

ACGME Program Requirements for Graduate Medical Education in Endovascular Surgical Neuroradiology

One-year Common Program Requirements are in BOLD

Effective: January 1, 2008

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. Definitions and Scope of the Specialty

Int.B.1. Endovascular surgical neuroradiology is a subspecialty that uses minimally invasive catheter-based technology, radiologic imaging, and clinical expertise to diagnose and treat diseases of the central nervous system, head, neck, and spine. The unique clinical and invasive nature of this subspecialty requires special training and skills. The program must include training and experience in the following:

Int.B.1.a) signs and symptoms of disorders amenable to diagnosis and treatment by endovascular surgical neuroradiology techniques;

Int.B.1.b) physical examinations to evaluate patients with neurological disorders;

Int.B.1.c) pathophysiology and natural history of these disorders;

- Int.B.1.d) indications for and contraindications to endovascular surgical neuroradiology procedures;
 - Int.B.1.e) clinical and technical aspects of endovascular surgical neuroradiology procedures;
 - Int.B.1.f) medical and surgical alternatives;
 - Int.B.1.g) preoperative and postoperative management of endovascular patients;
 - Int.B.1.h) neurointensive care management;
 - Int.B.1.i) fundamentals of imaging physics and radiation biology; and,
 - Int.B.1.k) interpretation of neuroangiographic studies pertinent to the practice.
- Int.B.2. In this subspecialty, the objective of training is to give fellows an organized, comprehensive, supervised, and full time educational experience in endovascular surgical neuroradiology. This expertise includes the management of patients with neurological disease, the performance of endovascular surgical neuroradiology procedures, and the integration of endovascular surgical neuroradiology therapy into the clinical management of patients.

Int.C. Duration and Scope of Education

- Int.C.1. The program shall offer one year of graduate medical education in endovascular surgical neuroradiology.
- Int.C.2. Training in endovascular surgical neuroradiology must be conducted in an environment conducive to investigative studies of a clinical or basic science nature.
- Int.C.3. A program in endovascular surgical neuroradiology must be jointly administered by programs in neurological surgery, diagnostic radiology, neuroradiology, and neurology which are accredited by the Accreditation Council for Graduate Medical Education (ACGME); these programs must be present within the same institution. Exceptions to this requirement will be subject to the review and approval, on a case-by-case basis, by the Review Committees for Neurological Surgery, Neurology, and Diagnostic Radiology. The endovascular surgical neuroradiology program is not intended to replace or duplicate the ACGME-accredited program in neuroradiology.

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.

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

I.A.1. The program director must have adequate support from the institution and the radiology, neurological surgery, and neurology departments to carry out the mission of the program.

I.B. Participating Sites

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

The PLA should:

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

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

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

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

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

II. Program Personnel and Resources

II.A. Program Director

II.A.1. There must be a single program director with authority and accountability for the operation of the program. The sponsoring institution's GMEC must approve a change in program director. After approval, the program director must submit this change to the ACGME via the ADS.

II.A.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;**
- II.A.2.b) current certification in the subspecialty by the American Board of Radiology, the American Board of Neurological Surgery, or the American Board of Psychiatry and Neurology, or specialty qualifications that are acceptable to the Review Committee;**
- II.A.2.c) current medical licensure and appropriate medical staff appointment;**
- II.A.2.d) special expertise in endovascular surgical neuroradiology techniques;
- II.A.2.d).(1) The program director must concentrate at least 50% of his or her practice in endovascular surgical neuroradiology therapy.
- II.A.2.e) appointment by and responsibility to the program director of the core program; and,
- II.A.2.f) appointment to the teaching staff in the departments of radiology, neurological surgery, and neurology.
- 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. The program director must:**
- II.A.3.a) prepare and submit all information required and requested by the ACGME;**
- 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;**
- II.A.3.c) obtain review and approval of the sponsoring institution's GMEC/DIO before submitting to the ACGME information or requests for the following:**
- II.A.3.c).(1) all applications for ACGME accreditation of new programs;
- II.A.3.c).(2) changes in fellow complement;
- II.A.3.c).(3) major changes in program structure or length of training;
- II.A.3.c).(4) progress reports requested by the Review Committee;
- II.A.3.c).(5) responses to all proposed adverse actions;

