly reviews should include:

V.A.2.b).(3).(b).(i) documentation of compliance with institutional and departmental policies, including HIPAA, The Joint Commission, patient safety, and infection control; (Detail)

V.A.2.b).(3).(b).(ii) review of faculty evaluations of the fellow; and, (Detail)

V.A.2.b).(3).(b).(iii) review of the vascular and interventional procedure case log. (Core)

V.A.2.c) The evaluations of fellow performance must be accessible for review by the fellow, 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 fellows 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 fellow upon completion of the program. (Core)

This evaluation must:

V.A.3.b).(1) become part of the fellow’s permanent record maintained by the institution, and must be accessible for review by the fellow in accordance with institutional policy; (Detail)
V.A.3.b).(2) document the fellow’s performance during their education; and,

V.A.3.b).(3) verify that the fellow 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. These evaluations must include written, confidential evaluations by the fellows.

V.B.4. Faculty members must receive annual feedback from these evaluations.

V.C. Program Evaluation and Improvement

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

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 fellow;

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

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;

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

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

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

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

V.C.2.a) fellow performance; (Core)
V.C.2.b) faculty development; and, (Core)
V.C.2.c) 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. The Review Committee will consider as one measure of a program’s quality the performance of its graduates on the examination of the American Board of Radiology for subspecialty certification in Vascular and Interventional Radiology. All program graduates should take the examination. (Outcome)

VI. Fellow 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 fellows 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 fellow well-being in a supportive educational environment. (Core)

VI.A.3. The program director must ensure that fellows 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 fellows to fulfill non-physician service obligations. (Core)

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

VI.A.6. Fellows 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 fellows 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 fellows 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 fellows 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 fellows to recognize the signs of fatigue and sleep deprivation; (Core)

VI.C.1.b) educate all faculty members and fellows 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 fellow 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 fellows who may be too fatigued to safely return home. (Core)

VI.D. Supervision of Fellows

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 fellows, faculty members, and patients. (Detail)

VI.D.1.b) Fellows 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 fellows 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 fellow. Other portions of care provided by the fellow can be adequately supervised by the immediate availability of the supervising faculty member or fellow physician, either in the institution, or by means of telephonic and/or electronic modalities. In some circumstances, supervision may include post-hoc review of fellow-delivered care with feedback as to
VI.D.3. Levels of Supervision

To ensure oversight of fellow 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 fellow 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 fellow must be assigned by the program director and faculty members.

VI.D.4.a) The program director must evaluate each fellow’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 fellows, based on the needs of the patient and the skills of the fellows.

VI.D.4.c) Fellows should serve in a supervisory role of residents or junior fellows in recognition of their progress toward independence, based on the needs of each patient and the skills of the individual fellow.

VI.D.5. Programs must set guidelines for circumstances and events in which fellows 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 fellow 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.6. Faculty supervision assignments should be of sufficient duration to assess the knowledge and skills of each fellow and delegate to him/her the appropriate level of patient care authority and responsibility.  (Detail)

VI.E. Clinical Responsibilities

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

VI.F. Teamwork

Fellows 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. Fellow 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 for Diagnostic Radiology will not consider requests for exceptions to the 80-hour limit to the fellows’ 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 fellow to achieve the goals and objectives of the educational program. (Core)

VI.G.2.b) Time spent by fellows 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.3. Mandatory Time Free of Duty

Fellows 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

Duty periods of fellows may be scheduled to a maximum of 24 hours of continuous duty in the hospital. (Core)

VI.G.4.a) Programs must encourage fellows 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) It is essential for patient safety and fellow education that effective transitions in care occur. Fellows 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.c) Fellows must not be assigned additional clinical responsibilities after 24 hours of continuous in-house duty. (Core)

VI.G.4.d) In unusual circumstances, fellows, 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.d).(1) Under those circumstances, the fellow must:

VI.G.4.d).(1).(a) appropriately hand over the care of all other patients to the team responsible for their continuing care; and, (Detail)
VI.G.4.d).(1).(b) 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.d).(2) The program director must review each submission of additional service, and track both individual fellow and program-wide episodes of additional duty. (Detail)

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

VI.G.5.a) Fellows must be prepared to enter the unsupervised practice of medicine and care for patients over irregular or extended periods. (Outcome)

Fellows in the subspecialties of diagnostic radiology are considered to be in the final years of education.

VI.G.5.a).(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 fellows have eight hours free of duty between scheduled duty periods, there may be circumstances when these fellows 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.a).(1).(a) Circumstances of return-to-hospital activities with fewer than eight hours away from the hospital by fellows must be monitored by the program director. (Detail)

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

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

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

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

VI.G.8. At-Home Call

VI.G.8.a) Time spent in the hospital by fellows 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
VI.G.8.b) Fellows 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”.  

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

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

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

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