- II.A.3.c).(6) **requests for increases or any change to fellow duty hours;**
- II.A.3.c).(7) **voluntary withdrawals of ACGME-accredited programs;**
- II.A.3.c).(8) **requests for appeal of an adverse action; and,**
- II.A.3.c).(9) **appeal presentations to a Board of Appeal or the ACGME.**
- II.A.3.d) **obtain DIO review and co-signature on all program information forms, as well as any correspondence or document submitted to the ACGME that addresses:**
 - II.A.3.d).(1) **program citations, and/or**
 - II.A.3.d).(2) **request for changes in the program that would have significant impact, including financial, on the program or institution.**
- II.A.3.e) devote sufficient time to the program to fulfill all the responsibilities inherent in meeting its educational goals;
- II.A.3.f) review each fellow's personal case log on a quarterly basis. At the completion of training, the program director must submit the entire clinical experience of the endovascular surgical neuroradiology program and the fellows in the format prescribed by the Review Committee. The list of procedures and the logs must be made available to the Review Committee at the time of its review of the core program and the endovascular surgical neuroradiology program;
- II.A.3.g) along with faculty, organize formal teaching conferences specifically developed for the fellows and held at least once a week to allow discussion of topics selected to broaden knowledge in the field of endovascular surgical neuroradiology. Specifically, teaching conferences should embrace the scope of endovascular surgical neuroradiology as outlined in the Introduction (Definitions and Scope) and IV (Educational Program) of these Program Requirements;
- II.A.3.h) ensure protected didactic and interactive conference time, including interdepartmental meetings with neurosurgeons and neuroradiologists;
- II.A.3.i) ensure that journal club should meet on a regular basis to discuss innovations in endovascular surgical neuroradiology. Fellows should attend and actively participate in interdepartmental meetings and conferences with neuroradiology, neurosurgery, neurology and neuropathology; and,

II.A.3.j) ensure that regular review of all mortality and morbidity related to the performance of endovascular surgical neuroradiology procedures are documented. Fellows must participate actively in these reviews, which should be held at least monthly. Fellows should be encouraged to attend and participate in local extramural conferences and should attend at least one national meeting or postgraduate course in endovascular surgical neuroradiology therapy while in training.

II.B. Faculty

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

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.

II.B.2.a) The faculty-to-fellow ratio must be at least one FTE faculty member for every fellow enrolled in the program.

II.B.3. The physician faculty must have current certification in the subspecialty by the American Board of Radiology, the American Board of Neurological Surgery, or the American Board of Psychiatry and Neurology, or possess qualifications acceptable to the Review Committee.

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

II.B.4.a) Physician faculty members must be appointed in good standing to the staff of an institution participating in the program.

II.B.4.b) Physician faculty members must concentrate at least 50% of their practice in endovascular surgical neuroradiology therapy.

II.B.4.c) Physician faculty members should hold primary and/or joint appointments in the departments of radiology, neurological surgery, and neurology departments.

II.B.5. Physician faculty members must provide didactic teaching and direct supervision of fellows' performance in clinical patient management and in the procedural, interpretive, and consultative aspects of endovascular surgical neuroradiology therapy.

II.B.6. In addition to the program director, the physician faculty must include at least one full-time member with expertise in endovascular surgical neuroradiology techniques.

II.C. Other Program Personnel

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

II.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.

II.D.1. Equipment and Facilities

II.D.1.a) Modern imaging/procedure rooms and equipment must be available and must permit the performance of all endovascular surgical neuroradiology procedures. Rooms in which endovascular surgical neuroradiology procedures are performed should be equipped with physiological monitoring and resuscitative equipment. The following state-of-the-art equipment must be available: MRI scanner equipped with high speed gradients, CT scanner (multi-detector) capable of CT angiography and CT Perfusion, biplane digital subtraction angiography, ultrasound, and a radiographic-fluoroscopic room(s).

II.D.1.b) Facilities for storing catheters, guidewires, contrast materials, embolic agents, and other supplies must be adjacent to or within procedure rooms. There must be adequate space and facilities for image display and interpretation and for consultation with other clinicians.

II.D.1.c) The sites where endovascular surgical neuroradiology training is conducted must include appropriate inpatient, outpatient, emergency, and intensive care facilities for direct fellow involvement in providing comprehensive endovascular surgical neuroradiology care.

II.D.1.d) The institution should provide laboratory facilities to support research projects pertinent to endovascular therapies.

II.D.2. Interchange with Residents in Other Specialties and Students

Fellows should be encouraged to participate in research activities with residents and staff in other related specialties.

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.

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. The program must document that each fellow has met the eligibility criteria.

III.A.1. The preliminary year in neuroradiology may be performed in the same institution as the endovascular surgical neuroradiology fellowship or in another institution with ACGME-accredited residencies in radiology, neuroradiology, neurosurgery, and neurology. For fellows who obtain preparatory training in another institution, documentation of completion of training must be provided by the neuroradiology program director for that institution. The endovascular surgical neuroradiology program director has the responsibility and authority to assess the adequacy of the preparatory training and to verify that all preliminary training requirements have been fulfilled.

III.A.2. Fellows entering from radiology should have:

III.A.2.a) completed an ACGME-accredited residency in diagnostic radiology;

III.A.2.b) completed an ACGME-accredited fellowship (subspecialty residency) in neuroradiology;

III.A.2.c) performed and interpreted a minimum of 100 diagnostic neuroangiograms under the supervision of a qualified physician (a board-certified radiologist, interventional neuroradiologist, endovascular neurosurgeon or interventional neurologist with appropriate training); and,

III.A.2.d) completed six months of training in neurologic surgery, vascular neurology, and neurointensive care, during which the fellow will become proficient in the outpatient evaluation and care of pre-and post-procedure endovascular patients, as well as in the management of patients in the neurointensive care environment.

III.A.2.d).(1) This may be completed during the radiology residency.

III.A.3. Fellows entering from neurosurgery should have:

III.A.3.a) completed an ACGME-accredited residency in neurological surgery; and,

III.A.3.b) completed a preparatory year of neuroradiology training which provides education and clinical experience. The preparatory year may occur during the neurological surgery residency and should include:

- III.A.3.b).(1) a course in basic radiographic skills, including radiation physics, radiation biology, and radiation protection; and the pharmacology of radiographic contrast materials acceptable to the program director where the neuroradiology training will occur;
 - III.A.3.b).(2) performing and interpreting a minimum of 100 diagnostic neuroangiograms under the supervision of a qualified physician (a Board-certified radiologist, interventional neuroradiologist, endovascular neurosurgeon, or interventional neurologist with appropriate training);
 - III.A.3.b).(3) the use of needles, catheters, guidewires and angiographic devices and materials;
 - III.A.3.b).(4) recognition and management of complication of angiographic procedures; and,
 - III.A.3.b).(5) understanding the fundamentals of non-invasive neurovascular imaging studies pertinent to the practice of endovascular surgical neuroradiology, including CT/CTA, MR/MRA and sonography of neurovascular diseases.
- III.A.4. Fellows entering from neurology should have:
- III.A.4.a) completed an ACGME-accredited residency in neurology;
 - III.A.4.b) completed an ACGME-accredited one-year vascular/stroke neurology program that includes at least three months of neurointensive care;
 - III.A.4.c) completed three months of clinical experience within an ACGME-accredited neurological surgery program;
 - III.A.4.d) completed a preparatory year of neuroradiology training which provides education and clinical experience that includes:
 - III.A.4.d).(1) a course in basic radiographic skills, including radiation physics, radiation biology, and radiation protection, and the pharmacology of radiographic contrast materials, acceptable to the program director where the neuroradiology training will occur;
 - III.A.4.d).(2) performing and interpreting a minimum of 100 diagnostic neuroangiograms under the supervision of a qualified physician (Board-certified neuroradiologist, interventional neuroradiologist, endovascular neurosurgeon, or intervening neurologist with appropriate training);
 - III.A.4.d).(3) instruction in the use of needles, catheters, guidewires and angiographic devices and materials;

III.A.4.d).(4) recognition and management of complication of angiographic procedures; and,

III.A.4.d).(5) understanding the fundamentals of non-invasive neurovascular imaging studies pertinent to the practice of endovascular surgical neuroradiology, including CT/CTA, MR/MRA and sonography of neurovascular diseases.

III.B. Number of Fellows

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

III.B.1. The total number of fellows in the program must be commensurate with the capacity of the program to offer an adequate educational experience in endovascular surgical neuroradiology therapy.

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 annually, in either written or electronic form. These skills and competencies should be reviewed by the fellow at the start of each rotation;

IV.A.2. ACGME Competencies

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

IV.A.2.a) Patient Care

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:

IV.A.2.a).(1) will serve as consultants under the supervision of staff endovascular surgical neuroradiology practitioners. Direct interactions of fellows with patients must be closely observed to ensure that appropriate standards of care and concern for patient welfare are strictly maintained. Communication, consultation, and coordination of care with the referring clinical staff and clinical services must be maintained and documented with appropriate notes in the medical record;

- IV.A.2.a).(2) will participate in and personally perform and analyze a broad spectrum of endovascular procedures. In order to ensure adequate training, the institution's patient population must have a diversity of illnesses from which broad experience in endovascular surgical neuroradiology therapy can be obtained. The case material should encompass a range of diseases, including:
- IV.A.2.a).(2).(a) aneurysms;
 - IV.A.2.a).(2).(b) arteriovenous malformation;
 - IV.A.2.a).(2).(c) atherosclerotic disease of the cervical vessels;
 - IV.A.2.a).(2).(d) occlusive vascular disease and acute infarction;
 - IV.A.2.a).(2).(e) intracranial neoplasms;
 - IV.A.2.a).(2).(f) vascular anomalies of the head and neck;
 - IV.A.2.a).(2).(g) neoplasms of the head and neck;
 - IV.A.2.a).(2).(h) vascular anomalies of the spine;
 - IV.A.2.a).(2).(i) neoplasms of the spine; and,
 - IV.A.2.a).(2).(j) traumatic vascular lesions of the CNS, head, neck and spine.
- IV.A.2.a).(3) perform a minimum of 100 therapeutic endovascular procedures;
- IV.A.2.a).(4) have adequate training and experience in invasive functional testing;
- IV.A.2.a).(5) attend and participate in clinical conferences. It is desirable that they participate in the clinical teaching of neurological surgery, and of radiology fellows and medical students;
- IV.A.2.a).(6) have experience in didactic and clinical experiences that encompass the full clinical spectrum of endovascular surgical neuroradiology therapy. The program in endovascular surgical neuroradiology must not have an adverse impact on the educational experience of diagnostic radiology, neuroradiology, neurological surgery, or neurology fellows in the same institution; and,
- IV.A.2.a).(7) make daily rounds with the endovascular surgical neuroradiology faculty members during which patient management decisions are discussed and made.

IV.A.2.b)

Medical Knowledge

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:

- IV.A.2.b).(1) will undergo clinical training which must consist of a period of 12 continuous months in endovascular surgical neuroradiology during which the fellow has the opportunity to carry out all of the following under close supervision:
- IV.A.2.b).(1).(a) perform clinical preprocedure evaluations of patients, and their preliminary diagnostic studies, and consult with clinicians on other services;
- IV.A.2.b).(1).(b) perform diagnostic and therapeutic endovascular surgical neuroradiology procedures;
- IV.A.2.b).(1).(c) generate procedural reports; and,
- IV.A.2.b).(1).(d) participate in short term and long term post procedure follow up care, including neurointensive care. The continuity of care must be of sufficient duration to ensure that the fellow is familiar with the outcome of all endovascular surgical neuroradiology procedures.
- IV.A.2.b).(2) must complete the following didactic component areas:
- IV.A.2.b).(2).(a) anatomical and physiologic basic knowledge:
- IV.A.2.b).(2).(a).(i) arterial and venous angiographic anatomy of the brain, spine, spinal cord, and head and neck, including:
- IV.A.2.b).(2).(a).(i).(a) collateral circulation;
- IV.A.2.b).(2).(a).(i).(b) dangerous anastomosis;
- IV.A.2.b).(2).(a).(i).(c) cerebral blood flow;
- IV.A.2.b).(2).(a).(i).(d) autoregulation;
- IV.A.2.b).(2).(a).(i).(e) variants of anatomy; and,
- IV.A.2.b).(2).(a).(i).(f) vascular distributions and supply/drainage.
- IV.A.2.b).(2).(a).(ii) related bony and soft tissue anatomy and physiology.

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| IV.A.2.b).(2).(a).(ii).(a) | vertebral, face, and skull bony anatomy; |
| IV.A.2.b).(2).(a).(ii).(b) | brain, neck, face, and spine soft tissue anatomy and physiology; and, |
| IV.A.2.b).(2).(a).(ii).(c) | ligamentous, articular and muscular anatomy. |
| IV.A.2.b).(2).(b) | pharmacology of the CNS and vasculature and relevant brain physiology: |
| IV.A.2.b).(2).(b).(i) | vasodilators and constrictors; |
| IV.A.2.b).(2).(b).(ii) | agents used in provocative testing; |
| IV.A.2.b).(2).(b).(iii) | contrast agents; |
| IV.A.2.b).(2).(b).(iv) | coagulation cascade; |
| IV.A.2.b).(2).(b).(iv).(a) | anticoagulants; |
| IV.A.2.b).(2).(b).(iv).(b) | antiaggregants; and, |
| IV.A.2.b).(2).(b).(iv).(c) | thrombolytics. |
| IV.A.2.b).(2).(c) | embolic, sclerosing, ablative and bone stabilization agents: |
| IV.A.2.b).(2).(c).(i) | blood pressure control; |
| IV.A.2.b).(2).(c).(ii) | heart rate control; |
| IV.A.2.b).(2).(c).(iii) | allergic reaction control; |
| IV.A.2.b).(2).(c).(iv) | infection; and, |
| IV.A.2.b).(2).(c).(v) | stroke risk reduction. |
| IV.A.2.b).(2).(d) | technical aspects of endovascular surgical neuroradiology, including: |
| IV.A.2.b).(2).(d).(i) | catheter and delivery systems; |
| IV.A.2.b).(2).(d).(ii) | embolic, sclerosing and stabilizing agents in cerebral, spinal and head and neck embolization; |
| IV.A.2.b).(2).(d).(iii) | stents, balloons, and revascularization devices; |

- IV.A.2.b).(2).(d).(iv) flow controlled navigations and embolization;
- IV.A.2.b).(2).(d).(v) complications of angiography and embolization;
- IV.A.2.b).(2).(d).(vi) collateral network manipulations, flow diversion;
- IV.A.2.b).(2).(d).(vii) electrophysiology;
- IV.A.2.b).(2).(d).(viii) provocative testing;
- IV.A.2.b).(2).(d).(ix) imaging of the vascular system; and,
- IV.A.2.b).(2).(d).(x) direct access/therapeutic injection techniques, including biopsy and aspiration.

IV.A.2.b).(3) must demonstrate knowledge of the classification, clinical presentation, imaging appearance, natural history, epidemiology, hemodynamic and physiologic basis for disease and treatment, indications and techniques for treatment, contraindications for treatment, treatment alternatives, combined therapies, risks of treatment, and complication management for all the disease states listed below:

- IV.A.2.b).(3).(a) arteriovenous malformations and fistulae;
- IV.A.2.b).(3).(b) vascular trauma;
- IV.A.2.b).(3).(c) hemorrhage and epistaxis;
- IV.A.2.b).(3).(d) stroke and cerebral ischemia;
- IV.A.2.b).(3).(e) arteriopathies;
- IV.A.2.b).(3).(f) vertebral fracture and degeneration;
- IV.A.2.b).(3).(g) tumors; and,
- IV.A.2.b).(3).(h) other vascular malformations and lesions.

IV.A.2.c) Practice-based Learning and Improvement

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; and,

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

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.

IV.A.2.e) **Professionalism**

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

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.

IV.B. Fellows' Scholarly Activities

IV.B.1. The curriculum must advance fellows' knowledge of the basic principles of research, including how research is conducted, evaluated, explained to patients, and applied to patient care.

IV.B.2. Fellows should participate in scholarly activity.

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

V. Evaluation

V.A. Fellow Evaluation

V.A.1. Formative Evaluation

V.A.1.a) **The faculty must evaluate fellow performance in a timely manner.**

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

V.A.1.b).(1) **provide objective assessments of competence in patient care, medical knowledge, practice-based**

learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice;

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

V.A.1.b).(3) provide each fellow with documented semiannual evaluation of performance with feedback.

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

V.A.1.d) Assessment should include regular evaluation of fellows' knowledge, skills, and overall performance, including the development of professional attitudes consistent with being a physician. The assessment must include cognitive, motor, and interpersonal skills as well as judgment.

V.A.1.e) The program director will meet quarterly with the fellows to communicate each evaluation. At this time, procedure logs and performance will be reviewed and each fellow will be provided with feedback.

V.A.1.e).(1) Fellows will be advanced to positions of higher responsibility only on evidence of their satisfactory progressive scholarship and professional growth.

V.A.1.e).(2) The program will maintain a permanent record of evaluation for each fellow and have it accessible to the fellow and other authorized personnel.

V.A.2. Summative Evaluation

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

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

V.A.2.b) 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.C. Program Evaluation and Improvement

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

V.C.1.a) fellow performance,

V.C.1.b) faculty development, and,

V.C.1.c) the quality of the curriculum and the extent to which the educational goals have been met by fellows.

V.C.1.c).(1) Written evaluations by fellows should be used in this process.

V.C.2. If deficiencies are found, the program should prepare a written plan of action to document initiatives to improve performance in the areas listed in section V.C.1. The action plan should be reviewed and approved by the teaching faculty and documented in meeting minutes.

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.

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

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

VI.A.4. The learning objectives of the program must:

VI.A.4.a) be accomplished through an appropriate blend of supervised patient care responsibilities, clinical teaching, and didactic educational events; and,

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

- VI.A.5.** The program director and sponsoring institution must ensure a culture of professionalism that supports patient safety and personal responsibility. Fellows and faculty members must demonstrate an understanding and acceptance of their personal role in the following:
- VI.A.5.a)** assurance of the safety and welfare of patients entrusted to their care;
 - VI.A.5.b)** provision of patient- and family-centered care;
 - VI.A.5.c)** assurance of their fitness for duty;
 - VI.A.5.d)** management of their time before, during, and after clinical assignments;
 - VI.A.5.e)** recognition of impairment, including illness and fatigue, in themselves and in their peers;
 - VI.A.5.f)** attention to lifelong learning;
 - VI.A.5.g)** the monitoring of their patient care performance improvement indicators; and,
 - VI.A.5.h)** honest and accurate reporting of duty hours, patient outcomes, and clinical experience data.
- VI.A.6.** All fellows and faculty members must demonstrate responsiveness to patient needs that supersedes self-interest. Physicians must recognize that under certain circumstances, the best interests of the patient may be served by transitioning that patient's care to another qualified and rested provider.
- VI.B. Transitions of Care**
- VI.B.1.** Programs must design clinical assignments to minimize the number of transitions in patient care.
 - VI.B.2.** Sponsoring institutions and programs must ensure and monitor effective, structured hand-over processes to facilitate both continuity of care and patient safety.
 - VI.B.3.** Programs must ensure that fellows are competent in communicating with team members in the hand-over process.
 - VI.B.4.** The sponsoring institution must ensure the availability of schedules that inform all members of the health care team of attending physicians and 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;**
 - VI.C.1.b) educate all faculty members and fellows in alertness management and fatigue mitigation processes; and,**
 - VI.C.1.c) adopt fatigue mitigation processes to manage the potential negative effects of fatigue on patient care and learning, such as naps or back-up call schedules.**
- VI.C.2. Each program must have a process to ensure continuity of patient care in the event that a fellow may be unable to perform his/her patient care duties.**
- VI.C.3. The sponsoring institution must provide adequate sleep facilities and/or safe transportation options for fellows who may be too fatigued to safely return home.**
- 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.**
 - VI.D.1.a) This information should be available to fellows, faculty members, and patients.**
 - VI.D.1.b) Fellows and faculty members should inform patients of their respective roles in each patient's care.**
 - VI.D.2. The program must demonstrate that the appropriate level of supervision is in place for all fellows who care for patients.**

Supervision may be exercised through a variety of methods. Some activities require the physical presence of the supervising faculty member. For many aspects of patient care, the supervising physician may be a more advanced 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 the appropriateness of that care.
 - 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.**

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.

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.

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.

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.

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.

VI.G.1.a).(1) In preparing a request for an exception the program director must follow the duty hour exception policy from the ACGME Manual on Policies and Procedures.

VI.G.1.a).(2) Prior to submitting the request to the Review Committee, the program director must obtain approval of the institution's GMEC and DIO.

VI.G.2. Moonlighting

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

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.

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.

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. 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.

VI.G.4.a) 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.

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

VI.G.4.c) 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.

VI.G.4.c).(1) Under those circumstances, the fellow must:

VI.G.4.c).(1).(a) appropriately hand over the care of all other patients to the team responsible for their continuing care; and,

VI.G.4.c).(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.

VI.G.4.c).(2) The program director must review each submission of additional service, and track both individual fellow and program-wide episodes of additional duty.

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.

Endovascular surgical neuroradiology fellows 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.

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.

VI.G.5.a).(1).(b)

Fellows may stay on duty with fewer than eight hours free of duty:

VI.G.5.a).(1).(b).(i)

to continue to provide care for a severely ill or unstable patient;

VI.G.5.a).(1).(b).(ii)

to participate in end-of-life care or management of a complication related to an earlier procedure in which the fellow was involved;

VI.G.5.a).(1).(b).(iii)

to provide humanistic attention to the needs of a patient or a patient's family;

VI.G.5.a).(1).(b).(iv)

or, for the academic importance of the events transpiring, including the opportunity to participate in a procedure that provides a unique or otherwise hard-to-obtain experience.

VI.G.6.

Maximum Frequency of In-House Night Float

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

VI.G.6.a)

Fellows must have no more than six consecutive weeks of night float rotations, and no more than four months of night float rotations in total per year.

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).

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.

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 fellow.

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”.

ACGME Approved: June 12, 2007

Effective: January 1, 2008

Editorial Revision: June 10, 2008

Revised Common Program Requirements Effective: July 1, 2011